

REQUEST FOR PROPOSALS FOR

Enterprise Applications Managed Services

ISSUING OFFICE

Pennsylvania Turnpike Commission

Contracts Administration Department

On behalf of the

Information Technology Departments

Enterprise Business Solutions & GeoAnalytics

RFP NUMBER

19-10350-8476

DATE OF ISSUANCE

August 1, 2019

REQUEST FOR PROPOSALS FOR

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CALENDAR OF EVENTS**RFP# 19-10350-8476**

The Commission reserves the right to make changes or alterations to this schedule as the Commission determines is in its best interest.

Activity	Date	Time
Request for Proposals Issued	August 1, 2019	N/A
Deadline for Proposers to Submit Questions via email to RFP-Q@paturndpike.com	August 22, 2019	2:00 PM
Answers to Proposers questions posted to the Commission website at https://www.paturndpike.com/Procurement/Bidlist.aspx?RTYPE=O <i>(Estimate Only)</i>	August 29, 2019	N/A
Due Date for Proposals	September 18, 2019	2:00 PM
Oral Clarifications/Presentations	October 2019 (estimate)	TBD
Anticipated Notice to Proceed <i>(Estimate Only)</i>	April, 2019	N/A

PART I**GENERAL INFORMATION FOR PROPOSERS**

I-1. Purpose. This request for proposals (RFP) provides interested Proposers with sufficient information to enable them to prepare and submit proposals for consideration by the Pennsylvania Turnpike Commission (Commission) to satisfy a need for Enterprise Applications Managed Services.

I-2. Issuing Office. This RFP is issued for the Commission by the Contracts Administration Department on behalf of the Information Technology Department.

I-3. Scope. This RFP contains instructions governing the proposals to be submitted and the material to be included therein; a description of the service to be provided; requirements which must be met to be eligible for consideration; general evaluation criteria; and other requirements to be met by each proposal.

I-4. Problem Statement. The Commission owns and operates a complex mix of technically sophisticated enterprise applications, which are supporting the Commission's core business processes. The Commission is seeking a firm capable of providing a defined set of enterprise managed services, including production support, software upgrades, support of platform upgrades, support of interfacing components, minor to medium enhancements, master data updates and integration of a variety of enterprise business systems, including an ERP (SAP) system, GIS, and data analytics solutions that the Commission currently operates and uses.

I-5. Type of Contract. The Commission intends to award one contract as a result of this RFP. It is proposed that if a contract is entered into as a result of this RFP, it will be a fixed-based fee contract with additional Work Orders negotiated as needed and performance-based incentives and disincentives. The Commission may in its sole discretion undertake negotiations with Proposers whose proposals as to price and other factors show them to be qualified, responsible, responsive, and capable of performing the work. A sample Contractual Agreement is provided in Appendix A.

I-6. Contractor Integrity Provisions. Contractor Integrity Provisions will apply to this contract upon award and the awarded vendor may be required to complete a Background Qualifications Questionnaire prior to entering into an Agreement with the Commission and attend annual ethics training provided by the Commission. Proposers can find the Integrity Provisions and other related documents on the Commissions website at www.paturnpike.com (Doing Business, General Information, Integrity Provisions).

Include full disclosure of any potential conflict with the State Adverse Interest Act, 71 P.S. § 776.3, for a State Advisor or State Consultant by the prime or any subconsultant. If there is no adverse interest, you shall include the following statement: "I have reviewed the State Adverse Interest Act and determined that there is no adverse interest for anyone on this Agreement team." This information should be included in your transmittal letter/cover page or executive summary.

I-7. Rejection of Proposals. The Commission reserves the right to reject any and all proposals received as a result of this request, or to negotiate separately with competing Proposers.

I-8. Subcontracting. Any use of subcontractor by a Proposer must be identified in the proposal. During the contract period use of any subcontractor by the selected Proposer, which were not previously identified in the proposal, must be approved in advance in writing by the Commission.

If a Joint Venture responds to this RFP, the Commission will not accept separate proposals from joint venture constituents. A firm will not be permitted to submit a proposal on more than one (1) joint venture for the same RFP. Also, a firm that responds to this RFP as a prime may not be included as a designated subconsultant to another firm that responds to the same RFP. Multiple responses under any of the foregoing situations will cause the rejection of all responses of the firm or firms involved. This does not preclude a firm from being set forth as a designated subconsultant to more than one prime consultant responding to the RFP.

I-9. Incurring Costs. The Commission is not liable for any costs the Proposer incurs in preparation and submission of its proposal, in participating in the RFP process or in anticipation of award of contract.

I-10. Procurement Schedule of Events. The current Schedule for Key Procurement Dates for this procurement process leading to an award of the Contract is provided in the Calendar of Events, page 1 of this RFP. The Commission reserves the right to make changes or alterations to this schedule as the Commission determines is in its best interest. All changes to these dates and/ or times up to and including the due date for Proposals will be issued as an addendum to this RFP and will become part of this RFP and will be posted to the Commission's website at <https://www.paturnpike.com/procurement/Bidlist.aspx?rtype=o>.

Unless otherwise notified in writing by the Commission, the dates indicated below for submission of items or for other required actions on the part of a Proposer shall constitute absolute deadlines for those activities and failure to fully comply by the time and date stated shall cause a Proposer to be disqualified. All times stated are in Harrisburg, PA local time and are subject to change.

I.11. Questions and Answers. There will be no pre-proposal conference for this RFP. No negotiations, decisions or actions shall be initiated or executed by a Proposer as a result of any oral discussions with any Commission member, employee, consultant/selected proposer. Written questions may be submitted to clarify any points in the RFP which may not have been clearly understood. Written questions shall be submitted by email to RFP-Q@paturnpike.com with **RFP 19-10350-8476** in the Subject Line to be received no later than the date and time provided on the Calendar of Events. All questions and written answers will be issued as an addendum to and become part of this RFP and will be posted to the Commission's website at (<http://www.paturnpike.com/procurement/Bidlist.aspx?rtype=o>), approximately on or before the date provided on the Calendar of Events and only if necessary. Proposers shall use the form provided in Appendix B to submit the questions.

I-12. Addenda to the RFP. If it becomes necessary to revise any part of this RFP before the proposal response date, addenda will be posted to the Commission's website under the original RFP document (<http://www.paturndpike.com/procurement/Bidlist.aspx?rtype=0>). It is the responsibility of the Proposer to periodically check the website for any new information or addenda to the RFP.

The Commission may revise a published advertisement. If the Commission revises published advertisement less than ten days before the RFP due date, the due date will be extended to maintain the minimum ten-day advertisement duration if the revision alters the project scope or selection criteria. Firms are responsible to monitor advertisements/addenda to ensure the submitted proposal complies with any changes in the published advertisement.

I-13. Response. To be considered, proposals must be delivered to the Pennsylvania Turnpike Commission's Contracts Administration Department, Attention: Wanda Metzger, on or before the date and time provided on the Calendar of Events. The Commission will **not** accept proposals via email or facsimile transmission.

Overnight Delivery Address:

Contracts Administration Department
Attn: Wanda Metzger
PA Turnpike Commission
700 South Eisenhower Blvd.
Middletown, PA 17057
Phone: (717) 831-7429

US Mail Delivery Address:

Contracts Administration Department
Attn: Wanda Metzger
PA Turnpike Commission
P.O. Box 67676
Harrisburg, PA 17106

Please note that use of U.S. Mail, FedEx, UPS, or other delivery method, does not guarantee delivery to the Contracts Administration Department by the above listed time for submission. Proposers mailing proposals should allow sufficient delivery time to ensure timely receipt of their proposals. If the Commission office location to which proposals are to be delivered is closed on the proposal response date, due to inclement weather, natural disaster, or any other cause, the deadline for submission shall be automatically extended until the next Commission business day on which the office is open. Unless the Proposers are otherwise notified by the Commission, the time for submission of proposals shall remain the same.

I-14. Proposals. To be considered, Proposers should submit a complete response to this RFP, using the format provided in PART II. Each proposal should be submitted in seven (7) hard copies of the Technical Submittal, seven (7) hard copies of the Diverse Business (DB) participation submittal, and seven (7) hard copies of the Cost Submittal. In addition to the hard copies of the proposal, **two complete and exact copies** of the Technical, Cost and DB submittals, along with all requested documents on CD-ROM or Flash Drive in Microsoft Office or Microsoft Office-compatible format. The electronic copy must be a mirror image of the hard copy. Proposer should ensure that there is no costing information in the technical submittal. The CD or Flash drive should clearly identify the Proposer and include the name and version number of the virus scanning software that was used to scan the CD or Flash drive before it was submitted. The Proposer shall present the proposal to the Contracts Administration Department only. No other

distribution of proposals will be made by the Proposer. Each proposal page should be numbered for ease of reference.

An official authorized to bind the Proposer to its Proposal must sign the proposal. If the official signs the Proposal Cover Sheet (Appendix C to this RFP) and the Proposal Cover Sheet is attached to the proposal, the requirement will be met. For this RFP, the proposal must remain valid for at least **180** calendar days. Moreover, the contents of the proposal of the selected Proposer will become contractual obligations if a contract is entered into.

Each and every Proposer submitting a proposal specifically waives any right to withdraw or modify it, except as hereinafter provided. Proposals may be withdrawn by written or fax notice (fax number (717) 986-8714) received at the Commission's address for proposal delivery prior to the exact hour and date specified for proposal receipt.

However, if the Proposer chooses to attempt to provide such written notice by fax transmission, the Commission shall not be responsible or liable for errors in fax transmission. A proposal may also be withdrawn in person by a Proposer or its authorized representative, provided his/her identity is made known and he/she signs a receipt for the proposal, but only if the withdrawal is made prior to the exact hour and date set for proposal receipt. A proposal may only be modified by the submission of a new sealed proposal or submission of a sealed modification which complies with the requirements of this solicitation.

I-15. Economy of Preparation. Proposals should be prepared simply and economically, providing a straightforward, concise description of the Proposer's ability to meet the requirements of the RFP. The Issuing Office limits the Technical Proposal to twenty-five (25) double-sided pages not counting Appendices, financials, and draft project plans.

I-16. Discussions for Clarification. Proposers who submit proposals may be required to make an oral or written clarification of their proposals to the Issuing Office through the Contract Administration Department to ensure thorough mutual understanding and Proposer responsiveness to the solicitation requirements. The Issuing Office through the Contract Administration Department will initiate requests for clarification.

I-17. Best and Final Offers. The Issuing Office reserves the right to conduct discussions with Proposers for the purpose of obtaining "best and final offers." To obtain best and final offers from Proposers, the Issuing Office may do one or more of the following: a) enter into pre-selection negotiations; b) schedule oral presentations; and c) request revised proposals. The Issuing Office will limit any discussions to responsible Proposers whose proposals the Issuing Office has determined to be reasonably susceptible of being selected for award.

I-18. Prime Proposer Responsibilities. The selected Proposer will be required to assume responsibility for all services offered in its proposal whether or not it produces them. Further, the Commission will consider the selected Proposer to be the sole point of contact with regard to contractual matters.

I-19. Proposal Contents. Proposals will be held in confidence and will not be revealed or discussed with competitors, unless disclosure is required to be made (i) under the provisions of any Commonwealth or United States statute or regulation; or (ii) by rule or order of any court of competent jurisdiction. All material submitted with the proposal becomes the property of the Pennsylvania Turnpike Commission and may be returned only at the Commission's option. Proposals submitted to the Commission may be reviewed and evaluated by any person other than competing Proposers at the discretion of the Commission. The Commission has the right to use any or all ideas presented in any proposal. Selection or rejection of the proposal does not affect this right.

In accordance with the Pennsylvania Right-to-Know Law (RTKL), 65 P.S. § 67.707 (Production of Certain Records), Proposers shall identify any and all portions of their Proposal that contains confidential proprietary information or is protected by a trade secret. Proposals shall include a written statement signed by a representative of the company/firm identifying the specific portion(s) of the Proposal that contains the trade secret or confidential proprietary information.

Proposers should note that "trade secrets" and "confidential proprietary information" are exempt from access under Section 708(b)(11) of the RTKL. Section 102 defines both "trade secrets" and "confidential proprietary information" as follows:

Confidential proprietary information: Commercial or financial information received by an agency: (1) which is privileged or confidential; **and** (2) the disclosure of which would cause substantial harm to the competitive position of the person that submitted the information.

Trade secret: Information, including a formula, drawing, pattern, compilation, including a customer list, program, device, method, technique or process that: (1) derives independent economic value, actual or potential, from not being generally known to and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use; **and** (2) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy. The term includes data processing software by an agency under a licensing agreement prohibiting disclosure.

65 P.S. §67.102 (emphasis added).

The Office of Open Records has determined that a third party must establish a trade secret based upon factors established by the appellate courts, which include the following:

- the extent to which the information is known outside of his business;
- the extent to which the information is known by employees and others in the business;
- the extent of measures taken to guard the secrecy of the information;
- the value of the information to his business and to competitors;
- the amount of effort or money expended in developing the information; and
- the ease of difficulty with which the information could be properly acquired or duplicated by others.

See Crum v. Bridgestone/Firestone North Amer. Tire., 907 A.2d 578, 585 (Pa. Super. 2006).

The Office of Open Records also notes that with regard to “confidential proprietary information the standard is equally high and may only be established when the party asserting protection shows that the information at issue is either ‘commercial’ or ‘financial’ and is privileged or confidential, and the disclosure *would* cause substantial competitive harm.” (emphasis in original).

For more information regarding the RTKL, visit the Office of Open Records’ website at www.openrecords.state.pa.us.

I-20. Debriefing Conferences. Proposers whose proposals are not selected will be notified of the name of the selected Proposer and given the opportunity to be debriefed, at the Proposer’s request. The Issuing Office will schedule the time and location of the debriefing. The Proposer will not be compared with other Proposers.

I-21. News Releases. Proposers shall not issue news releases, internet postings, advertisements or any other public communications pertaining to this RFP without prior written approval of the Issuing Office, and then only in coordination with the Issuing Office.

I-22. Commission Participation. Unless specifically noted in this section, Proposers must provide all services to complete the identified work. The Commission shall furnish the Proposer access to key personnel, relevant documents, and workspace for up to four dedicated resources (examples: engagement manager, business analyst; specific roles will be mutually agreed-upon between the Commission and the selected Proposer); there is an option to secure additional office space from the Commission negotiated between the Commission and the Proposer.

I-23. Cost Submittal. The cost submittal along with a rate card shall be placed in a separately sealed envelope within the sealed proposal and kept separate from the technical submittal.

I-24. Term of Contract. The term of the contract will commence on the Effective Date (as defined below) and will end five (5) years from the effective date with an option to renew for an additional five years incrementally or all at once. The Commission shall fix the Effective Date after the contract has been fully executed by the Proposer and by the Commission and all approvals required by Commission contracting procedures have been obtained.

I-25. Proposer’s Representations and Authorizations. Each Proposer by submitting its proposal understands, represents, and acknowledges that:

- a. All information provided by, and representations made by, the Proposer in the proposal are material and important and will be relied upon by the Issuing Office in awarding the contract(s). Any misstatement, omission or misrepresentation shall be treated as fraudulent concealment from the Issuing Office of the true facts relating to the submission of this proposal. A misrepresentation shall be punishable under 18 Pa. C.S. 4904.
- b. The price(s) and amount of this proposal have been arrived at independently and without consultation, communication or agreement with any other Proposer or potential Proposer.

- c. Neither the price(s) nor the amount of the proposal, and neither the approximate price(s) nor the approximate amount of this proposal, have been disclosed to any other firm or person who is a Proposer or potential Proposer, and they will not be disclosed on or before the proposal submission deadline specified in the response section of this RFP.
- d. No attempt has been made or will be made to induce any firm or person to refrain from submitting a proposal on this contract, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.
- e. The proposal is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive proposal.
- f. To the best knowledge of the person signing the proposal for the Proposer, the Proposer, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last four (4) years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as disclosed by the Proposer in its proposal.
- g. To the best of the knowledge of the person signing the proposal for the Proposer and except as otherwise disclosed by the Proposer in its proposal, the Proposer has no outstanding, delinquent obligations to the Commonwealth including, but not limited to, any state tax liability not being contested on appeal or other obligation of the Proposer that is owed to the Commonwealth.
- h. The Proposer is not currently under suspension or debarment by the Commonwealth, or any other state, or the federal government, and if the Proposer cannot certify, then it shall submit along with the proposal a written explanation of why such certification cannot be made.
- i. The Proposer has not, under separate contract with the Issuing Office, made any recommendations to the Issuing Office concerning the need for the services described in the proposal or the specifications for the services described in the proposal.
- j. Each Proposer, by submitting its proposal, authorizes all Commonwealth agencies to release to the Commission information related to liabilities to the Commonwealth including, but not limited to, taxes, unemployment compensation, and workers' compensation liabilities.

I-26. Indemnification. The Proposer shall be responsible for, and shall indemnify, defend, and hold harmless the Commission and its Commissioners, officers, employees, and agents from any claim, liability, damages, losses, causes of action, and expenses, including reasonable attorneys' fees, arising from damage to life or bodily injury or real or tangible personal property caused by the negligence or other tortious acts, errors, and omissions of Proposer, its employees, or its subcontractors while engaged in performing the work of the Agreement or while present on the Commission's premises, and for breach of the Agreement regarding the use or disclosure of proprietary and confidential information where it is determined that Proposer is responsible for any use of such information not permitted by the Agreement. The indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Proposer or its subcontractors under Workers' Compensation Acts, Disability Benefits Acts, or other Employee Benefit Act.

I-27. Data/Information Security Breach Notification. "Breach" shall mean any successful unauthorized acquisition, access, use, or disclosure of Commission data that compromises the security or privacy of such data.

"Commission Data" means Commission provided information and Commission related information acquired as a result of the services provided to Commission under this Agreement.

Proposer shall report to the Commission any Breach affecting Commission Data. The notice to be provided to the Commission by Proposer shall be provided without unreasonable delay and no later than within 72 hours of Proposer's discovery of any Breach. A Breach shall be deemed to be discovered on the first day on which the Proposer knows or reasonably should have known of the Breach. The notice to be provided to the Commission by Proposer shall be made in writing to the Commission's Information Security Officer and shall include the following content: (1) the nature of the Breach; (2) the specific Commission Data affected by the Breach; (3) the steps the Proposer is taking to remediate the Breach; and (4) steps the Proposer is taking to mitigate future Breaches. Following notification of the Breach, Proposer shall cooperate with the Commission's investigation of the Breach and provide any other information regarding the Breach or the Commission Data affected which the Commission may reasonably request. Should notice to individuals whose information was part of Commission Data be required under any applicable data privacy law, including, but not limited to, individual state data breach notice laws or federal laws such as HIPAA and Gramm Leach Bliley Act, Proposer shall provide the Commission with copies of any template notification letters and draft regulatory correspondence for Commission's prior approval. Proposer shall provide any notifications required under the applicable data privacy laws on behalf of the Commission at the request of Commission. The Commission reserves the right to handle any notifications required and shall notify Proposer if the Commission will be handling the required notifications. Upon request, Proposer shall provide the Commission with its cyber-security policies and procedures. Proposer agrees to reimburse the Commission for any and all reasonable costs associated with the Commission's response to Proposer's Breach, including any fees associated with the Commission's investigation of Proposer's Breach, notification costs, and any reasonable offer of credit or identity monitoring product.

I-28. Security Requirements. Proposer will comply with the Security Requirements are described in Appendix D – Security Standards and Requirements.

I-29. Liquidated Damages.

- (a) By accepting this Contract, the Proposer agrees to the delivery and acceptance requirements of this Contract. If a Contract schedule is not met, the delay will interfere with the Commission's program. In the event of any such delay, it would be impractical and extremely difficult to establish the actual damage for which the Proposer is the material cause. The Commission and the Proposer therefore agree that, in the event of any such delay the amount of damage shall be the amount set forth in this Section "Liquidated Damages" and agree that the Proposer shall pay such amount as liquidated damages, not as a penalty. Such liquidated damages are in lieu of all other damages arising from such delay.
- (b) The Commission and Proposer agree that the Deliverables identified in the Payment Schedule set forth in this Contract as "Major Deliverables" (the "Major Deliverables") shall be those for which liquidated damages shall be applicable in the event of delay of their completion beyond the delivery date specified in the Contract. If Major Deliverables are not identified in the Contract, liquidated damages shall apply to the total value of the Contract.
- (c) The amount of liquidated damages for any such Major Deliverable not completed by the deliverable schedule set out in the Contract shall be the flat amount of the specifically identified Major Deliverable for the Transition Period (see Appendix I) following the scheduled completion date of such Major Deliverable. Liquidated damages shall be assessed each calendar day until the date on which the Proposer completes such Major Deliverable, up to a maximum of thirty (30) calendar days. Proposer may recoup the total amount of liquidated damages assessed against previous Major Deliverables if the Proposer accelerates progress towards future Major Deliverables and meets the final project completion date set out in the Contract.
- (d) If, at the end of the thirty (30) day period specified in "Liquidated Damages - (c)" above, the Proposer has not met the schedule for completion of the Major Deliverable, then the Commission, at no additional expense and at its option, may either:
 - (1) immediately terminate the Contract and all software, documentation, reports, Developed Materials and any other materials provided for or created for the Commission as a result of this Contract shall be given to the Commission, and the Commission shall be entitled to its remedies under "Termination"; or
 - (2) order the Proposer to continue with no decrease in effort until the work is completed in accordance with the Contract and accepted by the Commission or until the Commission terminates the Contract. If the Contract is continued, any liquidated damages will also continue until the work is completed.
- (e) At the time(s) as identified in the Contract, liquidated damages shall be paid by the Proposer and collected by the Commission by deducting them from the invoices submitted under this Contract or any other contract Proposer has with the Commission, by collecting them through the performance security, if any, or by billing the Proposer as a separate item.

- (f) To the extent that the delay is caused by the Commission, no liquidated damages will be applied.
- (g) If the delays are caused by the default of a Subcontractor, and if such default arises out of causes beyond the control of both the Proposer and Subcontractor, and without their fault or negligence, the Proposer shall not be liable for liquidated damages for delays, unless the supplies or services to be furnished by the Subcontractor were obtainable from other sources in sufficient time to permit the Proposer to meet the required performance schedule.

I-30. Performance Bond. When awarded the contract, furnish a Performance Bond, with sufficient surety or sureties, in an amount equal to 100% of the contract price. Have the bond specify that the contracted work will be completed in a manner satisfactory to the Commission. Have the bond state that the Commission is not liable for any expenses incurred through the failure to complete the work as specified, nor liable for any damages growing out of the carelessness of the Proposer, the Proposer's employees, or subcontractors.

Have participants submit a single Performance bond, signed by both the participant and by their surety.

I-31. Insurance. Proposer will comply with the Insurance requirements as described in Appendix E - Insurance Specification.

I-32. Diverse Business (DB) Requirements. Proposer will comply with the DB Requirements as described in Appendix F – Diverse Business (DB) Requirements.

PART II

INFORMATION REQUIRED FROM PROPOSERS

Proposals must be submitted in the format, including heading descriptions, outlined below. To be considered, the proposal must respond to all requirements in this part of the RFP. Any other information thought to be relevant, but not applicable to the enumerated categories, should be provided as an appendix to the proposal. All cost data relating to this proposal including the rate card and all Diverse Business cost data should be kept separate from and not included in the Technical Submittal. Each proposal shall consist of three separately sealed submittals:

1. Technical Submittal, which shall be a response to RFP **Part II, Sections II-1 a through h**;
2. Diverse Business Participation Submittal, in response to RFP **Part II, Section II-2**; and
3. Cost Submittal, in response to RFP **Part II, Section II-3**.

The Commission reserves the right to request additional information which, in the Commission's opinion, is necessary to assure that the Proposer's competence, number of qualified employees, business organization, and financial resources are adequate to perform according to the RFP.

The Commission may make such investigations as deemed necessary to determine the ability of the Proposer to perform the work, and the Proposer shall furnish to the Issuing Office all such information and data for this purpose as requested by the Commission. The Commission reserves the right to reject any proposal if the evidence submitted by, or investigation of, such Proposer fails to satisfy the Commission that such Proposer is properly qualified to carry out the obligations of the agreement and to complete the work specified.

II-1 Technical Submittal.

A. Proposal Cover Sheet (See Appendix C)

Show the name of your firm, Federal I.D. number, address, name of contact person, contact person's email and telephone number date and the subject: **Enterprise Applications Managed Services, RFP 19-10350-8476**. Appendix C must be signed by an individual who is authorized to negotiate terms, render binding decisions, and commit your firm's resources. In addition, it is required that all information requested in Appendix C be provided including information pertaining to location of office performing the work, contact information, listing of all Pennsylvania offices and total number of Pennsylvania employees, and location of company headquarters.

B. Table of Contents

Include a clear identification of the material by section and by page number.

C. Executive Summary

Summarize your understanding of the work to be done and make a positive commitment to perform the work necessary. This section should summarize the key points of your submittal (limit to two pages). Include in this section or in a transmittal letter/cover page a statement regarding full disclosure of any potential conflict with the State Adverse Interest of State Advisor or Consultant Statute as instructed in Proposal Section 1.6 Contractor Integrity Provisions.

D. Firm Overview

Provide a brief history and description of your firm's business organization and its service expertise and experience in enterprise managed services, including production support, software upgrades, support of interfacing components, minor to medium enhancements, master data updates and integration for a variety of enterprise business systems, including an ERP (SAP) system, GIS, and data analytics solutions as it relates to the requirements discussed in Part IV of this RFP. Include the location of offices and the number and types of executive and professional personnel, engineers, technicians, specialists, software/application administrators, consultants or other relevant professional staff in each office. Discuss your firm's presence in and commitment to the Commonwealth of Pennsylvania. Include a discussion of the specific expertise and services that distinguish your firm.

If you propose to subcontract any portion of the work described in your response, the subcontracted firm or firms must be identified in this section. The role of the firm or firms should be explained along with a description of the specific expertise and services that the firm or firms contribute to the overall value of your proposal.

E. Personnel

Provide the names, proposed roles, background and experience, current professional licenses, office location and availability of the consulting personnel that would perform the services as described in Part IV of this RFP. Specifically identify the primary person(s) who will be responsible for managing the relationship with the Commission during this endeavor. Proposer must submit a current resume for all proposed staff listing relevant experience and applicable professional affiliations.

F. Relevant Experience and Expertise

Provide a narrative statement regarding your services expertise and experience as it relates to Part IV of this RFP. Additionally, include a statement regarding your understanding of the requirements as outlined in this RFP and your ability to provide production support/managed services for enterprise managed services, including production support, software upgrades, support of interfacing components, minor to medium enhancements, master data updates and

integration for a variety of enterprise business systems, including an ERP (SAP) system, GIS, and data analytics solutions in accordance with the same.

Describe your firm's experience in providing similar managed services engagements to other clients, especially other governmental entities and/or similar public/private sector transportation organizations. Describe the business practices that enable you to complete these tasks in an efficient, timely and, at times, expeditious manner.

Experience with emerging technologies is preferable. Provide examples of your firm's experience with emerging technologies (for example, bots, augmented reality (AR), artificial intelligence (AI) in regard to highly automated vehicles, etc.).

Include a proposal of industry-accepted SLAs that could be tied into a system of performance-based incentives (earnbacks) and disincentives.

Include a statement regarding any other specialized enterprise application managed services your firm may offer.

Provide a list of three references of clients for which your firm has performed similar work, as described in this RFP, within the past three years. Studies or projects referred to should be identified and the name of the customer shown, including the name, address, and telephone number of the responsible official of the customer, company, or agency who may be contacted.

G. Approach

Provide a description of the proposed approach/methodology that you will follow, along with a project plan and realistic timeline that identifies the phases and tasks required to complete the services defined in Part IV. Include in this section the deliverables and reports that will be provided, the project controls that will be used, and the tasks that will be performed.

Provide a description of all deliverables that you will provide as an output of the project plan.

Provide relevant samples of deliverables and project plans from similar services that your firm was primarily responsible for producing.

H. Transition Plan

Include a Transition Plan with a timetable and a breakdown of roles and responsibilities that will produce a smooth transition process from the existing model consisting of Commission staff and staff augmentation providing maintenance and operations services to the new contract. The Transition Plan should provide a practical high-level strategy that will be defined in detail following contract award. The Transition plan shall include strategies for both entrance (Contract Notice to Proceed) and exit (termination of the Contract) transitions. If

transition options are offered, the Proposer shall include pricing of these transition models in the cost submittal. The Transition Plan should include the following:

- Activities to seamlessly transition existing services;
- Critical actions to minimize operational impact on end users while maintaining service continuity and quality during transition; and
- Risks of transition and proposed risk mitigation strategies.

II-2 Diverse Business (DB) Requirements (Appendix F).

The Commission's Diverse Business (DB) Requirements for this procurement and a resulting contract are identified in Appendix F. There is no minimum participation level (MPL) for DBs established for this contract. However, the utilization of DBs are encouraged and will be considered as a criterion in the evaluation of proposals and may be considered as a factor in the Commission's selection of a firm for this contract.

The Proposer must include in its DB participation submittal that it meets the requirements set forth in the Commission's DB Requirements - Appendix F. In particular, the Proposer shall address the section of the DB Requirements labeled, "Actions Required by Proposer during the procurement/consultant selection phase." In addition, the DB participation submittal shall indicate the amount of DB participation incurred in the proposal in terms of dollars committed or percentage of total contract amount.

II-3 Cost Submittal and Rate Card.

The information requested in this section shall constitute your cost submittal. **THE COST SUBMITTAL SHALL BE PLACED IN A SEPARATE SEALED ENVELOPE WITHIN THE SEALED PROPOSAL AND ON A CD-ROM, SEPARATE FROM THE TECHNICAL SUBMITTAL.**

Proposers should **not** include any assumptions in their cost submittals. If the Proposer includes assumptions in its cost submittal, the Issuing Office may reject the proposal. Proposers should direct in writing to the Issuing Office pursuant to Part I-10, Questions and Answers of this RFP any questions about whether a cost or other component is included or applies. All Proposers will then have the benefit of the Issuing Office's written answer so that all proposals are submitted on the same basis.

The Proposer must complete the Cost Matrix (Appendix G) to calculate the total fixed price cost. In addition to the base term (fixed price), the Proposer must complete a Rate Card (Appendix G) identifying the Resources by position and average loaded rate for those resources for additional system enhancement/development/support that at present cannot be scoped and would be above and beyond the base pay. Based on the Rate Card, additional Work Orders

(WO) may be released to the Selected vendor via the contract resulting from this RFP. Any costs not provided in the cost proposal will be assumed as no charge to the Commission.

The selected Proposer shall only perform work on the Contract after the Effective Date is affixed and the fully executed contract sent to the selected Proposer. The Commission shall issue a written Notice to Proceed to the selected Proposer authorizing the work to begin on a date which is on or after the Effective Date. The selected Proposer shall not start the performance of any work prior to the date set forth in the Notice of Proceed and the Commission shall not be liable to pay the selected Proposer for any service or work performed or expenses incurred before the date set forth in the Notice to Proceed. No Commission employee has the authority to verbally direct the commencement of any work under the Contract.

PART III

CRITERIA FOR SELECTION

III-1. Mandatory Responsiveness Requirements. To be eligible for selection, a proposal shall be (a) timely received from a Proposer; and (b) properly signed by the Proposer.

III-2. Technical Nonconforming Proposals. The two (2) Mandatory Responsiveness Requirements set forth in Section III-1 above (a & b) are the only RFP requirements that the Commission will consider to be non-waivable. The Issuing Office reserves the right, in its sole discretion, to (1) waive any other technical or immaterial nonconformities in the proposal, (2) allow the Proposer to cure the nonconformity, or (3) consider the nonconformity in the evaluation of the proposal.

III-3. Proposal Evaluation. Proposals will be reviewed, evaluated, and rated by a Technical Evaluation Team (TET) of qualified personnel based on the evaluation criteria listed below. The TET will present the evaluations to the Professional Services Procurement Committee (PSPC). The PSPC will review the TET's evaluation and provide the Commission with the firm(s) determined to be highly recommended for this assignment.

The Commission will select the most highly qualified firm for the assignment or the firm whose proposal is determined to be most advantageous to the Commission by considering the TET's evaluation and the PSPC's determination as to each firm's rating. In making the PSPC's determination and the Commission's decision, additional selection factors may be considered taking into account the estimated value, scope, complexity and professional nature of the services to be rendered and any other relevant circumstances. Additional selection factors may include, when applicable, the following: geographic location and proximity of the firm, firm's Pennsylvania presence or utilization of Pennsylvania employees for the assignment; equitable distribution of work; diversity inclusion; and any other relevant factors as determined as appropriate by the Commission.

Award will only be made to a Proposer determined to be responsive and responsible in accordance with Commonwealth Management Directive 215.9, Selected proposer Responsibility Program.

III-4. Evaluation Criteria. The following criteria will be used, in order of relative importance from the highest to the lowest, in evaluating each proposal:

1. Proposer and Personnel Qualifications and Experience
 - a. Proposer's relevant experience and expertise in providing enterprise application managed services as it relates to the requirements discussed in Part IV of this RFP.
 - b. Qualifications, experience and competency of professional personnel who will be assigned to the contract by the Proposer including tenure with firm, length of time in the industry and type of experience.

- c. Financial ability of the Proposer to undertake a project of this size.
- d. Response of references if the Commission elects to solicit them.

2. Approach

- a. Understanding of the Commission's needs and scope of work.
- b. Soundness of proposed approach, methodology, and deliverables for providing enterprise applications managed services as it relates to the requirements discussed in Part IV of this RFP. This includes a proposal of industry-accepted SLAs. The Commission reserves the right to revise or adjust the proposed SLAs in collaboration with the selected vendor.
- c. Responsiveness to the Commission's desire for expeditious timeline for completion.
- d. Quality, completeness, and applicability of sample deliverables provided.
- e. Responsiveness, organization, and clarity of Proposal.

3. Cost.

While this area may be weighted heavily, it will not normally be the deciding factor in the selection process. The Commission reserves the right to select a proposal based upon all the factors listed above and will not necessarily choose the firm offering the best price. The Commission will select the firm with the proposal that best meets its needs, at the sole discretion of the Commission.

4. Commitment to Diversity and Inclusion.

This refers to the inclusion of DB firms, as described in Part II-2. Participation may be measured in terms of total dollars committed or percentage of total contract amount to certified DB firms.

PART IV

WORK STATEMENT

The Commission is seeking a firm to provide enterprise application managed services, aligned with best practices & Information Technology Infrastructure Library (“ITIL”) standards, which are critical to the Commission’s mission to operate a safe, reliable, customer-valued toll road system that supports national mobility and commerce. For a list of enterprise applications managed services see Appendix H, “Critical and Non-Critical Systems.”

The Commission wishes to enter into a long-term contract with a firm that is flexible, adaptable, and willing to extend its services to meet Commission service level requirements for a period of up to ten (10) years.

The Commission recognizes that not all services required over the potential life of the Contract are well-known today and therefore cannot be priced adequately. Thus, cost submittals for this work statement should only consider services required for the Commission’s existing systems as described within this RFP. Specific provisions have been included in the Contract to allow for future systems to be added into the Contract or removed via an annual contractual review and a Work Order (WO) process described in Section IV-3. These future systems are unknown or not known in enough detail today and so should not be priced by the Proposers. Cost submittals shall be based upon the quantities of applications supported in Appendix H only.

Today, the Commission’s Enterprise Business Solutions (EBS) and GeoAnalytics Departments comprise a diverse portfolio of enterprise platforms, and associated applications and services – reference Appendix H. Additionally, it is likely that other cutting-edge systems and technologies may emerge during the life of the contract.

Several of PTC’s systems are maintained on-premise at the Central Administration Campus in Middletown, Pennsylvania where systems performance is monitored locally; other systems are Cloud-based and may be supplemented with a modest on-premise footprint. These systems support core Commission business processes while both directly and indirectly promoting driver safety; therefore, proper and reliable operation is paramount to the Commission.

The following sections describe the organization of the systems to be maintained under this contract, requirements to maintain those systems, future projects that could increase the requirements of this contract, the Work Order (WO) process that adds needed flexibility to accommodate additions/removals of assets and services, existing systems to be maintained, and reporting mechanisms for project control.

IV-1. Objectives.

a. General. The primary objective of this RFP is to select a firm who shall be responsible for providing enterprise applications managed services for the Commission’s complex and diverse portfolio of enterprise applications that support Commission’s core business processes critical to the mission of

Commission. The Selected Proposer shall provide the Commission with services that meet or exceed the expectations set forth in this RFP. The Selected Proposer shall provide, manage, and supervise a qualified technical labor force to support all systems included herein.

The services and functions the Selected Proposer are to provide to the Commission are:

1. Receiving IT Incident Tickets via the Commission's ServiceNow ITSM system. These tickets will be created by the Level 1 Service Desk, End Users, or Monitoring Systems. The tickets may be triaged by the Level 1 Service Desk and when appropriate will be assigned to the Selected Proposer.
2. Troubleshoot IT Incident Tickets captured within the Commission's ServiceNow ITSM system, performing the actions required to restore service and resolve these tickets. This may include contacting and/or dispatching Commission and other parties as needed and performing other actions as necessary. The Incident Ticket will be updated with the progress and actions taken by the Selected Proposer.
3. Remain responsible for all tickets assigned to the Selected Proposer until the tickets are in a Resolved or Closed State, irrelevant of who is working on the ticket.
4. Escalate to the Commission as defined within the Service Levels (Appendix I) and the procedures of the Commission.
5. Perform routing status check on the systems and applications to assure the proper operation of these systems and applications and to report to the Commission on all findings. These may occur daily, hourly, weekly, monthly based on the needs and criticality of the systems / application. The intervals for these check points are at the sole discretion of the Commission. Each application may have one or more status checks to be performed that may include test transactions, reviewing logs, and dashboards, and other tests as defined by the Commission. This may include reviewing sub-systems to the relevant applications such as Databases, and Hardware.
6. Make changes as requested and approved by the Commission following the Commission's Change and Release Management processes and procedures. The latter will be provided to the Awarded Proposer upon NTP.
7. Document all changes and perform a knowledge transfer to the Commission on all changes and enhancements.
8. Perform Unit and / or User testing on all changes, including the changes made by the Commission or other party assigned by the Commission.
9. Coordinate testing and defect resolution on all enhancement and changes performed by the Selected Proposer.

10. Implement system updates, patches, enhancements, and other activities as approved by the Commission following the Commission's Change and Release Management processes and procedures.
11. Create enhancement and fixes as requested and approved by the Commission following the Commission's Change Management processes and procedures.
12. Provide an onsite Engagement Manager, Service Delivery Manager and others as needed to meet with Commission staff on contract and service-related topics that include Change Review Board, project status meetings and calls, end-user quality reviews, etc. Refer to Appendix J "Key Positions"

Currently, support of existing Commission enterprise services is provided by a mix of existing support contracts, Commission staff, and contracted staff augmentation. To prevent a lapse in service, the Commission expects the Selected Proposer to complete any and all transition ("ramp-up") activities for this project in a seamless manner to ensure no interruption to Commission's operations and services to business partners and the public. Commission staff including contracted staff augmentation will participate in the transition of maintenance and operations tasks to the Selected Proposer.

b. Specific. The Selected Proposer shall be responsible for the project, including but not limited to, all terms and conditions, all requirements, all deliverables, and all dates for delivery, as described in this RFP for the Commission's continuing needs, primarily, for maintenance and enhancements services, in support of the Commission's enterprise platforms. The Selected Proposer shall address a wide range of enterprise application managed services including, but not limited to, the comprehensive practices associated with the Information Technology Infrastructure Library ("ITIL") framework, continuous service improvement, and adherence to Service Level Agreements ("SLAs").

The Selected Proposer shall assume full or shared responsibility for a wide range of functionality including, but not limited to, the full software development lifecycle (SDLC), work scheduling and control, project management metrics and products, and service management and improvement, leveraging established code repository tools and methods.

In the response to this RFP, the Selected Proposer shall ensure that any and all project management products and personnel proposed adhere to the Proposer's quality of service standards and guarantees provided. The Selected Proposer shall ensure that the quality of service standards and guarantees are met at all times during the term of any Agreement issued to the Selected Proposer as a result of this RFP.

Specific factors critical to the success of the contract are as follows:

- i. Provide application support, management, enhancements, and upgrades as defined within this RFP that meet or exceed the defined Service Levels
- ii. Implement IT Service Management that is ITIL-based and meets the agreed-upon SLAs to gain efficiency, quality, and consistency to quantify activities for performance management;

- iii. Maintain discipline to all aspects of the project, build trusted relationships with the Commission's business units, management, IT, business partners, and other IT consultant resources;
- iv. Deploy in sufficient numbers, a technical labor force that is highly skilled and knowledgeable in providing enterprise applications managed services for all systems required by this RFP;
- v. Maintain organizational stability to ensure knowledge continuity.
- vi. Perform all work in a transparent manner allowing the Commission to understand the activities and to have confidence in the work being performed. This is accomplished through:
 - a. Creating, implementing, and maintaining a well-defined approach and managed service plan that is innovative, flexible, and adaptable to changes, upgrades, new implementations, emerging technology, and additions and/or decommissioning of services and systems;
 - b. Quantifying work activities for planning, estimating, and monitoring;
 - c. Clearly stating how work will be delivered, managed, and monitored including cost controls and schedule management;
 - d. Systematically and diligently use the Commission's service ticketing system ServiceNow, reporting mechanisms, and develop comprehensive documentation that will ensure complete visibility into services provided and lifecycles of all Commission assets;
- vii. Make continuous service improvement a priority by conducting continuous health assessments on existing assets and making recommendations on legacy modernization, supportability, and cost of ownership;
- viii. Monitor inventories of software assets managed under the contract;

c. Contract Intent. This contract is for the maintenance and operation of the Commission's enterprise applications. The Selected Proposer agrees to operate and maintain all enterprise software systems to provide the Commission with fully operational systems included in this RFP. The contract shall be performance-based, where performance measures will be tracked and measured against an SLA. The Selected Proposer shall be completely responsible for solving any and all issues that may arise without placing the burden of responsibility back on the Commission.

IV-2. Nature and Scope of the Project. As the Commission strives to improve its services and support enterprise initiatives, the demand for information technology (IT) is expected to continue to grow. The Selected Proposer will need to demonstrate considerable experience, skill, and judgement using proven IT service management practices. The nature and scope of this RFP includes all systems pertaining to the Commission's enterprise application portfolio and are documented within Appendix H.

Commission staff currently performs enterprise application managed services. Thus, a transition period of two calendar months shall be required to transfer knowledge and responsibilities from Commission

staff and current selected proposers to the Selected Proposer. The Commission anticipates a transition period where the Commission will continue to be responsible for providing maintenance services; however, the Selected Proposer shall perform transition period services as described in Section IV-3(a)(vii) "Transition Period." At a to-be-specified date, the Selected Proposer shall be fully responsible for all services/tasks and systems to be maintained with the Commission providing direction and assigning ServiceNow tickets.

Due to the potential length of the Contract, the Selected Proposer shall be willing to grow and adjust with future additions, subtractions, and/or modifications to the systems to be maintained, requirements, and services/tasks. Any changes may be established during an annual contract review, or as needed supported by the work order (WO) process detailed later in Section IV-3 of this RFP.

The Selected Proposer shall acquire IT knowledge sufficient in the designated timeframe to assume responsibility for maintenance of the Commission's enterprise application portfolio from PTC staff and designees. The Selected Proposer shall then accept ultimate responsibility for management and deliverables associated with planned maintenance and resolution of service failures (during business hours and non-business hours), scheduled and unscheduled release management (during business and non-business hours), on-call services, and turnover services for all applications included in the scope of this RFP throughout the term of the contract. The Selected Proposer may be required to develop larger enhancements and initiatives with other selected proposers or Commission personnel. At the Commission's discretion, the Selected Proposer may be required to assume maintenance of new applications.

For more detailed information of Commission's core platforms reference Appendices K, L, M, N, O, P, Q, R, and S.

IV-3. Requirements. The Selected Proposer shall provide all maintenance and operational support necessary to facilitate the complete and reliable operation of all Commission systems at a fixed price, including planned releases, and patches, and enhancements as desired by the Commission. See System Briefs (Appendices K, L, M, N, O, P, Q, R and S) for more details. For detailed information on Commission systems in scope refer to Appendices T (Supported System Environments). These requirements shall apply to all existing assets/tasks

The Selected Proposer shall provide within the monthly invoice 160 hours of task work per calendar month for non-project requests. Tasks are small requests typically of short duration and complexity such as creating a custom report or implementing a minor configuration change. These will be requested via the Commission's ServiceNow request system and must be approved by the "Director of Enterprise Bus. Solutions" or the "GeoAnalytics Information Officer" or designee. Unused monthly hours shall be banked if not used during the calendar month for a maximum of 6 months before expiring. A monthly report shall be provided with the utilization and balance of these hours to the Commission's Project Manager.

Throughout the life of the Contract, the Commission may request implementation and maintenance of new platforms, and additional new and/or recurring services to be performed by the Selected Proposer.

Requested services shall be performed by the Selected Proposer after mutual agreement and on an as needed basis.

Additional new platforms, services, and recurring services, their scope and pricing, will be authorized via a defined work order process in addition to the agreed-upon base term (fixed price). This will be accomplished either via additional purchase orders against the contract for the add-on work or a modification to existing purchase order(s).

Commission may from time to time request an activity that shall differ from “additional” or “new” services or platforms as described within Section IV-3(a)(vii), as the service shall be for a single occurrence, not an ongoing service to be added to the Contract for its remaining life. Due to the uncertainty surrounding these supplemental services, the Selected Proposer shall not include a proposed cost for any such tasks. However, the Selected Proposer is encouraged to submit qualifications for operations and maintenance of all the systems described within this RFP.

a. General Requirements.

i. Background.

This procurement, and resulting contract, shall work with two Groups within the Commission’s Information Technology Department.

a. Enterprise Business Solutions

The first is the Enterprise Business Solutions (EBS) Group is responsible for the continued development, operation and optimization of the Commission’s Enterprise Resource Planning (ERP) system. The Enterprise Business Solutions Group works closely with Commission enterprise business units to maintain, improve and grow the enterprise solution to accommodate the administrative and operational requirements of the Commission. Specific areas of responsibility within this group include business process support for Logistics, Human Capital Management (HCM) and Finance Functionality, Business Warehouse/Business Intelligence (BW/BI), Enterprise Reporting, Enterprise Development, Release Management, Quality Assurance and Security. The Enterprise Business Solutions Group keeps a watchful eye on emergent ERP technology trends, projected Commission business requirements and anticipated business practices.

Functional Team includes:

- Logistics – PS/PM (Project Systems & Plant Maintenance and Materials Management) & SRM (Supplier Relationship Management)
- Human Capital Management
- Finance & Treasury

The purpose of the Functional Support Team:

- Fix the system when it breaks
- Apply mandatory updates as they become available as well as updates and upgrades to the software on a scheduled basis

- Implement changes requested by the users as prioritized by PTC's Business Process Owners
- Recommend changes to the software or business processes to our users

Business Intelligence & Enterprise Development Team includes:

- BI/BW (Business Warehouse/Business Intelligence)
- Enterprise Reporting
- Enterprise Development/Support
- Portal Development/Support
- XI/PI Development/Support

The purpose of the Business Intelligence & Enterprise Development Team:

- Responsible for performing life cycle activities relating to enterprise development and applications, the enterprise portal and the Business Intelligence Warehouse.
- Responsible for the design, development and update of Forms, Reports, Interfaces, Conversions and Enhancements.
- Responsible for designing, configuring, implementing and testing enhancements to the Business Warehouse.
- Responsible for designing, configuring, implementing and testing enhancements to the Enterprise Portal.
- Responsible for recording and resolving defects in development objects/applications.
- Responsible for working with users and process owners to ensure that development objects meet business requirements.

b. GeoAnalytics

The second department within the scope of the resulting contract is GeoAnalytics supports the collection, storage, analysis, manipulation and presentation of complex geographical and non-geographical data for PTC. This includes web applications, portals, dashboards, and mobile applications.

Key aspects of GeoAnalytics include spatial repository, integration point for system of record platforms within PTC, visualization of metrics for the PTC strategic plan, real-time delivery of data for view and analysis, Telematics, Asset inventory and visualization, spatiotemporal analytics for PTC assets. Systems available include but not limited to:

- Diversity and Inclusion Demographics Tool
- Smart Map
- PSP TraCS Viewer
- Dashboard Viewer
- Engineering Data Viewer
- Aerial Photo Viewer
- Communication Towers
- Deer Kills and Bear Encounters
- GeoSpatial Enablement Utility Lines and Projects
- MS4 Viewer
- Toll Violations

- Traffic and Engineering Operations Viewer

Members of the GeoAnalytic group work closely with all PTC business areas to address safety and efficiencies by leveraging technology.

ii. Location of Performance.

Except where Selected Proposer obtains the Commission's prior written approval, Selected Proposer shall perform all of the Services only from or at locations within the geographic boundaries of the continental United States. Any Commission approval for the performance of Services outside of the continental United States shall be limited to the specific instance and scope of such written approval, including the types of Services and locations involved.

iii. Invoicing.

The Selected Proposer shall submit monthly invoices in a format acceptable to the Commission. Invoices shall be delivered alongside the monthly project status reporting containing all supporting documentation (for example, ServiceNow reporting), and all other required information as deemed necessary by the Commission, thereby enabling the Commission to substantiate the charges being invoiced.

The invoice shall break out work performed, and its cost authorized based on a Work Order above the base amount invoiced monthly. The invoice shall break out requests in a manner that meets the Commission's needs to approve payment. This may include but is not limited to an official acceptance of any deliverables in the request or workorder.

Incentives and disincentives shall be applied to the invoices only with the Commission's consent. Refer to RFP Section IV-3(b)(vii). The selected Proposer shall provide the necessary documentation with the invoice for the Commission to fully investigate and approve any "Incentives and Disincentives." This may include but is not limited to submit documentation showing each ticket's incentive or disincentive and detail. The total shall be calculated as the sum of all incentives less all disincentives accrued for incident tickets closed within that month.

Final payment for each invoice shall be contingent upon all conditions of the contract being met. The Commission reserves the right to withhold and/or adjust payment for work not completed, unsatisfactory work, or work that is deemed inadequate and/or not meeting the requirements set forth in this RFP. The Commission reserves the right to perform audits and make inquiries at its sole discretion.

iv. Organizational Procedure.

The Selected Proposer shall keep the Commission fully informed on systems operations and shall consult with the Commission's designated department personnel on policy and procedural inquiries. The Selected Proposer shall adhere to all Commission policies, standards and procedures whether or not they are explicitly stated in this RFP.

All interruptions or failures of the system within this contract shall be reported to the Selected Proposer via the Commission's service ticketing system ServiceNow (Section IV-3(a)(ix) describes service ticketing system). Reporting over telephone and/or e-mail shall also be required based upon the needs of the Commission. When an incident is reported by a Commission Authorized IT staff member to the Selected Proposer via telephone or email, the Selected Proposer will create the ServiceNow Incident Ticket and begin working the incident through resolution. The Selected Proposer shall not create IT Incident Tickets at the request of general application users. These are to be referred to the appropriate Commission Service Desk.

Product support tasks for existing and future applications shall be performed through the assignment of service tickets with four (4) tiers of increasing priority via ServiceNow. Note: the ServiceNow instance provides for a priority "5-Plannigng". This priority 5 is considered the same importance as the selection "4-Low" and is to be treated the same for all operational and Service Level purposes. The Selected Proposer shall acknowledge and resolve ServiceNow tickets consistent with the general requirements in Section IV-3(a) "General Requirements" and within the performance requirements detailed in Section IV-3(b) "Performance Requirements."

v. Coordination with Other Entities and Agencies.

The Selected Proposer will be required to coordinate and work with other entities and agencies in addition to the Commission. Other entities and agencies may include but are not limited to:

- a) Interfaces:
 - 1) Neubrain BOARD Budgeting Tool
 - 2) Leave of Absence
 - 3) SAP SuccessFactors
 - 4) Lawtrac
 - 5) Informatica Cloud
- b) Enterprise platforms in the Cloud:
 - 1) ServiceNow
 - 2) MS Dynamics
 - 3) Select Esri offerings

- 4) Agile Assets
 - c) External data feed providers:
 - 1) AccuWeather
 - 2) INRIX
 - 3) PSP TraCs
 - 4) State General Assembly
 - 5) WAZE
 - d) Banks:
 - 1) PNC
 - 2) USBank
 - 3) BNY Mellon
 - 4) WFCT
 - 5) Wells Fargo
 - e) Benefit Providers:
 - 1) MetLife
 - 2) AFLAC
 - 3) ADP
 - 4) SERS
 - 5) Aetna
 - 6) Concordia
 - 7) CVS
 - 8) Davis
 - 9) Highmark
 - 10) Great West (deferred compensation)
 - f) State/Commonwealth of Pennsylvania:
 - 1) PennDOT
 - 2) SECA
 - 3) PennWatch
 - 4) Office of Administration:
 - o Disclosures
 - o Driver License
 - g) Baker Engineering Site (PONTIS)
 - h) InfoLogistics Site (Right to Know)
 - i) Panaya
 - j) AgileAssets (sign management, pavement asset management, storm water management, tunnel management system)
 - k) FuelTrac (Fuel management system)
 - l) Keystone
 - m) Other entities:
 - 1) Other selected proposers
 - 2) Software and application vendors
 - 3) Original Equipment Manufacturers (OEM)
-

4) Pennsylvania Turnpike Commission consultants

The Selected Proposer shall coordinate and work with other entities as needed and act on behalf of the Commission with Commission approval.

The Selected Proposer shall keep the Commission informed on all coordination activities and work with other entities and agencies as necessary without placing the burden of responsibility back on the Commission.

vi. Personnel and Qualifications.

The Selected Proposer shall provide qualified and experienced personnel. A minimum of two contracted resource shall be expected to be on-site at the Commission Central Administration Campus. One serving as an “Engagement Manager” to provide hands-on support and accountability for the duration of the agreement. The second as a “Service Delivery Manager” to provide hands-on support for the first 12 months of the agreement. Specifically, the Commission expects this vendor staff to coordinate Selected Proposer resources as needed to maintain the expected service level.

The Selected Proposer shall establish and provide a managed services workforce, which shall perform the services and duties set forth in this RFP and shall, without exception, be adequately staffed to perform all work necessary to operate and maintain all Commission systems included in this RFP. The Selected Proposer must have experience/knowledge for all systems identified in Section IV-2 to provide the services required in the Contract. Particularly, the Selected Proposer shall have specialized knowledge and experience with providing enterprise applications managed services for the systems described in Section IV-2. Within a specified timeframe mutually agreed-upon between the Commission and the Selected Proposer, the Selected Proposer shall, at their own expense, acquire resources or train Selected Proposer’s personnel on supporting new technologies not named in this RFP which the Commission is yet to acquire and implement. The Commission reserves the right to terminate the contract if the Selected Proposer fails to meet that requirement in the agreed-upon timeframe.

The Commission reserves the right to conduct job performance evaluations for staff located within a Commission location and require the Selected Proposer to take corrective actions with personnel when deemed necessary by the Commission. The Selected Proposer’s staff shall provide services to meet or exceed the performance requirements detailed in Section IV-3(b) “Performance Requirements.”

a) **Plan of Organization.**

- 1.) The Commission shall consider innovative delivery models if substantiated and proven to be effective. Any such innovation shall be highlighted in the Technical Proposal.
- 2.) The Selected Proposer shall supply an organization chart of personnel assigned to this contract as **an appendix to the Technical Proposal**. The organization chart shall indicate the primary, on-site point of contact who will work closely with the Commission, the Operational Leads such as Change Manager, Service Manager, and other leadership and key roles.
- 3.) In addition to the organization chart, the Selected Proposer shall provide process flow charts including how interactions with the Commission's EBS and GeoAnalytics teams will take place **as an appendix to the Technical Proposal**.
- 4.) The Selected Proposer shall employ qualified personnel sufficient in skill and numbers to satisfactorily perform all services required by this RFP and provide enterprise applications managed services for all identified business processes during business and off-hours.
- 5.) The Commission at its sole discretion shall accept positions not stated in Appendix J if they are adequately substantiated in the Selected Proposer's staff plan. The Commission reserves the right to deny any person from working on this Contract.
- 6.) The Selected Proposer shall identify sub-contractor proposers working on this Contract and shall be responsible for the management of the services provided by the sub-selected proposer unless specifically relieved of this responsibility by the Commission.
- 7.) The Selected Proposer shall provide a Personnel Management Plan and a Training Plan detailing the approach to acquire resources or train Selected Proposer's personnel on new technologies not named in this RFP, but the Commission is yet to acquire and implement.

- b) **Staff Plan.** The Selected Proposer shall develop and submit a Staff Plan to the Commission for approval within the timeframe described in Appendix I. A detailed draft of this plan shall be submitted with the Technical Proposal. The Staff Plan shall include but not limited to a description of how absences will be covered, how staff changes will be managed and controlled, and how additional service requests will be handled. The Staff

Plan will also identify and describe the multi-disciplinary teams necessary to perform the work required, indicate key personnel, and provide a breakdown of positions and the duties to be performed by each staff member.

Key personnel shall be defined as Selected Proposer personnel who are essential to managing and/or carrying out the work included in the Contract and whose extended absence would be expected to negatively impact tasks/services and/or deliverables. Backup staffing for key personnel shall be required of the Selected Proposer and indicated in the Staff Plan. Backup staffing for key personnel shall ensure that key positions are filled by qualified staff at all times in the event of an absence, or in the event that replacements need to be found. Changes to key personnel shall be tracked and controlled by the Selected Proposer. Upon or before separation of personnel, a request to remove system access shall be created in ServiceNow and assigned to the Commission's IT Security team. When necessary, permanent replacements of key personnel shall be made within a reasonable amount of time.

Any changes or additions by the Selected Proposer to personnel identified in the bid package shall be submitted to the Commission in a written Personnel Change Request and is subject to Commission review. The Selected Proposer shall develop the Personnel Change Request Form and submit it to the Commission for approval.

The Commission shall approve staff changes in writing before any services by new or changed staff are performed. All Personnel Change Requests shall include up-to-date resumes and indicate the required licenses, certifications, and experience of the proposed personnel. The Personnel Change Request shall also include a detailed description of the duties the proposed personnel will perform. The Commission reserves the right to approve or deny any Personnel Change Requests.

The Selected Proposer shall have the ability to increase or reduce the quantities of staff assigned to this project as requested by the Commission, or as necessary to adequately perform the services required by this RFP. Additions and decreases to staffing shall be discussed at a minimum during the annual contract review or as needed.

- c) **Training.** The Selected Proposer shall provide its staff adequate training as needed to safely perform their duties and maintain expertise.

The Selected Proposer shall keep all technical skills up to date. Selected Proposer staff shall be trained on all existing systems that they will be working on. Training shall include custom code development, implementations, integrations, configurations, system administration, and deployments of existing systems. Future systems are likely to necessitate additional training. Due to uncertainty surrounding these systems, training for any future system shall be determined via the annual contractual review.

Anticipated custom code development requires proficiency in:

- 1) SAP (ABAP, Workflow, BAPI, BADI, PI, BI, etc.);
- 2) JavaScript and Java for ServiceNow;
- 3) Web Services Publishing for OnBase, C#, front end is based on ASP.NET and JavaScript. Database is SQL Server for MS Dynamics;
- 4) C++, Python, VB.NET, or C# for ArcGIS; for GIS web-based applications development, HTML, JavaScript, and CSS as a baseline. Java, PHP, and ASP.NET;
- 5) C++ and Java for Informatica.

Commission staff may participate in any applicable training conducted by the Selected Proposer at no additional cost to the Commission. The Selected Proposer shall train Commission end users for new systems, implementations, and integrations. The Selected Proposer shall give the Commission two (2) weeks' minimum notice of applicable training.

Training shall consist of hands-on training as well as formal classroom lectures and shall cover all topics necessary to develop and/or maintain expertise.

- d) **Commission Policies.** The Selected Proposer shall adhere to all Commission personnel policies whether or not enumerated within this RFP. In order to abide by Commission personnel policies, the Selected Proposer shall reference the most recent and applicable Commission policy which can be found at https://www.paturnpike.com/yourTurnpike/policy_letters.aspx. Commission policy letters that shall apply to the Selected Proposer include but are not limited to the following:

- 1) 3.04
- 2) 3.07
- 3) 3.11

- 4) 5.03
- 5) 5.08
- 6) 5.09
- 7) 7.13
- 8) 8.01
- 9) 8.05
- 10) 8.10

vii. Equipment.

The Selected Proposer shall utilize Commission environments and access methods; PC or Laptop, monitor, mouse, cubicle, chair, desk, and phone equipment may be provided to the Selected Proposer's onsite staff while working at the Commission's location at the Commission's sole discretion. However, no equipment will be provided to any remote staff (staff not physically located within a Commission building).

viii. Transition Period.

The Selected Proposer shall develop and submit a comprehensive Transition ("Ramp-up") Plan to the Commission for approval within the timeframe described in Appendix I. The Transition Plan shall include but not be limited to a detailed timeline, risks and risk mitigation strategies, descriptions of all activities necessary to ensure a smooth transition/service continuity, and identification of critical actions to minimize operational impact on end users. The Proposer must submit a detailed draft of the Transition Plan in response to Section II-1(H) of this RFP. The Selected Proposer shall be required to work closely with Commission staff and designees to transfer knowledge and responsibilities in an orderly and professional manner during transition ("ramp-up"). The Selected Proposer must perform all preparations and due diligence necessary to immediately take on full responsibility for all aspects of the Contract when the two (2) month transition period ends no later than 60 Calendar days after issuance of the Notice to Proceed. The SLA in its entirety will take full effect when the transition period ends.

Similarly, the Selected Proposer shall be responsible for working closely with future selected proposers upon contract termination. The Selected Proposer shall develop and submit a comprehensive Transition ("Disentanglement") Plan to the Commission for approval within an agreed-upon timeframe.

During the ramp-up transition, the Selected Proposer shall be responsible for comprehensive system information familiarization and performing of all other tasks indicated in the Transition Plan (including the development of associated task documentation).

The Selected Proposer shall be responsible for all reports and project control deliverables as described in Section IV-4 during the transition period and as indicated in the Selected Proposer's Transition Plan.

The Selected Proposer shall be responsible for developing and submitting all detailed task plans listed in Appendix I to the Commission for approval during the transition period within the timeframes detailed in Appendix I, as indicated in the Selected Proposer's Transition Plan.

ix. Additions and Decommissioning of Systems and Tasks.

The Commission recognizes that it is likely that various systems and tasks shall either need to be added or decommissioned over the life of the contract. The Selected Proposer must remain open and flexible to changes to systems and tasks under this contract and to participate in all transitions resulting from these changes. Changes pertaining to new or decommissioned systems and tasks shall be made through contract addenda and will be handled through the standard Work Order (WO) process.

“New” is defined as the inclusion of systems/tasks which were not part of the contract upon execution. The Commission will work with the Selected Proposer to determine assignments for new systems and tasks at the Commission's sole discretion. Existing Service Level Agreement (SLA) requirements shall apply to new systems/tasks immediately upon inclusion or new SLA shall be created for new systems or tasks. New systems/tasks shall become part of the Contract after agreement.

“Additions” are defined as the addition of applications, systems, software components and extensions (in product suites), or any other applicable item into existing systems/tasks already covered by the contract upon execution. The Commission shall work with the Selected Proposer to add “Additions” to the Contract through the standard WO process.

“Decommissions” are defined as the removal of a system or task from the contract. Decommissioned systems and tasks shall be removed from the Contract at the Commission's sole discretion. Decommissions will be handled through the standard WO process.

The Selected Proposer shall operate and maintain additions to existing systems and new systems deployed and integrated during the life of the contract. The Selected Proposer shall halt services immediately for any systems and tasks decommissioned.

x. IT Service Management System.

The Selected Proposer shall be required to use the Commission's service ticketing system, ServiceNow, for all services covered under this contract. The Selected

Proposer is responsible for coordinating with the Commission for configuration of the ServiceNow system for use in this contract during the transition period. The Selected Proposer is responsible for maintaining and keeping all information in ServiceNow current and up to date. This includes adding any additional future assets to the ServiceNow system (in addition to existing systems and documentation) after deployment.

The Commission reserves the right to combine like ServiceNow tickets at its sole discretion.

The Selected Proposer shall be responsible for approved software development or changes to processes in the Commission's ServiceNow instance. The Commission's service ticketing system ServiceNow is accessible over the public internet and shall be available to both the Selected Proposer and the Commission. The Selected Proposer shall adhere to established Commission IT service management processes and be accountable to managing approved changes for updates in a timely manner, including executing appropriate testing. The Selected Proposer shall notify and coordinate with the Commission for all changes needed to carry out the work of the contract consistent with the Commission's change processes and standards. ServiceNow shall be utilized for the following contract activities including but not limited to:

- a) Knowledge Base/Documentation Management;
- b) Reporting;
- c) Service Ticketing, includes:
 - 1) Service Requests
 - 2) Change Requests
 - 3) Incidents
 - 4) Problems
- d) Configuration Item (CI) management in the CMDB;
- e) Service Level Management.

xi. Documentation.

The Selected Proposer shall be required to maintain and develop comprehensive documentation for all required assets/services to enhance lifecycle visibility and to centralize/consolidate required documents, reports, plans, and other information related to the Contract. The Selected Proposer shall be responsible for updating ServiceNow with knowledge articles as applicable for the entire life of the Contract. The Selected Proposer shall coordinate and work with the Commission and the ServiceNow support entity to obtain existing knowledge base article templates, or create new templates as applicable, for use in the Contract.

The Selected Proposer shall upload all project documents, reports, and plans to ServiceNow or other system(s) as required by the Commission, and other select systems in electronic form as applicable. All documentation shall be kept up to date by the Selected Proposer and updated/submitted as necessary to reflect the most current information. For instance, if a plan deliverable changes during the life of the contract, the Selected Proposer shall be responsible for revising it. The Selected Proposer shall organize and maintain documentation in a manner acceptable to the Commission.

xii. IT Service Management Processes.

The Selected Proposer is required to use the Commission's IT service management ticketing system (ServiceNow) and approved IT service management process for the ongoing and daily activities included within this contract. This includes but is not limited to the following ITIL process names:

- Service Request Management
- Change Request Management
- Incidents Management
- Problems Management
- Release Management
- Capacity Management
- Knowledge Management
- Project Management
- Service Level Management

The Commission shall verify that completed/resolved tickets are approved for closure by closing the ticket in the ServiceNow (ticket states changes to "closed").

The Selected Proposer shall be responsible for coordinating and working with the Commission to configure of ServiceNow tickets during the transition period. For example, the Commission's instance of ServiceNow currently automatically close Resolved Incident tickets if they have not been closed within five (5) calendar days. Tickets in the resolved state assigned to the Selected Proposer that have not been closed within five (5) calendar days shall not be automatically closed by ServiceNow. The Commission/ServiceNow support provider shall be required to configure ServiceNow to exclude tickets assigned to the Selected Proposer from being automatically closed after five (5) calendar days; however, the Selected Proposer shall be required to coordinate this configuration with the Commission/ServiceNow support provider. Another example is the Selected Proposer's workflows will need to be added to the Commission's ServiceNow instance and the Selected Proposer will make all needed changes to support the services. All changes will follow the Commission's

Change Management processes and procedures and must be authorized before implementation.

ServiceNow shall capture timestamps and store them upon the change of state for all ServiceNow tickets. Timestamps shall be utilized for SLA performance tracking.

The Selected Proposer shall configure ServiceNow's Service Level process to track and report on all Service Level requirements as part Transition Activities (Ramp-Up).

All activities performed to resolve ServiceNow tickets shall be documented in the ServiceNow ticket.

The Commission's Network Control (NC) sends service outage alerts to the ServiceNow. ServiceNow shall receive and generate tickets from service outage alerts received from NC.

ServiceNow tickets will contain the following information as a minimum:

- issue being corrected,
- the severity of the issue,
- the activities performed to correct it,
- any modifications made,
- outstanding issues still needing attention,
- activities still needed or used to restore proper operation,
- and all other pertinent information.

xiii. Planned Maintenance.

The Selected Proposer is required to use the Commission's ServiceNow Service Request system and the Commission's documented Service Request process for each planned maintenance.

xiv. IT Service Incidents.

The Selected Proposer is required to use the Commission's ServiceNow Service Incident ticketing system for each incident. The Selected Proposer will use the approved Commission Incident Management Process in the working and resolution of Incidents. This process may be modified with approval from the Commission. The approved process will be fully documented, maintained, and followed by the proposer staff.

xv. Configuration Management Database (CMDB).

The Selected Proposer shall be required to use the ServiceNow Configuration Management Database (CMDB) for this Contract. Asset Management includes but is not be limited to the existing ServiceNow Configuration Management Database (CMDB); it also requires the Selected Proposer to update Commission systems and/or documents as required by the Commission. The Selected Proposer shall maintain the CMDB and Commission's systems and/or documents with up-to-date and accurate inventories of all CIs (Configuration Items) included within this Contract. The Selected Proposer must maintain inventories of all assets covered under the contract plus support the storage and capture of other CIs that are managed by the Commission and others.

It shall be the responsibility of the Selected Proposer to review existing information in the CMDB and Commission systems and/or documents during the transition period.

The Commission reserves the right to retire assets from the CMDB and existing systems and documentation and mark them as decommissioned.

xvi. Business Continuity Planning.

To support continuity of operations during an emergency, the Commission needs a strategy for maintaining operations for an extended period of time. One part of this strategy is to ensure that essential contracts that provide critical business services to the Commission have planned for such an emergency and put contingencies in place to provide needed goods and services.

The Selected Proposer shall describe how the Proposer anticipates such a crisis will impact its operations and its emergency response continuity of operations plan. The Selected Proposer shall attach a copy of the plan, or at a minimum, summarize how the plan addresses the following aspects of preparedness:

- a) Employee training (describe Proposer's training plan, and how frequently it will be shared with employees);
- b) Identified essential business functions and key employees (within Proposer's organization) necessary to carry them out;
- c) Contingency plans for:
 - 1) How Selected Proposer will handle staffing issues when a portion of key employees are incapacitated due to illness;

- 2) How Selected Proposer will communicate with its staff and subcontractor when primary communications systems are overloaded or otherwise fail, including key contacts, chain of communications (including subcontractor), etc.
- 3) The staff's primary work location is uninhabitable and must be vacated
- 4) How and when Selected Proposer's emergency plan will be tested, and if the plan will be tested by a third-party.

xvii. Project Prioritization.

Project prioritization shall be an iterative process. The Commission welcomes Proposer recommendations regarding the project prioritization process; however, the Commission shall approve or modify the priority of any work at its sole discretion at any time.

xviii. Contract Management.

The Selected Proposer shall participate in the management of the Contract executed by this RFP. Unless specifically noted as the responsibility of another party in this RFP, the Selected Proposer shall be responsible for all activities necessary to provide the Commission with functional and reliable systems listed in Section IV-2 Nature and Scope of Project, specifically in Sections a. Enterprise Business Solutions (EBS) and b. GeoAnalytics.

xix. Contract Change Management.

The Selected Proposer is required to abide by the Commission's policies and processes for all changes regarding the Contract. As noted previously in this RFP, changes likely to occur during the life of the Contract include but are not limited to the following:

- a) Assets (Applications and Services)
- b) Requirements
- c) Service Levels
- d) Tasks and associated Task Plan
- e) Reports and Project Controls
- f) Key Staff
- g) Critical and Non-Critical Systems
- h) Environments

Changes to the Contract shall be addressed during annual contract reviews. A Letter of Authorization (LOA) process shall authorize changes to be implemented provided

that the scope/budget of the requested change fits within the constraints of the original intent of the contract. In the event of exceeding the contract (Dollar) value that was authorized by the Commission, the change to the contract will have to be submitted for Commission approval. All changes shall be officially added or subtracted via Contract Addenda.

The Selected Proposer shall attend and participate in contract reviews with the Commission. The Commission and the Selected Proposer shall discuss contractual items including but not limited to project status, contractual issues, and recommended changes.

Contract Issue Mitigation. If contractual issues arise that cannot be adequately resolved during the annual contract review, the Selected Proposer shall follow the Commission's process to appeal contractual issues at the sole discretion of the Commission. It shall be the understanding of the Selected Proposer and the Commission that the Contract shall promote working together to solve contractual issues and avoid placing blame on one another. Refer to RFP IV-3 (d)(iii)

xx. Executive Updates.

The Selected Proposer shall provide the Commission with Executive Updates regarding all Contract management items as requested by the Commission.

b. Performance Requirements. The Commission's service ticketing system ServiceNow shall be used to track and monitor the performance of the Proposer. The following paragraphs describe general standards/requirements used to determine enterprise applications managed services' needs, priority assignment of ServiceNow tickets to address service needs, priority escalations, and performance of the Proposer.

i. Usability Standard. "Usable" asset shall be defined as an application or service that a.) is available for use by Commission staff, selected proposers, business partners, or customers (for instance: select GIS map layers are publicly accessible and functioning) and function properly with software utilized to poll, control, or otherwise access the asset and

b.) substantially performs the functions for which the asset was intended.

This standard shall apply to all assets included in this contract. The Commission shall have authority for determining when an asset is considered usable or not.

ii. Usability Requirement. Usability shall be based upon ServiceNow tickets and tracked via ServiceNow. "Low" and "Moderate" priority ServiceNow tickets (else any exceptions noted in Appendix I) shall not impact Usability Time. All "High" and "Critical" priority ServiceNow tickets shall impact Usability Time without exception.

Usability Time shall be defined as the percentage of time that assets meet the usability standard, thus do not have high or critical priority ServiceNow tickets open and in "awaiting vendor response" or "active" states – any asset meeting this criterion shall be considered "Usable."

Un-Usability Time shall be defined as the time that assets do not meet the usability standard, thus have high or critical priority ServiceNow tickets open and in "awaiting vendor response" and "active" states. Any asset meeting this criterion shall be considered "Un-Usable."

Usability Time shall apply to all assets included in this contract and will be calculated for each asset.

Note: Usability Time requirements shall apply to the cumulative Usability Time total of all assets in the EBS and the GeoAnalytics programs, respectively, tracked and applied separately by program.

Monthly Usability Time for EBS and GeoAnalytics respectively shall be calculated by the following equation:

$$\text{Percent Usability Time} = (\text{Total Time Active in SLA} - \text{Un-Usability Time}) / (\text{Total Time Active in SLA}) * 100$$

Specific industry-standard Usability Time Service Levels shall be proposed by the Proposer in response to Appendix I. A Service Level Agreement (SLA) shall be negotiated as part of the Commission and the Selected Proposer, negotiating the agreement following bid award.

- iii. Non-Desirable Condition.** Assets shall be considered in a non-desirable condition when any part of the system ceases to meet the asset standard. ServiceNow tickets shall be opened and assigned to the Selected Proposer for all non-desirable conditions.

All systems included in this contract are expected to be up and operate properly and efficiently with full functionality, capacity, and usability consistent with the asset standard, usability standard, and Usability Time requirement.

Assets in a non-desirable condition must be restored to a fully operational state within the timeframes allowable for ServiceNow Ticket Acknowledgement and Ticket Resolution to be agreed-upon after the contract has been awarded. This shall apply to all assets included in this contract.

- iv. Production Support and Maintenance Priorities.** Whenever a non-desirable condition is discovered, the Commission Project Manager or the Commission Network Control for critical priority events after-hours shall notify the Selected

Proposer via a ServiceNow ticket and/or call. The Selected Proposer shall be responsible for responding to and resolving ServiceNow tickets and calls according to the work priority levels detailed below. Maintenance priorities shall include:

- a) Low;
- b) Moderate;
- c) High; and
- d) Critical.

The default maintenance priority for any ticket shall be low priority if not previously defined as another priority level.

“Low” priority generally shall refer to any non-desirable condition that does not meet the asset standard but does not impact overall usability and does not impact Usability Time. Low priority maintenance items shall be notified by a ServiceNow ticket.

“Moderate” priority generally shall refer to any non-desirable condition that does not meet the asset standard and impacts usability but not substantially enough to impact Usability Time. Moderate priority maintenance items shall be notified by a ServiceNow ticket.

“High” priority generally shall refer to any non-desirable condition that does not meet the asset standard, impacts usability, and impacts Usability Time for one (1) operator, select devices or system. High priority maintenance items shall be notified by a call, a ServiceNow ticket, and any means of notification mutually agreeable to the Commission and Selected Proposer.

“Critical” priority shall refer to any non-desirable condition that does not meet the asset standard, impacts usability for multiple systems, impacts Usability Time for multiple operators, or has the potential to create unsafe conditions. Critical maintenance items shall be notified by a call, a ServiceNow ticket, and any means of notification mutually agreeable to the Commission and Selected Proposer. Appendix H provides a listing of assets and associated business processes that would rate always critical due to being mission-critical to the Commission’s Business.

- v. **Altering Incident Priority:** Altering the Priority of an Incident Ticket by a staff member of the Selected Proposer requires prior approval from an Authorized Commission IT Management employee. The Selected Proposer will not adjust any Ticket Priorities without prior authorization. For example, reducing the Priority from a 3-Moderate to a 4-Low or 2-High to a 3-Moderate requires prior authorization from the Commission.

vi. Priority Escalations. The Commission reserves the right to escalate or de-escalate any service request ticket to a different priority at its sole discretion. Escalation authority shall be held by the following Commission personnel:

- a) CTO, CIO, CFO, COO, and CEO;
- b) Communications Director;
- c) Communications Manager;
- d) Director, EBS;
- e) Manager of EBS-Technical Services;
- f) Manager of EBS-Business Process Services;
- g) Director, GeoAnalytics;
- h) Manager, GIS;
- i) Manager, BIDA;
- j) Network Control Manager;
- k) Network Control.

Any ServiceNow ticket that has not been resolved within the appropriate timeframe shall be escalated to the next highest maintenance priority as deemed necessary by the Commission. When a ticket priority level is escalated, the ticket shall inherit the SLA for the newly assigned priority immediately – escalated acknowledgment and resolution thresholds shall begin at the time of escalation to a higher priority. When a ticket priority is de-escalated, acknowledgement and resolution thresholds shall be measured beginning at the time of original notification.

Refer to Appendix I for examples of how incentives/disincentives are applied to escalated or de-escalated tickets.

vii. Incentives and Disincentives. The Selected Proposer shall receive additional compensation for exceptional performance. Conversely, disincentives shall apply for poor performance. For instance, the Selected Proposer shall receive incentives for exceeding the SLA for resolution of ServiceNow tickets or submission of deliverables faster than required. Disincentives shall be applied for not meeting the SLA, for instance, incomplete performance of tasks, system Un-Usability Time, slow resolution of ServiceNow tickets, or missed submissions of deliverables.

The dollar amounts of incentives and disincentives shall vary dependent upon factors including but not limited to contents or general importance of a deliverable, ServiceNow ticket priority, and criticality of an asset or task.

Incentives accrued shall be paid out with each monthly invoice, less any disincentives accrued during the same invoicing period.

Incentives and disincentives are detailed in Appendix I.

- viii. ServiceNow Ticket Acknowledgement and Resolution.** Appendix I details the required ticket acknowledgement and resolution times for each maintenance priority described above. Ticket acknowledgement and resolution times shall apply to all systems/services under the contract.

“Acknowledgement” shall be defined as the time stamp within the Commission’s ServiceNow system where a Selected Proposer’s staff is assigned to the IT Incident Ticket. This will be assigned, accepted, and documented within the “Work Notes” (or equivalent) field. Acknowledgment shall only be valid if it is received from the Selected Proposer technician(s) assigned to and responsible for the resolution of the ServiceNow ticket at hand. The state of ServiceNow tickets shall be “awaiting vendor response” (or equivalent) when it is initially opened and until the Selected Proposer’s assigned technician, acknowledge ownership of the ticket. After Selected Proposer’s assigned technician documents acknowledgement the Selected Proposer, the ticket state shall be changed to “active” (or equivalent) will proceed as the required process or procedure dictates.

“Resolution” shall be defined as the Selected Proposer having completed all work required and properly notifying the Commission that the incident is resolved for the Commission to verify the resolution and close the ticket. The state of a ServiceNow ticket shall be “active” until the Selected Proposer performs all necessary work to resolve the ticket. After the Selected Proposer performs all necessary work, the ServiceNow ticket state shall be changed to “resolved.” When resolution has been verified by the Commission, the ServiceNow ticket state shall be changed to “closed by the Commission.” Resolution shall only be valid if the Selected Proposer technician(s) completely corrected the non-desirable condition before having notified the Service Desk or NC. The state of a service request ticket shall be changed from "resolved" back to "active" if the Commission determines that the issue at hand has not been adequately resolved – in this case, incentives shall no longer apply to that ticket.

The Selected Proposer shall be required to acknowledge and resolve low, medium, and high priority ServiceNow tickets during regular business hours and be available on-call during all hours for critical priority ServiceNow tickets – specific critical business processes detailed in Appendix H – to meet the SLA requirements detailed in Appendix I.

Commission business hours are from 7:30 am to 5:30 pm Monday through Friday excluding Commission holidays. Commission holidays are as follows:

- a) New Year’s Day;
- b) Martin Luther King, Jr. Day;
- c) President’s Day;

- d) Good Friday;
- e) Memorial Day;
- f) Independence Day;
- g) Labor Day;
- h) Veteran's Day;
- i) Thanksgiving Day; and
- j) Christmas Day.

The Commission expects the Selected Proposer's Engagement Manager to coordinate Proposer's resources (off-premise) during workdays from 6:00 am to 6:00 pm, as stated in IV-3. a. v.

Ticket resolution occurring between the Resolution Threshold for Incentive and the Resolution Threshold for Disincentive shall be considered normal performance of work and shall not constitute an incentive or disincentive. See Appendix I for acknowledgement and resolution thresholds.

- ix. Performance of the Selected Proposer.** The Commission reserves the right to conduct reviews and/or verification of services performed by the Proposer at any time. The Selected Proposer shall perform all the tasks required to operate and maintain all systems included in the Contract and adhere to all Commission policies, procedures, and general requirements set forth in this RFP without exception. Performance requirements in the form of industry-standard Service Levels will be solicited from the Selected Proposer and are required to be submitted as part of the Proposer's response to Appendix I.

Unsatisfactory performance or operation shall be reported to the Selected Proposer in writing in an Unsatisfactory Performance Notice. Upon receiving this notice, the Selected Proposer shall take immediate action to remediate the issues described in the notice.

As part of the Selected Proposer's remedial actions, the Selected Proposer shall submit a Performance Improvement Plan stating the Selected Proposer's plans, intentions, and steps to take to improve their performance and avoid Unsatisfactory Performance Notices in the future. Performance Improvement Plans shall include but not be limited to updates to maintenance schedules, personnel assignments, and any other applicable change necessary to bolster future performance. Performance Improvement Plans shall be prepared at the cost of the Proposer.

The Selected Proposer shall not receive any additional compensation for remedial actions performed to address an Unsatisfactory Performance Notice.

If acceptance level remains below the minimum after the three-month probationary period, the Commission will retain 3% of the amount invoiced by the Selected Proposer for the associated task(s).

If acceptance level remains below the minimum after a second three-month probationary period, the Commission will retain 5% of the amount invoiced by the Selected Proposer for the associated task(s).”

Failure to remediate the issues described in an Unsatisfactory Performance Notice shall be sufficient cause for cancellation of the contract. The Commission reserves the option to order the necessary services to remediate unsatisfactory performance or operation from another selected proposer at the expense of the Selected Proposer.

c. Work Orders / Contract Changes: the contract may be modified as needed utilizing the following processes:

- i. Add, Update, Delete Ongoing/Reoccurring Applications:** The list of supported applications is detailed within **Appendix H** and support Environments are detailed within **Appendix T** and requires a documented contract change using a form agreed to by both the Commission and the Selected Proposer plus an adjustment to the then active overall contract Purchase Order.
- ii. Commission requested enhancements:** These require a statement of work that includes requirements and deliverables plus a costing quote. The Commission will issue a specific and unique purchase order to the Selected Proposer.
- iii. Commission requested Activities:** These require a statement of work that includes requirements and deliverables plus a costing quote. The Commission will issue a specific and unique purchase order to the Selected Proposer.
- iv. Task Requests:** These require an authorized ServiceNow Request detailing the scope of the work to be performed. The Proposer will include within the overall scope of services an amount of 160 hours per month of support and development for these work requests. Any hours unused within a calendar month will accrue in the next month to a maximum of six months.
- v. Adjustments to Specific Appendices:** the following Appendices can be modified:

Appendix D	Appendix G	Appendix H	Appendix I
Appendix J	Appendix T	Appendix U	Appendix V

- vi. **Adjustments to the remainder of the contract require a more complex process that will be defined at the time required.**

d. **Program Governance**

- i. **Commission Program Manager Role:** General oversight of this agreement and associated program will be managed by a Program Manager. This Program Manager is a member of the Commission's IT Department with responsibility of this and other Programs and contracts.
- ii. **Steering Committee:** The Program receives durations and oversight from the Managed Services Steering Committee. This Committee consists of the Director of Enterprise Services and the Chief GeoAnalytics Officer and others as assigned by the Commission's Chief Technology Officer.
- iii. **Escalations and Initial Disputes To The Commission:** in the normal course of this program, any required escalations or disputes will follow the below process:
 - a) Selected Proposer will submit a written document describing the Escalation or Dispute to the Commission's Program Manager.
 - b) The Program Manager will acknowledge receipt of the document within three business days.
 - c) The Program Manager will provide a written response to the escalation or dispute with ten business days.
 - d) The Selected Proposer may wish to elevate or refute the response from the Commission's Program Manager and may do so via written notice to the Steering Committee (one or more members).
 - e) The Steering Committee will acknowledge receipt of the document within three business days. The Steering Committee will provide a written response to the escalation or dispute with ten business days.
 - f) The Selected Proposer may wish to elevate or refute the response from the Commission's Steering Committee and may do so via written notice to the Commission's Chief Technology Officer.
 - g) The Chief Technology Officer (CTO) will respond to the Escalation or Dispute based on the availability of the CTO.
 - h) Additional Dispute resolutions are available as described within Appendix A. Refer to Appendix A Standard Agreement Dispute Resolution Section.

Please Note: these escalations described within this section are not ITIL Service Operations (Incident and Problem Management) support escalations.

iv. Escalations and Initial Disputes To The Selected Proposer: in the normal course of this program, any required escalations or disputes will follow the below process:

- a) The Commission will submit a written document describing the Escalation or Dispute to the Selected Proposer's Engagement Manager.
- b) The Selected Proposer's Engagement Manager will acknowledge receipt of the document within three business days.
- c) The Selected Proposer's Engagement Manager will provide a written response to the escalation or dispute with ten business days.
- d) The Commission may wish to elevate or refute the response from the Selected Proposer's Engagement Manager and may do so via written notice to the Contract Executive. Refer to Appendix J Key Positions.

Please Note: these escalations described within this section are not ITIL Service Operations (Incident and Problem Management) support escalations.

e. PTC Responsibilities

The following actions or duties are not the responsibility of the Selected Proposer.

- The PTC will provide SAP developer keys as necessary to support contract staff members
- The PTC will provide remote access to the development and test environment as well as Quality Center for contractor staff working off-site
- The PTC will continue to provide direction and supervision to its own staff
- The PTC will be responsible for functional / business process support

IV-4. Services/Tasks.

The Selected Proposer shall perform all the necessary services/tasks to meet all requirements detailed in Section IV-3 "Requirements" whether or not enumerated in this section. The Selected Proposer shall respond to ServiceNow tickets and notifications from the Commission Project Manager and perform all the actions necessary to provide production support and resolve incidents, restoring applications and services to meet or exceed the asset standard, usability standard, and agreed-upon Usability Time requirements described in IV-3 b. "Performance Requirements" and Appendix I. Note that specific industry-standard Usability Time Service Level Objectives (SLOs) shall be proposed by the Proposer in response to Appendix I. A Service Level Agreement (SLA) shall be negotiated as part of the Commission and the Selected Vendor negotiating the agreement following bid award.

The services and tasks described in this RFP shall apply to all applicable existing applications, services, and planned projects. Given the potential longevity of the Contract, the Commission anticipates future additions or subtractions to systems impacting the tasks described below. For the purposes of the cost submittal for this RFP, the Selected Proposer shall only consider existing applications and services and biddable services/tasks when preparing the Services/Tasks Cost Worksheet provided in Appendix G.

The Selected Proposer shall submit drafts of all plans listed in this section with the Technical Proposal. All final and detailed plans must be submitted to the Commission for review and approval within the timeframes detailed in Appendix I. If a submitted plan is not approved, the Selected Proposer shall be required to revise and resubmit the plan at no charge to the Commission until the plan is approved. Refer to Appendix I for due dates/submission timeframes for services/task plans and reports.

Transition Tasks and Deliverables

a. Kick-Off Meeting

Within two (2) business days receipt of a Notice to Proceed, under this contract, the Selected Proposer shall attend a contract kick-off meeting to be held at the Commission Central Administration Campus. The Selected Proposer's core team identified in the proposal shall meet onsite (at the Commission) with Commission representatives to discuss in detail the requirements of the contract, and the Selected Proposer shall provide a proposed plan of action for the transition and bring up any issues or items that require clarification or guidance.

At the kick-off meeting, a copy of the fully executed Agreement and all documentation will be discussed as well as the Transition Plan described in IV-4(b) below. Within five (5) working days after the meeting, the Selected Proposer must prepare minutes of this meeting, including a follow-up items list for both the Selected Proposer and the Commission, and provide to the Commission's Project Manager.

Deliverable - One-time attendance at the contract kick-off meeting at the Commission Central Administration Campus, plus the minutes of the meeting delivered to the Commission's Program Manager.

b. Transition Plan

Planning and execution are key to the success of the transition of the duties and responsibilities for this project. Therefore, detailed planning activities are being required from the Selected Proposer. The Selected Proposer shall provide to the Commission a multipart written report containing the following information.

1. Transition Task Plan - "Ramp-up"

A detailed project plan describing the high-level activities and tasks and timeline. The report is to include a Microsoft Project task plan detailing the overall project tasks and timelines.

2. Transition Plan – “Disentanglement”

A high-level plan describing the anticipated activities and tasks with an approximate timeline describing the expected tasks needed for the Selected Proposer to be removed from the duties and responsibilities described within this RFP and resulting contract. The plan shall include an estimated timeline of major events. The Selected Proposer will assume that another organization (either another contractor or Commission Department) will assume the duties and responsibilities. No MS Project Plan is required.

3. Knowledge Transition Work Plan

Develop and implement a Knowledge Transition Work Plan to assume service and maintenance activities currently being handled by Commission staff and selected proposers. This plan will be no less than 30 calendar days (one calendar month) and no greater than 50 calendar days in length. The plan’s duration and implementation are dependent upon Commission approval.

The Knowledge Transition Work Plan will take into consideration the following key objectives, including but not limited to:

- a) Transition responsibilities, technical know-how, and business knowledge from Commission staff and existing selected proposers efficiently and effectively;
- b) Estimate number of days for completion;
- c) Accomplish transition within the timeframe specified;
- d) Manage an orderly transition without disruption of service to users, partners, or customers;
- e) Transition work materials such as software, system documentation, and development support tools;
- f) Perform scoping assessments using a measurement system to determine the scale of maintenance needs for an enterprise platform or system (“assets”). Proposers are encouraged to offer a measurement system that will be used throughout this contract for planning, estimating, executing, and monitoring maintenance related activities;
- g) Transition knowledge related to managing the system lifecycle;
- h) Collaborate with the Commission to develop and confirm service level agreements as shall be solicited from the proposers in Appendix I, which will be part of the technical proposal;
- i) Update the proposed detailed Knowledge Transition Work Plan to reflect adjustments made during the transition task.

4. System and Scope Assessment Report

Selected Proposer shall develop a System and Scope Assessment Report that should include a list of what types of information will be gathered for each system, the method to be used to collect that information, the format for documenting that information and the plan outlining how that documented information will be preserved. This report is subject to review and revision by the Commission prior to acceptance. The goal is to demonstrate an understanding of both the business use and technical components/architecture of the Commission platforms subject to managed services. Refer to Appendix T (Supported System Environments) and Appendix H (Critical and Non-Critical Systems) for the systems within scope.

5. Staff Plan

The Selected Proposer shall provide a detailed plan on the staffing that will be engaged with the Commission. This plan shall describe the type, training, and experience of people by function and their location.

6. Training Plan

The Selected Proposer shall provide a plan that describes the ongoing training efforts that will be in place that allows the Selected Proposer's staff to remain current in the relevant technologies and to remain certified as needed to provide the services described within this RFP and resulting contract.

7. Transition Staffing Matrix (RACI)

The Selected Proposer is to provide resources that will accomplish predicted work. Proposers are to review the Transition tasks in the RFP and the In-Scope Assets in Appendix H with addition details within Appendices K, L, M, N, O, P, Q, R, and S to propose how the Selected Proposer will staff the assets with skilled resources. This matrix is to include the named key resources, their role, when these key resources will start, and the process for ramping up resources during the transition period.

8. SLA Management Plan

The Selected Proposer shall describe the actions that will be in place during the contract to assure active support and reporting of the agreed to Service Levels defined within this contract.

9. Recurring Issue Maintenance Response Plan

The Selected Proposer shall provide the planned actions that will identify and solve (or assist with solving) issues that are reoccurring (resolutions that must be applied 3 or more times in any 3 running month period).

10. Planned Maintenance Schedule

The Selected Proposer shall provide a listing of all identified and anticipated Planned Maintenance activities for the first year of the contact.

11. Documentation Management Plan

The Selected Proposer shall describe how information will be documented and distributed to their internal staff, any subcontractors, and to the Commission. This is key to proper communications of activities and responsibilities to all involved.

Deliverable - Successful delivery and acceptance of the document with the described sections Within the timeline defined within Appendix I (Service Levels and Major Deliverables). This deliverable is intended to indicate that the Selected Proposer has the information and plans necessary for a successful transition of responsibilities and duties defined within this RFP and contract.

c. Staffing Onboarding

The Selected Proposer shall have all defined staff engaged with the Commission relative to this contract.

Deliverable – the selected proposer shall provide a listing of the engaged staff by name and include their role and a summary of their level of expertise. This deliverable is due Within the timeline defined within Appendix I (Service Levels and Major Deliverables).

d. Initial Operations Procedures Update

The selected propose shall work with the Commission's IT staff and jointly develop Standard Operating Procedures on the daily operational duties and responsibilities of both parties.

Deliverable - The Selected Propose shall provide the Commission with these documents Within the timeline defined within Appendix I (Service Levels and Major Deliverables).

e. ServiceNow Modifications

The Selected Proposer shall work with the Commission and define the required changed needed within ServiceNow to allow the selected proposer to be engaged in, create, actively work, and resolve (or close) Incidents, Problems, Requests, Changes, Knowledge Articles and Service Levels. These modifications are on the critical timeline to the success of this RFP. The system must allow Commission staff to create Requests, Incidents, Changes, Knowledge, and SLA items that can be accessible and worked on by the Selected Proposer. This deliverable will include requirements gathering, configuration changes, testing, working with the Commission on implementation and will include any training information for changed processes so the commission staff and partners can fully use the changes implemented.

Deliverable – Successful Implementation of modifications to the Incident, Change, Knowledge, Request, Problem, Service Level and CMDB modules or functions within the Commissions Production instance of ServiceNow. This deliverable shall be completed Within the timeline defined within Appendix I (Service Levels and Major Deliverables).

f. Software Development Lifecycle Documentation

The Selected Proposer shall document the Software Development Lifecycle (SDLC) methodology used at the Commission and the changes made in order to incorporate the Selected Proposer into the methodology.

Deliverable – Delivery and acceptance of two or more methodology documents. Because of the immediate need for changes to ServiceNow, the first document (ServiceNow SDLC) is due Within the timeline defined within Appendix I (Service Levels and Major Deliverables).

g. Training

The Selected Proposer shall provide to their staff and the Commission the required and identified training to make the transition successful.

Deliverable – provide the training that was identified in the Transition Plan section (reference IV-4 (b)(6) ***Training*** above). A training report will be provided to the Commission’s Project Manager listing the training and the attending or registered students. This training shall be completed Within the timeline defined within Appendix I (Service Levels and Major Deliverables).

h. Transition Activities Completed

Upon receipt of the written approval from the Commission’s Project Manager for the Transition Plan deliverable (reference IV-4(b) above), the Selected Proposer shall have 60 calendar days from the Notice to Proceed to implement and complete the transition activities agreed upon by both the Commission and the Selected Proposer as a result of Task 3 to assume service and maintenance activities currently being handled by Commission staff and existing selected proposers.

i. Transition Completion Report

Within the timeline defined within Appendix I (Service Levels and Major Deliverables) the selected proposer shall deliver a completed Transition Activities; the Selected Proposer shall prepare a report that documents the completion of the transition activities and provides the status of each objective and activity that took place during the transition period. The report must be submitted to Commission’s Project Manager for review and approval. The Commission’s Project Manager will provide a written notification to the Selected Proposer acknowledging acceptance of this task.

Deliverable - Successful completion of planned Transition Activities described and approved from the deliverable of the Transition Plan above (reference IV-4(b) above). Also, due is a one-time

report, which shall be submitted to the Commission's Project Manager for review and approval Within the timeline defined within Appendix I (Service Levels and Major Deliverables). Transition Deliverable Payment(s) will not be made until Commission has reviewed, approved, and fully accepted the work completed for the transition. Refer to Appendix I for Transition Timelines and Deliverables.

AGREEMENT

This **AGREEMENT** is made this _____ day of _____, 2019, between the **Pennsylvania Turnpike Commission** (“**COMMISSION**”), an instrumentality of the Commonwealth of Pennsylvania, with principal offices at 700 South Eisenhower, Blvd., Middletown, Pennsylvania 17057 (mailing address: P. O. Box 67676, Harrisburg, PA 17106-7676);

AND

(name of contractor) (“**CONTRACTOR**”), a **(state)** corporation, with its principal office at **(address)**.

WITNESSETH:

WHEREAS, the **COMMISSION** desires to satisfy a need for the Enterprise Applications Managed Services;

WHEREAS, by Act No. 211 of the General Assembly of the Commonwealth of Pennsylvania, approved May 21, 1937, and its amendments, the **COMMISSION** is authorized and empowered to enter into an Agreement with the **CONTRACTOR**;

WHEREAS, the **COMMISSION** desires to retain the services of **CONTRACTOR** upon the following terms; and

NOW, THEREFORE, in consideration of these mutual covenants, and intending to be legally bound, the parties agree as follows:

Contractor’s Scope of Work

The **CONTRACTOR** will perform the work described in 19-10350-8476 dated **(date of solicitation)**, titled **(Title of solicitation)** and the **CONTRACTOR’S** proposal dated **(date of contractor’s proposal)**. These documents are made a part of this Agreement by reference.

Commission’s Responsibilities

(As defined in Section I of the RFP, “Commission Participation”)

The **COMMISSION** shall furnish the **CONTRACTOR** access to key personnel, relevant documents, and adequate workspace for completing the work.

Compensation

For the work, services, and material as defined in this Agreement, the **CONTRACTOR** shall be paid **(insert Commission approved Compensation)**.

The **CONTRACTOR** agrees that the **COMMISSION** may set off the amount of any state tax liability or other obligation of the **CONTRACTOR** or its subsidiaries to the Commonwealth against any payments due the **CONTRACTOR** under any contract with the **COMMISSION**.

Duration of Agreement [and Renewal]

The term of this Agreement shall be for a period of **(agreement term)** and shall commence on the Effective Date as defined below.

The Effective Date shall be fixed by the **COMMISSION** after the Agreement has been fully executed by the **CONTRACTOR** and by the **COMMISSION**, and after all approvals required by the **COMMISSION** contracting procedures have been obtained.

The term may be extended for **[number]** additional years by a writing signed by both parties.

This Agreement will not terminate until the **COMMISSION** accepts all work as complete and tender's final payment to the **CONTRACTOR**.

OR

The time of completion may be extended if the extension is approved by the **COMMISSION** in the form of a letter signed by the **Chief Engineer or appropriate person the Agreement is for**. This letter will become part of this Agreement. This Agreement will not terminate until the **COMMISSION** accepts all work as complete and tender's final payment to the **CONTRACTOR**.

Termination

The **COMMISSION** may terminate this Agreement at any time upon thirty- (30) calendar days written notice. If this notice is given, the **CONTRACTOR** shall be paid only for the services already rendered upon the date of the notice and for the services rendered to the date of termination, subject to all provisions of this Agreement. The notice will be effective on the date of receipt. The right to cancel may be exercised as to the entire project, or as to any particular phase or phases, part or parts, and upon one or upon several occasions, but any termination may not be revoked except upon written consent of the parties through a supplemental Agreement to this Agreement.

Insurance

The **CONTRACTOR**, prior to execution of this Agreement, shall furnish to the **COMMISSION** the certificates of insurances as required in attached **Exhibit "X"** and made a part of this Agreement.

Diverse Business (DB) Requirements

The **CONTRACTOR** agrees to comply with the requirements set forth in the **COMMISSION'S** DB Requirements – **Exhibit "X"**, attached and made part of this Agreement. In particular, the

CONTRACTOR agrees to comply with section (d) Consultant Requirements During Performance of Services.

Assignment and Delegation

The **CONTRACTOR** may not transfer, assign, or delegate any terms of this Agreement, in whole or in part, without prior written permission from the **COMMISSION**.

The **CONTRACTOR** shall not engage the services of any person or persons currently employed by the **COMMISSION**, except with the **COMMISSION**'s approval.

The **CONTRACTOR** shall neither assign this contract, in part or in whole, nor the right to any monies due it under this Agreement. Any part of the work to be done or material furnished under the contract shall not be sublet except to those firms indicated as part of the team in the initial Proposal, without the **COMMISSION**'s prior consent in the form of a letter signed by the *Department Head (update accordingly)*.

Governing Law

This Agreement will be interpreted according to the laws of the Commonwealth of Pennsylvania.

Observance of Laws

The **CONTRACTOR** agrees to observe all relevant federal, state, and local laws and to obtain in its name all necessary permits and licenses.

Work for Hire

Except for hardware, third party licensed software, and software previously developed by **CONTRACTOR**, all Deliverables, including but not limited to source code, software, specifications, plans, designs and engineering, drawings, data, information or other written, recorded, photographic, or visual materials, trademarks, service marks, copyrights or other Deliverables produced by **CONTRACTOR** or any supplier in the performance of this Agreement shall be deemed "Work Product". All Work Product shall be considered services for hire. Accordingly, except as set forth earlier in this paragraph, all Work Product shall be the exclusive property of the **COMMISSION**. The **CONTRACTOR** agrees to notify the **COMMISSION** in writing before using any of **CONTRACTOR**'s previously developed software for services provided under this Agreement. The **CONTRACTOR** and the **COMMISSION** will honor all applicable preexisting licenses, copyrights, trademarks, service marks, and patents. If as part of an expense item under this Agreement, the **CONTRACTOR** purchases the right to any license, the agreements for the use or ownership of such license will be placed in the name of the **COMMISSION** along with all other rights and obligations. In addition, the **CONTRACTOR** will mark all **COMMISSION** content or previously unprotected work product designated by the **COMMISSION** with a notice as follows: "Pennsylvania Turnpike Commission, (Year)".

Audit/Retention of Records

CONTRACTOR and its subcontractors shall maintain books and records related to performance of this Agreement or subcontract and necessary to support amounts charged to the **COMMISSION** in accordance with applicable law, terms and conditions of this Agreement, and generally accepted accounting practice. **CONTRACTOR** shall maintain these books and records for a minimum of three (3) years after the completion of the Agreement, final payment, or completion of any contract, audit or litigation, whichever is later. All books and records shall be available for review or audit by the **COMMISSION**, its representatives, and other governmental entities with monitoring authority upon reasonable notice and during normal business hours. **CONTRACTOR** agrees to cooperate fully with any such review or audit. If any audit indicates overpayment to **CONTRACTOR**, or subcontractor, the **COMMISSION** shall adjust future or final payments otherwise due. If no payments are due and owing to **CONTRACTOR**, or if the overpayment exceeds the amount otherwise due, **CONTRACTOR** shall immediately refund all amounts which may be due to the **COMMISSION**. Failure to maintain the books and records required by this Section shall establish a presumption in favor of the **COMMISSION** for the recovery of any funds paid by the **COMMISSION** under this Agreement for which adequate books and records are not available to support the purported disbursement.

Dispute Resolution

All questions or disputes regarding any matter involving this Agreement or its breach shall be referred to the Board of Claims of the Commonwealth of Pennsylvania pursuant to 62 Pa.C.S.A. § 1701 *et seq.* If the Board of Claims either refuses or lacks jurisdiction, these questions or disputes shall proceed as provided in 42 Pa.C.S.A. § 7301 *et seq.* (Statutory Arbitration).

The panel of arbitrators will consist of a representative of each of the parties and a third party chosen by the representatives, or if the representatives are unable to choose, by the American Arbitration Association.

Indemnification

The **CONTRACTOR** shall be responsible for, and shall indemnify, defend, and hold harmless the **COMMISSION** and its Commissioners, officers, employees, and agents from any claim, liability, damages, losses, causes of action, and expenses, including reasonable attorneys' fees, arising from damage to life or bodily injury or real or tangible personal property caused by the negligence or other tortious acts, errors, and omissions of **CONTRACTOR**, its employees, or its subcontractors while engaged in performing the work of this Agreement or while present on the **COMMISSION**'s premises, and for breach of this Agreement regarding the use or disclosure of proprietary and confidential information where it is determined that **CONTRACTOR** is responsible for any use of such information not permitted by this Agreement. The indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or its subcontractors under Workmen's Compensation Acts, Disability Benefits Acts, or other Employee Benefit Act.

Data/Information Security Breach Notification

“Breach” shall mean any successful unauthorized acquisition, access, use, or disclosure of **COMMISSION** data that compromises the security or privacy of such data.

“Commission Data” means **COMMISSION** provided information and **COMMISSION** related information acquired as a result of the services provided to **COMMISSION** under this Agreement.

CONTRACTOR shall report to the **COMMISSION** any Breach affecting **COMMISSION** Data. The notice to be provided to the **COMMISSION** by **CONTRACTOR** shall be provided without unreasonable delay and no later than within 72 hours of **CONTRACTOR**'s discovery of any Breach. A Breach shall be deemed to be discovered on the first day on which the **CONTRACTOR** knows or reasonably should have known of the Breach. The notice to be provided to the **COMMISSION** by **CONTRACTOR** shall be made in writing to the **COMMISSION**'s Information Security Officer and shall include the following content: (1) the nature of the Breach; (2) the specific Commission Data affected by the Breach; (3) the steps the **CONTRACTOR** is taking to remediate the Breach; and (4) steps the **CONTRACTOR** is taking to mitigate future Breaches. Following notification of the Breach, **CONTRACTOR** shall cooperate with the **COMMISSION**'s investigation of the Breach and provide any other information regarding the Breach or the Commission Data affected which the **COMMISSION** may reasonably request. Should notice to individuals whose information was part of Commission Data be required under any applicable data privacy law, including, but not limited to, individual state data breach notice laws or federal laws such as HIPAA and Gramm Leach Bliley Act, **CONTRACTOR** shall provide the **COMMISSION** with copies of any template notification letters and draft regulatory correspondence for **COMMISSION**'s prior approval. **CONTRACTOR** shall provide any notifications required under the applicable data privacy laws on behalf of the **COMMISSION** at the request of **COMMISSION**. The **COMMISSION** reserves the right to handle any notifications required and shall notify **CONTRACTOR** if the **COMMISSION** will be handling the required notifications. Upon request, **CONTRACTOR** shall provide the **COMMISSION** with its cyber-security policies and procedures. **CONTRACTOR** agrees to reimburse the **COMMISSION** for any and all reasonable costs associated with the **COMMISSION**'s response to **CONTRACTOR**'s Breach, including any fees associated with the **COMMISSION**'s investigation of **CONTRACTOR**'s Breach, notification costs, and any reasonable offer of credit or identity monitoring product.

Liquidated Damages

- (a) By accepting this Contract, the Contractor agrees to the delivery and acceptance requirements of this Contract. If a Contract schedule is not met, the delay will interfere with the Commission's program. In the event of any such delay, it would be impractical and extremely difficult to establish the actual damage for which the Contractor is the material cause. The Commission and the Contractor therefore agree that, in the event of any such delay the amount of damage shall be the amount set forth in this Section "Liquidated Damages" and agree that the Contractor shall pay such amount as liquidated

damages, not as a penalty. Such liquidated damages are in lieu of all other damages arising from such delay.

- (b) The Commission and Contractor agree that the Deliverables identified in the Payment Schedule set forth in this Contract as “Major Deliverables” (the “Major Deliverables”) shall be those for which liquidated damages shall be applicable in the event of delay of their completion beyond the delivery date specified in the Contract. If Major Deliverables are not identified in the Contract, liquidated damages shall apply to the total value of the Contract.
- (c) The amount of liquidated damages for any such Major Deliverable not completed by the deliverable schedule set out in the Contract shall be the flat amount of the specifically identified Major Deliverable for the Transition Period (see RFP Appendix I) following the scheduled completion date of such Major Deliverable. Liquidated damages shall be assessed each calendar day until the date on which the Proposer completes such Major Deliverable, up to a maximum of thirty (30) calendar days. Proposer may recoup the total amount of liquidated damages assessed against previous Major Deliverables if the Proposer accelerates progress towards future Major Deliverables and meets the final project completion date set out in the Contract.
- (d) If, at the end of the thirty (30) day period specified in “Liquidated Damages - (c)” above, the Contractor has not met the schedule for completion of the Major Deliverable, then the Commission, at no additional expense and at its option, may either:
 - (1) immediately terminate the Contract and all software, documentation, reports, Developed Materials and any other materials provided for or created for the Commission as a result of this Contract shall be given to the Commission, and the Commission shall be entitled to its remedies under “Termination”; or
 - (2) order the Contractor to continue with no decrease in effort until the work is completed in accordance with the Contract and accepted by the Commission or until the Commission terminates the Contract. If the Contract is continued, any liquidated damages will also continue until the work is completed.
- (e) At the end of the Contract term, or at such other time(s) as identified in the Contract, liquidated damages shall be paid by the Contractor and collected by the Commission by deducting them from the invoices submitted under this Contract or any other contract Contractor has with the Commission, by collecting them through the performance security, if any, or by billing the Contractor as a separate item.
- (f) To the extent that the delay is caused by the Commission, no liquidated damages will be applied.
- (g) If the delays are caused by the default of a Subcontractor, and if such default arises out of causes beyond the control of both the Contractor and Subcontractor, and without their

fault or negligence, the Contractor shall not be liable for liquidated damages for delays, unless the supplies or services to be furnished by the Subcontractor were obtainable from other sources in sufficient time to permit the Contractor to meet the required performance schedule.

Security Requirements

The Security Requirements are attached as **Exhibit X** and made a part of this Agreement.

Contractor Integrity Provisions

The Contractor Integrity Provisions are attached as **Exhibit X** and made a part of this Agreement.

Confidentiality Provisions

1. As a consequence of the performance of its duties with the **COMMISSION, CONTRACTOR** may learn, be given, or become aware of certain information, including, but not limited to, matters pertaining to internal communications, information, proprietary information, individually identifiable health information, trade practices, business operations, or other sensitive information collectively known as Confidential Information. Regardless of how transmitted or received by **CONTRACTOR**, whether by receipt, sending, or merely becoming available to **CONTRACTOR** through its relationship to the **COMMISSION, CONTRACTOR** agrees to maintain and treat as proprietary and confidential to the **COMMISSION** all such Commission Confidential Information, and shall not discuss, reveal, or use for any purpose outside the performance of its contract with the **COMMISSION** such Commission Confidential Information. Confidential Information shall not include any information that (i) is or becomes available to the public other than as a consequence of a breach by any individual, a partnership, a corporation, an association, a limited liability company, a joint stock company, a trust, a joint venture, an unincorporated organization (each a "Person") of any fiduciary duty or obligation of confidentiality, including, without limitation, catalogues, publications, product descriptions and sales literature that the **COMMISSION** has distributed to the public generally; or (ii) information which at the time of disclosure to the **CONTRACTOR** is in the public domain; or (iii) is disclosed as required by a final, unappealable court order and no suitable protective order, or equivalent remedy, is available, or (iv) the **CONTRACTOR** was aware of prior to its disclosure to the **CONTRACTOR** by the **COMMISSION** from a source not bound by a confidential obligation and the **CONTRACTOR** provides the **COMMISSION** written notice of such fact prior to the execution of this Agreement or promptly upon the **CONTRACTOR**'s learning that the information was Confidential Information; or (v) information which the **CONTRACTOR** can demonstrate with competent written evidence was independently developed by or for the **CONTRACTOR** without use of or reliance on the Confidential Information.

2. With respect to its employees, **CONTRACTOR** agrees to:

- a) require all of its employees to maintain such confidentiality;

- b) take appropriate action against its employees, officers, and subcontractors for any and all violations of this Agreement.
3. With respect to any subcontractors that **CONTRACTOR** wishes to employ to perform any of its obligations under any agreement with the **COMMISSION**, **CONTRACTOR** agrees to require any such approved subcontractor to execute written confidentiality agreements that require each such subcontractor and its employees to comply with all the requirements set forth above.
4. **CONTRACTOR** agrees that any breach of these Confidentiality Provisions may result in civil and/or criminal penalties, for **CONTRACTOR**, its officers and employees, and subcontractors.
5. Notwithstanding any other provision to the contrary, **CONTRACTOR** agrees that these provisions shall survive the termination of this and any and all agreements between the **CONTRACTOR** and the **COMMISSION**.
6. **CONTRACTOR** agrees to treat the information in the same way **CONTRACTOR** treats its own most confidential information and to inform each such person of these provisions.
7. **CONTRACTOR** agrees to immediately notify the **COMMISSION** of any information which comes to its attention which does or might indicate that there has been any loss of confidentiality or information.
8. **CONTRACTOR** shall return to the **COMMISSION** upon demand any and all Confidential Information entrusted to it by the **COMMISSION** pursuant to this Agreement (including any and all copies, abstracts, compilations or analyses thereof and memoranda related thereto or incorporating the Confidential Information) or the **CONTRACTOR** may request permission from the **COMMISSION**, which permission may be granted or denied in the **COMMISSION**'s sole discretion, to destroy all such Confidential Information and provide a certificate of destruction to the **COMMISSION** signed by the **CONTRACTOR**. The **CONTRACTOR** further agrees that neither itself nor its employees or representatives will copy, in whole or in part, any such Confidential Information without the prior written consent of the **COMMISSION**.
9. **CONTRACTOR** agrees that if they have had or will have an SSAE16 audit that they will comply with and abide by the findings of such audit to protect **COMMISSION** information.
10. Except where **CONTRACTOR** obtains the **COMMISSION**'S prior written approval, **CONTRACTOR** shall perform all of the Services only from or at locations within the geographic boundaries of the continental United States. Any **COMMISSION** approval for the performance of Services outside of the continental United States shall be limited to the specific instance and scope of such written approval, including the types of Services and locations involved.

Use of Unmanned Aircraft Systems: (remove if not applicable to this Agreement)

The **CONTRACTOR** shall not use or operate Unmanned Aircraft Systems (UAS) without the express written approval of the **COMMISSION**. Such approval shall be determined upon review

and authorization of a written request from the **CONTRACTOR** by the **COMMISSION**'s Legal Department and UAS program managers. If approved, the **CONTRACTOR** shall execute a separate Authorization to Operate UAS or other applicable third-party agreement prepared by the **COMMISSION**'s Legal Department setting forth the necessary indemnification, release and insurance requirements. The Authorization shall define the requirements the **CONTRACTOR** must follow in order to operate UAS within **COMMISSION** right-of-way and property. All approved UAS operations shall be conducted using Small Unmanned Aircraft Rule (Part 107) (14 CFR Part 107) of the Federal Aviation Administration (FAA) Regulations.

Execution in Counterparts

This Agreement may be executed in counterparts, including counterparts transmitted electronically or by facsimile, each of which shall constitute an original of this Agreement.

Entire Agreement

This Agreement, together with any writings either attached as exhibits or incorporated by reference, constitutes the entire understanding between the parties and there are no other oral or extrinsic understandings of any kind between the parties.

Modification

This Agreement may be modified only by a writing signed by both parties.

[SIGNATURES ARE SET FORTH ON THE NEXT PAGE]

IN WITNESS WHEREOF, the **Pennsylvania Turnpike Commission** and **(Contractor Name)** have executed this Agreement by their duly authorized officers on the date written above.

ATTEST:

PENNSYLVANIA TURNPIKE COMMISSION

Ann Louise Edwards
Assistant Secretary-Treasurer

Date

Leslie S. Richards
Chair

Date

APPROVED AS TO FORM AND LEGALITY:

Albert C. Peters II
General Litigation & Contracts Counsel

Date

Pennsylvania Attorney General

Date

ATTEST:

(Contractor Name)

Signature_____

Date

Signature_____

Date

Name_____

Name_____

Title_____

Title_____

Federal Tax ID No._____

CONTRACTOR INTEGRITY PROVISIONS

It is essential that those who seek to contract with the Pennsylvania Turnpike Commission (“Commission”) observe high standards of honesty and integrity. They must conduct themselves in a manner that fosters public confidence in the integrity of the Commission contracting and procurement process.

I. DEFINITIONS. For purposes of these Contractor Integrity Provisions, the following terms shall have the meanings found in this Section:

- a. “Affiliate”** means two or more entities where (a) a parent entity owns more than fifty percent of the voting stock of each of the entities; or (b) a common shareholder or group of shareholders owns more than fifty percent of the voting stock of each of the entities; or (c) the entities have a common proprietor or general partner.
- b. “Consent”** means written permission signed by a duly authorized officer or employee of the Commission, provided that where the material facts have been disclosed, in writing, by prequalification, bid, proposal, or contractual terms, the Commission shall be deemed to have consented by virtue of the execution of this contract.
- c. “Contractor”** means the individual or entity, that has entered into this contract with the Commission, and “Contractor Related Parties” means any affiliates of the Contractor and the Contractor’s executive officers, Pennsylvania officers and directors, or owners of 5% or more interest in the Contractor
- d. “Financial Interest”** means either:
 - i. Ownership of more than a five percent interest in any business; or
 - ii. Holding a position as an officer, director, trustee, partner, employee, or holding any position of management.
- e. “Gratuity”** means tendering, giving, or providing anything of monetary value including, but not limited to, cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind. See Commission Policy 3.10, Code of Conduct.
- f. “Non-bid Basis”** means a contract awarded or executed by the Commission with Contractor without seeking bids or proposals from any other potential bidder or offeror.

II. In furtherance of this policy, Contractor agrees to the following:

- 1.** Contractor shall maintain the highest standards of honesty and integrity during the performance of this contract and shall take no action in violation of state or federal laws or regulations or any other applicable laws or regulations, or other requirements applicable to Contractor or that govern contracting or procurement with the Commission.

2. Contractor shall establish and implement a written business integrity policy, which includes, at a minimum, the requirements of these provisions as they relate to Contractor activity with the Commission and Commission employees and which is made known to all Contractor employees. Posting these Contractor Integrity Provisions conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the contract services are performed shall satisfy this requirement.
3. Contractor, its affiliates, agents, employees and anyone in privity with Contractor shall not accept, agree to give, offer, confer, or agree to confer or promise to confer, directly or indirectly, any gratuity or pecuniary benefit to any person, or to influence or attempt to influence any person in violation of the Public Official and Employees Ethics Act, 65 Pa.C.S. §§1101 et seq.; the State Adverse Interest Act, 71 P.S. §776.1 et seq.; Commission Policy 3.10, Code of Conduct or in violation of any other federal or state law in connection with performance of work under this contract, except as provided in this contract.
4. Contractor shall not have a financial interest in any other contractor, subcontractor, or supplier providing services, labor, or material under this contract, unless the financial interest is disclosed to the Commission in writing and the Commission consents to Contractor's financial interest prior to Commission execution of the contract. Contractor shall disclose the financial interest to the Commission at the time of bid or proposal submission, or if no bids or proposals are solicited, no later than Contractor's submission of the contract signed by Contractor.
5. Contractor certifies to the best of its knowledge and belief that within the last five (5) years Contractor or Contractor Related Entities have not:
 - a. been indicted or convicted of a crime involving moral turpitude or business honesty or integrity in any jurisdiction;
 - b. been suspended, debarred or otherwise disqualified from entering into any contract with any governmental agency;
 - c. had any business license or professional license suspended or revoked;
 - d. had any sanction or finding of fact imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust; and
 - e. been, and is not currently, the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or civil anti-trust investigation by any federal, state or local prosecuting or investigative agency.

If Contractor cannot so certify to the above, then it must submit along with its bid, proposal or contract a written explanation of why such certification cannot be made and the Commission will determine whether a contract may be entered into with the Contractor. The Contractor's obligation pursuant to this certification is ongoing from and after the effective date of the contract through the termination date thereof. Accordingly, the Contractor shall have an obligation to immediately notify the Commission in writing if at any time during the term of the contract it becomes aware of any event which would cause the Contractor's certification or explanation to change. Contractor acknowledges that the

Commission may, in its sole discretion, terminate the contract for cause if it learns that any of the certifications made herein are currently false due to intervening factual circumstances or were false or should have been known to be false when entering into the contract.

6. Contractor shall comply with the requirements of the Lobbying Disclosure Act (65 Pa.C.S. §13A01 et seq.) regardless of the method of award. If this contract was awarded on a Non-bid Basis, Contractor must also comply with the requirements of the Section 1641 of the Pennsylvania Election Code (25 P.S. §3260a).
7. When Contractor has reason to believe that any breach of ethical standards as set forth in law, Commission Policy 3.10, Code of Conduct, or these Contractor Integrity Provisions has occurred or may occur, including but not limited to contact by a Commission officer or employee which, if acted upon, would violate such ethical standards, Contractor shall immediately notify the Commission contracting officer or the Chief Compliance Officer in writing.
8. Contractor, by submission of its bid or proposal and/or execution of this contract and by the submission of any bills, invoices or requests for payment pursuant to the contract, certifies and represents that it has not violated any of these Contractor Integrity Provisions in connection with the submission of the bid or proposal, during any contract negotiations or during the term of the contract, to include any extensions thereof. Contractor shall immediately notify the Commission in writing of any actions for occurrences that would result in a violation of these Contractor Integrity Provisions. Contractor agrees to reimburse the Commission for the reasonable costs of investigation incurred by the Chief Compliance Officer for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the Commission that results in the suspension or debarment of the Contractor. Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.
9. Contractor shall cooperate with the Chief Compliance Officer in investigating any alleged Commission agency or employee breach of ethical standards and any alleged Contractor non-compliance with these Contractor Integrity Provisions. Contractor agrees to make identified Contractor employees available for interviews at reasonable times and places. Contractor, upon the inquiry or request of the Chief Compliance Officer, shall provide, or if appropriate, make promptly available for inspection or copying, any information of any type or form deemed relevant by the Chief Compliance Officer to Contractor's integrity and compliance with these provisions. Such information may include, but shall not be limited to, Contractor's business or financial records, documents or files of any type or form that refer to or concern this contract. Contractor shall incorporate this paragraph in any agreement, contract or subcontract it enters into in the course of the performance of this contract/agreement solely for the purpose of obtaining subcontractor compliance with this provision. The incorporation of this provision in a subcontract shall not create privity of contract between the Commission and any such subcontractor, and no third party beneficiaries shall be created thereby.

- 10.** For violation of any of these Contractor Integrity Provisions, the Commission may terminate this and any other contract with Contractor, claim liquidated damages in an amount equal to the value of anything received in breach of these Provisions, claim damages for all additional costs and expenses incurred in obtaining another contractor to complete performance under this contract, and debar and suspend Contractor from doing business with the Commonwealth. These rights and remedies are cumulative, and the use or non-use of any one shall not preclude the use of all or any other. These rights and remedies are in addition to those the Commission may have under law, statute, regulation, or otherwise.

RFP 19-10350-8476		Pennsylvania Turnpike Commission (PTC)			
Proposer Questions		Proposer Name:			
#	Page	Section	Section Description	Proposer Question	Commission Response
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

APPENDIX C – PROPOSAL COVER SHEET

**Pennsylvania Turnpike Commission
Enterprise Applications Managed Services**

RFP# 19-10350-8476

Enclosed in three separately sealed submittals is the proposal for the Proposer identified below for the above referenced RFP:

Proposer Information:	
Proposer Company Name	
Proposer Mailing Address	
Proposer Website	
Proposer Contact Person/Title	
Contact Person’s Phone Number	
Contact Person’s Fax Number	
Contact Person’s Email Address	
Proposer Federal ID Number	
Location of Headquarters	
Location of Office(s) Performing the Work	
Listing of all Pennsylvania Offices and Total Number of Pennsylvania Employees	

Submittals Enclosed and Separately Sealed:

<input type="checkbox"/> Technical Submittal <input type="checkbox"/> Diverse Business Participation Submittal <input type="checkbox"/> Cost Submittal
Signature
Signature of an official authorized to bind the Proposer to the provisions contained in the Proposer’s proposal: _____
Print Name
Title

An official authorized to bind the Proposer to its provisions must sign the proposal. If the official signs this Proposal Cover Sheet and the Proposal Cover Sheet is attached to the proposal, the requirement will be met.

1. Security Standards

General Security Requirements

1.	Vendor shall supply all hosting equipment (hardware and software) required for performance of the contract and ensure maintenance and replacement as necessary to maintain compliance with the Service Level Agreement(s).
2.	The vendor shall warrant all system/software to be delivered free of malware or other malicious or destructive code.
3.	In the event of adverse risk findings through an audit or assessment, the vendor shall cooperate with the Commission in remediating any risks to the system, including complying with requests to temporarily take the system offline or otherwise limit access to the system during remediation if warranted.
4.	Vendors must have a plan for compliance with all applicable breach notification laws, including Pennsylvania's Breach of Personal Information Notification.
5.	The Commission must be notified in writing within 72 hours of the earliest indication or report of a potential breach or unintended disclosure of confidential information.
6.	Incident response actions that may affect confidential information must be conducted quickly and with ample resources. Vendor must hire a professional third-party incident response team if its inhouse resources do not have sufficient skill or availability.
7.	The Commission shall have the right to view all incident response evidence, reports, communications, and related materials, affecting Commission systems, upon request.
8.	If requested by the Commission, or if required by law, the vendor, at its own cost and expense, shall notify in writing all persons affected by the incident.
9.	The vendor is responsible for hardening all devices to run only the services required to support the application. All unnecessary services must be disabled (for example, UPnP, SLP, etc.).
10.	If Commission user service disruptions are expected, the change must be approved by the Change Review Board (CRB) before implementation.
11.	No generic user accounts for shared resources will be permitted.
12.	Audit logs must be implemented for all systems. All actual or attempted violations of system security must generate an audit log. Audit logs must be secured against unauthorized access or modification.
13.	All account credentials (username/password) must be encrypted during transmission.
14.	All administrator account passwords and SNMP community strings must be changed from the manufacturer's default values to a hardened value.

Hosted/Cloud-Based Security Requirements

1.	The Commission's data must be located and remain within the continental United States.
2.	Vendor shall use commercially reasonable resources and efforts to maintain adequate internet connection bandwidth, service capacity, and ensure its data center and/or other vendors performing subcontracted services have industry standard physical, technical, human, and administrative controls.
3.	Vendor shall house all services and equipment in an operational environment that meets industry standards including climate control, fire and safety hazard detection, redundancy, electrical needs, and physical security.
4.	If Commission employee access is required, then the latest version of ADFS (Active Directory Federated Services), using the latest version of SAML, must be used for authentication and authorization, and the Identity Source must be either the Commission's on-premise ADFS installation or the Commission's Azure AD instance.
5.	When SAML authentication is used for cloud-hosted systems, the vendor must use Provider-side Initiated authentication.
6.	All cloud-based/hosted systems using HTTPS, or any other protocol using SSL/TLS, must use TLS 1.2 or later with a key size no smaller than 2048 bits.
7.	For public-facing systems, the vendor shall utilize a third-party certificate provider who is a recognized and trusted authority in the industry.
8.	The vendor is responsible for sending the Commission system/network vulnerability scan results upon request.
9.	The vendor will supply firewall and IPS logs for malicious intrusion and access attempts into hosted Commission systems upon request.
10.	Vendors must have, and upon request by the Commission, shall provide copies of its information security policies that cover the following elements: - Data classification and privacy - Security training and awareness - Systems administration, patching, and configuration - Application development and code review - Incident response - Workstation management, mobile devices, and antivirus - Backups, disaster recovery, and business continuity - Regular audits and testing - Requirements for third-party business partners and contractors - Compliance with information security or privacy laws, regulations, or standards
11.	The vendor shall allow the Commission, or an agreed upon third party, to perform security assessments, vulnerability assessments, or audits of systems that contain Commission data.
12.	For systems hosted off the Commission's network, an industry-accepted endpoint protection solution must be operated on all hosting servers.

On-Prem / Physically-Connected Security Requirements

1.	The Commission's IT Security Team must be allowed to scan, for security vulnerabilities, any new equipment and/or changes to existing equipment before implementation.
2.	The Commission's IT Security team must be given administrator-level access to all installed equipment for incident response and security assessment.
3.	All Microsoft Windows-based systems, connected to the Commission's network, will be joined to the Commission's Active Directory domain and will be patched by the Commission's IT staff on a monthly basis at a minimum.
4.	The vendor is responsible for updating all non-Windows systems, not operated or administered by the Commission, to the vendors' latest recommended level.
5.	If remote access is needed, the vendor must use HorizonView. If using VPN for remote access, a Commission owned, and managed device is required.
6.	If local connectivity to the Commission's network is needed, a Commission-owned and managed device is required. Vendor-owned devices are not permitted to be connected to the network.
7.	The vendor's system/software must co-exist with all industry accepted endpoint software with no exceptions.
8.	The vendor must provide the necessary directory and file exclusions to allow the system/software to operate as intended.

2. Commission Requirements

2.1. Equipment Installations, Changes, and Access	<ul style="list-style-type: none"> a. The Commission’s IT Security Team must be allowed to scan, for security vulnerabilities, any new equipment and/or changes to existing equipment before implementation. b. The vendor is responsible for hardening all devices to run only the services required to support the application. All unnecessary services must be disabled (for example, UPnP, SLP, etc.). c. The Commission’s IT Security team must be given administrator-level access to all installed equipment for incident response and security assessment. d. If Commission user service disruptions are expected, the change must be approved by the Change Review Board (CRB) before implementation.
2.2. Vulnerability Management	<ul style="list-style-type: none"> a. All Windows-based systems, connected to the Commission’s network, will be joined to the Commission’s Active Directory domain and will be patched by the Commission’s IT staff on a monthly-basis at a minimum. b. The vendor is responsible for updating all non-Windows systems, not operated or administered by the Commission, to the vendors’ latest recommended level.
2.3. Vendor Remote Access and Accounts	<ul style="list-style-type: none"> a. All vendors shall use the Commission’s VMWare’s HorizonView infrastructure for remote access. b. No generic user accounts for shared resources will be permitted. Every technician/engineer will have their own unique user account.
2.4. Incident Response	<ul style="list-style-type: none"> a. Vendors must have a plan for compliance with all applicable breach notification laws, including Pennsylvania’s Breach of Personal Information Notification. b. The Commission must be notified in writing within 48 hours of the earliest indication or report of a potential breach or unintended disclosure of confidential information. c. Incident response actions that may affect confidential information must be conducted quickly and with ample resources. Vendor must hire a professional third-party incident response team if its inhouse resources do not have sufficient skill or availability. d. The Commission shall have the right to view all incident response evidence, reports, communications, and related materials upon request. e. If requested by the Commission, or if required by law, the vendor, at its own cost and expense, shall notify in writing all persons affected by the incident.

<p>2.5. Information Security Policies</p>	<p>a. Vendors must have, and upon request by the Commission, shall provide copies of its information security policies that cover the following elements:</p> <ul style="list-style-type: none"> i. Data classification and privacy ii. Onshore Data iii. Security training and awareness iv. Systems administration, patching, and configuration v. Application development and code review vi. Incident response vii. Workstation management, mobile devices, and antivirus viii. Backups, disaster recovery, and business continuity ix. Regular audits and testing x. Requirements for third-party business partners and contractors xi. Compliance with information security or privacy laws, regulations, or standards
<p>2.6. Audit & Inspection</p>	<p>a. The vendor shall allow the Commission, or an agreed upon third party, to perform security assessments, vulnerability assessments, or audits of systems that contain Commission data.</p> <p>b. In the event of adverse risk findings through an audit or assessment, the vendor shall cooperate with the Commission in remediating any risks to the system, including complying with requests to temporarily take the system offline or otherwise limit access to the system during remediation.</p> <p>c. Audit logs must be implemented for all systems on the Commission’s network. All attempted violations of system security must generate an audit log. Audit logs must be secured against unauthorized access or modification.</p>

2.7. Malware	<ul style="list-style-type: none"> a. The vendor shall warrant all software/applications to be delivered free of malware or other malicious or destructive code. b. For software hosted on the Commission’s network: c. The vendor’s software must co-exist with all industry accepted endpoint software. Endpoint protection must run on all Commission servers. d. The vendor must provide the necessary directory and file exclusions to allow the software to operate as intended. e. For software hosted off the Commission’s network: f. An industry-accepted endpoint protection solution must be operated on all hosting servers.
2.8. Off-Premises Systems Hosting Requirements	<ul style="list-style-type: none"> a. Vendor shall supply all hosting equipment (hardware and software) required for performance of the contract and ensure maintenance and replacement as necessary to maintain compliance with the Service Level Agreement(s). b. Vendor shall use commercially reasonable resources and efforts to maintain adequate internet connection bandwidth, service capacity, and ensure its data center and/or other vendors performing subcontracted services have industry standard physical, technical, human, and administrative controls at all times. c. Vendor shall house all services and equipment in an operational environment that meets industry standards including climate control, fire and safety hazard detection, redundancy, electrical needs, and physical security d. If systems are located off the Commission’s network and Commission employee access is required, then the latest version of ADFS (Active Directory Federated Services), using the latest version of SAML, must be used for authentication and authorization e. All off-premises systems using HTTP, or any other protocol using SSL/TLS, must use TLS 1.2 or later with a key size no smaller than 2048 bits. f. For public-facing systems, the vendor shall utilize a third- party certificate provider who is a recognized and trusted authority
2.9. Location of Performance	<ul style="list-style-type: none"> a. Except where Selected Proposer obtains the Commission’s prior written approval, Selected Proposer shall perform all the Services only from or at locations within the geographic boundaries of the continental United States. Any Commission approval for the performance of Services outside of the continental United States shall be limited to the specific instance and scope of such written approval, including the types of Services and locations involved.

Minimum Insurance Requirements

Before starting any work and until completion and final payment is made for the work, or final acceptance of the work, the Contractor will provide and maintain the following minimum levels of insurance at Contractor's own expense. The cost of the required insurance shall be included in the Contractor's cost proposal and no adjustment shall be made to the contract price on account of such costs. Contractor shall furnish Certificates of Insurance showing the effective date of coverage as outlined below. No work may be performed until the required evidence of Insurance is provided in accordance with the terms of the contract. Contractor shall be responsible for ensuring that all Subcontractors hired by the Contractor are properly insured. Contractor shall not permit any such Subcontractors to start work until such evidence has been provided to the Contractor.

- a) All insurance shall be procured from insurers permitted to do business in the State in which the project is taking place and having an A.M. Best Rating of at least "A-, Class VIII".
- b) Contractor shall not have a Self-Insured Retention (SIR) on any policy greater than \$50,000, which is the responsibility of the Contractor. If Contractor's policy(ies) has a Self-Insured Retention exceeding this amount, approval must be received from the Commission prior to starting work. In the event any policy includes an SIR, the Contractor is responsible for payment within the SIR of their policy(ies) and the Additional Insured requirements specified herein shall be offered within the SIR amount(s).
- c) All insurance required herein, except for Professional Liability Insurance, shall be written on an "occurrence" basis.
- d) The Contractor's insurance carrier(s) shall agree to provide at least thirty (30) days prior written notice to the Commission in the event coverage is canceled or non-renewed, unless cancellation is for non-payment of premium. In the event of cancellation or non-renewal of coverage(s) for any reason, it is the Contractor's responsibility to replace coverage to comply with the Contract requirements so there is no lapse of coverage for any time period.

If the insurance carriers will not issue or endorse their policy(s) to comply with the above it is the responsibility of the Contractor to report any notice of cancellation or non-renewal at least thirty (30) days prior to the effective date of this notice.

- e) Contractor shall provide the Commission with Certificates of Insurance, showing the insurance coverages listed below, ten days prior to the start of work of this Project and thereafter upon renewal or replacement of each coverage. The Contractor shall not begin any work until the Commission has reviewed and approved the Certificate of Insurance.

Failure of the Commission to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the Commission to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Upon completion of the contract, an additional certificate(s) of insurance evidencing coverage shall be provided to the Commission with final application for payment.

- f) The Commission, and its Commissioners, officers, employees and agents shall be added as ADDITIONAL INSUREDS on all required liability policies (except Workers' Compensation and Professional Liability) for ongoing operations and completed operations on a primary noncontributory basis.

There shall be no "Insured versus Insured Exclusion" on any policies; all policies will provide for "cross liability coverage".

- g) Waiver of Rights of Subrogation: Contractor shall waive all rights of recovery against the Commission and all the additional insureds for loss or damage covered by any of the required insurance (except Professional Liability).
- h) The amount of insurance in the required coverages shall not be construed to be a limitation of the liability on the part of the Contractor.
- i) The carrying of insurance described below shall in no way be interpreted as relieving the Contractor of any responsibility or liability under the contract.
- j) Any type of insurance or any increase in limits of liability which the Contractor requires for its own protection or on account of statute shall be its own responsibility and at its own expense.
- k) Contractor shall promptly notify the Commission and the appropriate insurance company(ies) in writing of any accident(s) as well as any claim, suit or process received by the insured Contractor arising in the course of operations under the contract. The Contractor shall forward such documents received to its insurance company(ies), as soon as practicable, or as required by its insurance policy(ies).

REQUIRED COVERAGES - the following may be provided through a combination of primary and excess policies in order to meet the minimum limits set forth below:

1. **Workers' Compensation and Employer's Liability:**

Provided in the State in which the work is to be performed and elsewhere as may be required and shall include:

- a) Workers' Compensation Coverage: Statutory Requirements
- b) Employers Liability Limits not less than:
 - Bodily Injury by Accident: \$500,000 Each Accident
 - Bodily Injury by Disease: \$500,000 Each Employee
 - Bodily Injury by Disease: \$500,000 Policy Limit
- c) Includes sole proprietorships and officers of corporation who will be performing the work.

2. **Commercial General Liability:**

Provided on standard ISO forms or an equivalent form including Premises - Operations, Independent Contractors, Products/Completed Operations, Broad Form Property Damage, Contractual Liability, and Personal Injury and Advertising Injury.

- a) Occurrence Form with the following minimum limits:
 - (1) General Aggregate: \$2,000,000
 - (2) Products/Completed Operations Aggregate: \$2,000,000
 - (3) Each Occurrence: \$1,000,000
 - (4) Personal and Advertising Injury: \$1,000,000

3. **Automobile Liability:**

- a) Coverage to include All Owned, Hired and Non-Owned Vehicles (or "Any Auto"). If Contractor does not have any Owned Vehicles, Contractor is still required to maintain coverage for Hired and Non-Owned Vehicles as either a stand-alone policy or endorsed onto the Commercial General Liability policy above
- b) Minimum per Accident Combined Single Limit \$1,000,000

4. **Commercial Umbrella Liability:**

- a) Policy(ies) to apply on a Following Form Basis of the following:
 - (1) Commercial General Liability,
 - (2) Automobile Liability, and
 - (3) Employers Liability Coverage.
- b) Minimum Limits of Liability
 - Occurrence Limit: \$4,000,000
 - Aggregate Limit (where applicable): \$4,000,000

5. **Professional Liability:**

- a) The definition of “Covered Services” shall include the services required in the scope of this contract.
- b) Minimum Limits of Liability:
 - Per Claim: \$10,000,000
 - Aggregate: \$10,000,000
- c) If the policy is issued on a claims-made form, the following requirements will apply:
 - 1. The retroactive date must be on or before the start of work under this contract;
 - 2. In the event of policy termination, cancellation or non-renewal, the Contractor must purchase “tail coverage/an extended reporting period” or maintain coverage for a period of three (3) years after the completion of their work/final payment.

6. **Network Security and Privacy Liability (may be included in Professional Liability):**

- a) Contractor shall maintain the following coverage including but not limited to:
 - (1) Network Security Liability for third party liability arising out of hacking, network system intrusions, unauthorized access/use to data or systems, distribution of malicious code, denial of service and cyber extortion.
 - (2) Privacy Liability for third party liability arising out of breach of privacy, inclusive of confidential and proprietary business information, HIPAA violations and other breaches of personally identifiable information and /or protected health information that may arise from their work with this contract.
- b) Minimum Limits of Liability (including Payment Card Information (PCI) Loss):
 - Per Claim: \$10,000,000
 - Aggregate: \$10,000,000
- c) Minimum Limits of Liability:
 - Privacy Breach Notification and Credit Monitoring: \$10,000,000 Per Occurrence

7. **Crime Insurance:**

- a) Include the Employee Theft and Theft, Disappearance and Destruction coverage parts. The Employee Theft Coverage part shall include the Clients’ Property Endorsement (ISO Form CR 04 01, or its equivalent).
- b) Minimum Limits of Liability: Per Occurrence: \$1,000,000

APPENDIX F
Pennsylvania Turnpike Commission
DIVERSE BUSINESS (DB) REQUIREMENTS

Diverse Business Participation. The Commission is committed to Diverse Business (DB) participation on competitive contracting opportunities. Firms or entities that have not previously performed work or provided services to the Commission are encouraged to respond to the solicitations. RFPs may include DB participation as part of the criteria for the evaluation of proposals, and the Commission may consider DB participation as a selection factor.

Minimum Participation Level (MPL). The minimum participation level (MPL) for the inclusion of DBs will be established in the RFP/advertisement as a percentage.

(a) General Requirements. Section 303 of Title 74 of the Pennsylvania Consolidated Statutes, 74 Pa.C.S. § 303, requires proposer on contracts funded pursuant to the provisions of Title 74 (Transportation) and 75 (Vehicle Code) administered and issued by the Commission to make Good Faith Efforts to solicit subconsultants that are Diverse Businesses (DBs) as defined in Section 303. The DB requirements of Section 303 apply to this contract.

Section 303 requires proposers to make Good Faith Efforts, as described below, to solicit subconsultants that are DBs during the proposal process to maximize participation of DBs in competitive contracting opportunities.

The Commission is committed to participation by DBs and will enforce the requirements of Section 303 and this section. Failure to make Good Faith Efforts and demonstrate such Good Faith Efforts in the solicitation of subconsultants may result in the proposer being declared ineligible for the contract.

Proposers shall document and submit to the Commission all Good Faith Efforts, as described in this section, to solicit subconsultants that are DBs during the solicitation process.

Proposers are encouraged to utilize and give consideration to consultants offering to utilize DBs in the selection and award of contracts.

Proposers shall not discriminate on the basis of gender, race, creed or color in the award and performance of contracts in accordance with 62 Pa.C.S. §3701.

Failure to comply with the requirements of Section 303 or this specification may result in the imposition of sanctions as appropriate under section 531 of the Procurement Code, 62 Pa.C.S. § 531 relating to debarment and suspension.

The Commission's Director of the Office of Diversity and Inclusion, or designee, is designated the Responsible Official who shall supervise the DB program and ensure that the Commission complies with the DB program.

(b) Definitions. The following definitions apply to terms used in this specification:

1. Disadvantaged Business – A business that is owned or controlled by a majority of persons, not limited to members of minority groups, who are subject to racial, social, ethnic prejudice or cultural bias.

2. Diverse Business – A disadvantaged business, minority-owned or women-owned business or service-disabled veteran-owned or veteran-owned small business that has been certified by a third-party certifying organization.

3. Minority-owned Business – A business owned and controlled by a majority of individuals who are African Americans, Hispanic Americans, Native Americans, Asian Americans, Alaskans or Pacific Islanders.

4. Professional Services – An industry of infrequent, technical or unique functions performed by independent contractors or consultants whose occupation is the rendering of the services, including: (1) design professional services as defined in 62 Pa.C.S. § 901 (relating to definitions); (2) legal services; (3) advertising or public relations services; (4) accounting, auditing or actuarial services; (5) security consultant services; (6) computer and information technology services; and (7) insurance underwriting services.

5. Pro Forma Effort-The act of completing a form or document identifying efforts to solicit DBs for a project in order to satisfy criteria with little or no expectation that the DBs contacted or identified will perform any of the work.

6. Service-Disabled Veteran-Owned Small Business – A business in the United States which is independently owned and controlled by a service-disabled veteran(s), not dominant in its field of operation, and employs 100 or fewer employees.

7. Subconsultant- Any individual, partnership, firm, or corporation entering into a contract with the prime consultant for work under the contract, including those providing professional and other services.

8. Third-party Certifying Organization – An organization that certifies a small business, minority-owned business, women-owned business or veteran-owned small business as a diverse business. The term includes: (1) the National Minority Supplier Development Council; (2) the Women’s Business Development Enterprise National Council; (3) the Small Business Administration; (4) The Department of Veteran Affairs; (5) the Pennsylvania Unified Certification Program.

9. Veteran-owned Small Business –A small business owned and controlled by a veteran or veterans.

10. Women-Owned Business – A business owned and controlled by a majority of individuals who are women.

(c) Actions Required by Proposer during the procurement/consultant selection phase

1. Submission Requirements – Consultant Responsiveness.

- a. **Minimum Participation Level (MPL) Documentation** - If the documentation submitted with the proposal demonstrates that the proposer has identified DBs sufficient to meet the MPL established for this contract, the proposer will be deemed to have satisfied the DB requirement during this phase. The proposer is required to provide the business name and business address of each DB and supporting documentation that includes proof of certification.

If the consultant’s proposal demonstrates the consultant’s inability to meet the MPL established for this contract, the proposer shall demonstrate Good Faith Efforts with its proposal. Failure to submit the required documentation demonstrating Good Faith Efforts as further described below with the proposal may result in a rejection of the proposal.

- b. If no MPL has been established for this contract, the proposer is required to either provide a statement of intent that it will self-perform 100% of the work for the agreement, or demonstrate Good Faith Efforts to solicit subconsultants that are DBs. In either case documentation shall be provided with the proposal.

Failure to submit the required information identified above with the proposal may result in a rejection of the proposal.

2. Good Faith Effort Requirements: The documentation of Good Faith Efforts must include the business name and business address of each DB considered. Supporting documentation must also include proof of certification and any explanation of Good Faith Efforts the proposer would like the Commission to consider. Any services to be performed by a DB are required to be readily identifiable to the agreement. Good Faith efforts are demonstrated by seeking out DB participation in the project given all relevant circumstances. The Commission requires the proposer to demonstrate more than Pro Forma Efforts. Evidence of Good Faith Efforts includes, but is not limited to:

- a. Consultant solicits through all reasonable and available means the interest of all certified DBs with the capacity to perform the scope of work set forth in the agreement.
- b. The proposer must provide written notification at least 5 business days before proposals are due to allow the DBs to respond to the solicitation.
- c. The proposer must determine with certainty if DBs are interested by taking appropriate steps to follow up initial solicitations.
- d. The proposer must make efforts to select portions of the work to be performed by DBs to include, where appropriate, breaking out contract work into economically feasible units to facilitate DB participation;
- e. It is the proposer's responsibility to make a portion of the work available to DBs and, to select those portions of the work, so as to facilitate DB participation.
- f. The proposer shall provide evidence of such negotiations that include the names, addresses, and telephone numbers of DBs considered; A description of the information provided regarding the required work and services for the work selected for subconsultants; and evidence as to why additional agreements could not be reached for DBs to perform the work.
- g. Proposers cannot reject or withhold solicitation of DBs as being unqualified without sound reasons based on a thorough investigation of their capabilities.
- h. The DB's standing within its industry, membership in specific groups, organizations or associations and political or social affiliations (for example union v. non-union employee status) are not legitimate causes for the rejection or non-solicitation of proposals in the proposer's efforts to meet the Good Faith Efforts requirement.
- i. Efforts to assist interested DBs in obtaining bonding, lines of credit or insurance.

3. Actions Taken by the Commission. As part of the proposal review process, the Commission will review the submissions to determine whether the proposer has complied with Section 303 and this requirement in the selection of DB subconsultants. The Commission will determine whether the proposer has either met the MPL or provided acceptable documentation as noted above. The Commission reserves the right to contact proposers for clarification during the review and negotiation process.

If the Commission determines that the proposer has failed to either meet the MPL or provide acceptable documentation as noted above, the proposal may be rejected.

(d) Consultant Requirements During Performance of Services.

1. Replacement of a DB Subconsultant. Consultant must continue good faith efforts through completion of the contract. The obligation to make Good Faith Efforts to solicit subconsultants for any type of service extends to additional work required for any service which is identified to be performed by a DB.

If at any time during the performance of the work, it becomes necessary to replace or add a subconsultant that is a DB, the consultant, as appropriate, shall immediately notify the Commission and seek approval in writing in accordance with the Agreement of the need to replace the DB, which notice shall include the reasons for the replacement. If a prime consultant who originally indicated that it would self-perform all work subsequently decides to use a subconsultant for any work under the contract, the consultant must submit documentation of all Good Faith Efforts as to the work for which a subconsultant is obtained.

2. Records. Maintain project records as are necessary to evaluate DB compliance and as necessary to perform the reporting function addressed below. Maintain all records for a period of 3 years following acceptance of final payment. Make these records available for inspection by the Commission, its designees or agents. These records should indicate:

2.a. The number of DB and non-DB subconsultants and the type of services performed on or incorporated in this project.

2.b. The progress and efforts made in seeking out DB subconsultant organizations and individual DB consultants for work on this project to increase the amount of DB participation and/or to maintain the commitments made at the time of the proposal to DBs.

2.c. Documentation of all correspondence, contacts, telephone calls, and other contacts made to obtain the service of DBs on this project.

3. Reports. Maintain monthly reports and submit reports as required by the Commission concerning those contracts and other business executed with DBs with respect to the records referred to in subsection (e)2. above in such form and manner as prescribed by the Commission. At a minimum, the Reports shall contain the following:

3.a The number of Contracts with DBs noting the type of services provided, including the execution date of each contract.

3.b The amounts paid to each DB during the month, the dates of payment, and the overall amounts paid to date. If no payments are made to a DB during the month, enter a zero (\$0) payment.

3.c Upon request and upon completion of individual DB firm's work, submit paid invoices or a certification attesting to the actual amount paid. In the event the actual amount paid is less than the award amount, a complete explanation of difference is required.

4. Subconsultant Contracts

4.a. Subcontracts with DB firms will not contain provisions waiving legal rights or remedies provided by laws or regulations of the Federal Government or the Commonwealth of Pennsylvania or the Commission through contract provisions or regulations.

4.b. Prime consultant will not impose provisions on DB subconsultants that are more onerous or restrictive than the terms of the prime's contract with non-DBs.

4.c. Executed copies of subcontracts/purchase orders are to be received by the Commission before the commencement of work by the DB.

5. Payments to DB Subconsultants. Payments to DBs are to be made in accordance with the prompt payment requirements of Chapter 39, Subchapter D of the Procurement Code, 62 Pa.C.S. §3931 et

seq. Performance of services by a DB subconsultant in accordance with the terms of the contract entitles the subconsultant to payment.

(e) Actions to be Taken by Commission After Performance of Services. Following completion of the Consultant's services, the Director of the Commission's Office of Diversity and Inclusion or his/her designee will review the overall DB participation to assess the Consultant's compliance with Section 303 and this contract. Appropriate sanctions may be imposed under 62 Pa.C.S. § 531 (relating to debarment or suspension) for a Consultant's failure to comply with Section 303 and the requirements of the contract.

Instructions

1. Start completing the Managed Services Cost Sheet by only entering values in the yellow-highlighted cells.
2. Complete the Task Cost Worksheet by only entering values in the yellow-highlighted cells. Do not enter any values in the gray high-lighted cells.
3. The Cost Summary auto-calculates the grand total. Please enter "Offeror Name," "Date," and "Completed by" in the yellow high-lighted cells.

Managed Services Cost Worksheet

Part IV: Enterprise Applications Managed Services ***

Instructions: Use the fields below to identify the costs associated with establishing, maintaining, and providing monthly maintenance and support as described in the RFP. For the purpose of this cost proposal, the Proposer shall provide the monthly cost of routine maintenance and support for twelve (12) months in years one, two, three, four, and five. Fill only the cells that are highlighted in yellow. All calculations are complete and locked.

Year 1		Year 2		Year 3		Year 4		Year 5	
Monthly Cost		Monthly Cost		Monthly Cost		Monthly Cost		Monthly Cost	
Months	12	Months	12	Months	12	Months	12	Months	12
Year 1 Total	\$ -	Year 2 Total	\$ -	Year 3 Total	\$ -	Year 4 Total	\$ -	Year 5 Total	\$ -

Note: The Proposer shall begin invoicing the Commission upon successful transition of the services defined herein. The Proposer's first invoice may be for a partial month based on a proration from the successful transition until the last day of the month in whole days. *(i.e 1/30th of Monthly Cost per day X Number of Days remaining in month)*

Refer to RFP IV-3 for Services

Part IV: Enterprise Applications Managed Services ***

Instructions: Use the fields below to identify the costs associated with establishing, maintaining, and providing the maintenance and support as described in the RFP. For the purpose of this cost proposal, the Proposer shall provide the cost of Transition into this agreement and the resulting services herein.

Fill only the cells that are highlighted in yellow. All calculations are complete and locked.

Transition Month	Costs to be invoiced this month	Brief Description of Activities anticipated for this Invoice Amount
Month 1 Transition Costs		
Month 2 Transition Costs		

COST SUMMARY

		All 5 Years	
Managed Services Cost	\$		-
Transition Cost	\$		-
		Total Cost	
Grand Totals	\$		-

Offeror Name:	
Date:	
Completed by:	

Instructions:

This tab must include a typical range of fully loaded hourly rates your firm would expect to charge for each of the sample position titles listed.

* This data is requested for evaluation purposes only. Awarded Proposers will be required to provide specific rates in response to individual work order requests for proposals (WORFP).

* This is not intended to be an all-inclusive list. It is both possible and probable that additional position types will be required to perform work order based application services over the duration of the contract. Additional positions, when required, will be identified within RFP and/or

* Low end rates should reflect a rate for a competent professional with two to five years of experience. High end rates should reflect the rate for a senior professional who has more than five years of experience and is capable of working in a lead capacity.

* Rates are inclusive of all vendor expenses billable to the PTC. Expenses should not be more than 10% of the rate provided.

* The not-to-exceed rate listed below will become part of the resulting contract for awarded suppliers.

Position Title <i>(Refer to Appendix U "Rate Card - Position Descriptions" for more details on this positions)</i>	Fully Loaded Range	
	Low End	Not to Exceed
Project Manager	\$	\$
Enterprise Business Solutions Technical Lead	\$	\$
GIS/BIDA Lead	\$	\$
Business Intelligence Specialist	\$	\$
Enterprise Development Specialist	\$	\$
Enterprise Development Analyst	\$	\$
Business Process Specialist	\$	\$
Programs Specialist	\$	\$
Integration Specialist	\$	\$
Senior Business Process Specialist	\$	\$
Senior Enterprise Development Analyst	\$	\$
Senior Integration Specialist	\$	\$
Systems Administrator	\$	\$
Senior Systems Administrator	\$	\$

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Issue Resolution Requirements by Business Process

Certain Commission business processes were identified as “**Critical**” to Commission business operations. If issues arise during off-hours, these incidents require immediate service ticket submission and resolution work to begin. In the matrix below, these processes requiring immediate attention are identified by the “X” in the “*Critical*” Column in this Appendix H.

Business processes identified as “**Non-Critical**,” only require service ticket submission after-hours with incident resolution commencing in the morning of the next business day. In the matrix below, these processes are identified by the “X” in the “*Non-Critical*” Column in this Appendix H.

Business Processes that are not listed in this Appendix H, are by default to be considered a “*Non-Critical*” process. Therefore, incident resolution will follow the “*Non-Critical*” process.

In addition, scheduled and/or emergency patching and/or upgrades and planned project work that may need to be supported warrant Level 1 off-hour support.

SAP

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
1.	FI/GL	Budget Creation to Close	This scenario covers budget prep for the operating budget.	<ul style="list-style-type: none"> Budget Prep Budget Execution Budgeting Close 	X	
2.	FI/GL	Budget Creation to Close	This scenario covers review and reporting transactions for budgeting.	<ul style="list-style-type: none"> Budgeting Close 		X
3.	PS	Capital Plan creation to In-year close	This scenario covers funding master data used in capital planning.	<ul style="list-style-type: none"> Capital Planning Master Data Capital Planning Transactions 		X
4.	PS	Project Planning to Close	This scenario covers the creation of an Engineering Project with a manually assigned number, structure creation and project team assignment	<ul style="list-style-type: none"> Engineering Capital Plan Project IT Capital with Operational Budget Funding (This scenario covers the creation of an IT Project with a system assigned number, structure creation and project team assignment) Facilities Project with Orders (This scenario covers the creation of a Facilities Project with a manually assigned number, structure creation and project team assignment) 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> Fleet Equipment Purchase Program (This scenario covers the creation of an annual Fleet Equipment Purchase Project with a system assigned number, using a predefined template) Legal Expense Project A (This scenario covers the creation of a Legal Expense Project with a system assigned number, using a predefined template, and project team assignment) Legal Expense Project B (The execution piece of this test includes charging time to a WBS of this type, procurement through SRM as well as Network Activities, goods / service receipts, and settlement) Miscellaneous Engineering Project for Open-End Contract Activities (This scenario covers the creation of an Engineering Project for miscellaneous Open-End work, with a system assigned number, structure creation and project team assignment) 		
5.	PM, FA (Fixed Assets)	Asset Management to Disposition	This scenario will cover the setup of all Fleet equipment. Examples are cars, dump trucks and vans.	<ul style="list-style-type: none"> Equipment Functional Locations Fleet Assignment and Reporting (This will test the Fleet Tracking Requirements. The bulk of this requires FRICE Objects and should probably only be tested in IT2) Asset Master Data (This covers the PTC Asset Classes 2000-Improvements, 3000-Vehicles and Equipment, 4000-Office and Electronic Equipment) Retire an Asset (This covers the PTC Asset Classes 2000-Improvements, 3000-Vehicles and Equipment, 4000-Office and Electronic Equipment) Assets Inquiries and Reports (This covers the PTC Asset Classes 2000-Improvements, 3000-Vehicles and Equipment, 4000-Office and Electronic Equipment) 		X
6.	PM, LAM, IM	Maintenance Plan to Execution	This scenario covers Roadway Preventive Maintenance plans that are executed with the same pattern.	<ul style="list-style-type: none"> Single Cycle Maintenance Plan Strategy Maintenance Plan (This scenario covers Facility Preventive Maintenance plans that are executed with multiple patterns) Multiple counter Maintenance Plan with Utilization (This scenario covers Preventive Maintenance plans that are triggered based on entries against multiple counters) 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
7.	PM	Maintenance Request to Close	This scenario covers Order Type PM02, which includes any maintenance request from outside maintenance that requires an approval process	<ul style="list-style-type: none"> External Maintenance Request to Completion Internal Maintenance Request to Completion with Approvals (This scenario covers Order Type PM01 - Roadway) Internal Maintenance Request to Completion, no Approval Process (This scenario covers Order Type PM03 - Equipment) 	X	
8.	SMP Work Manager	Work Order Processing	When work is given to Maintenance and FEMO workers, they are able to perform this work remotely and track using this mobile application on the tablet.	<ul style="list-style-type: none"> Sync tablet local data to ECC database Work Order Management (work orders and notifications) Confirmation entry Time Sheet entry and approval Equipment Measurement Document entry Functional Location and Equipment Search Document upload / download 	X	
9.	MM	Demand Planning and Inventory Management	This scenario covers the manual creation of a STR, creation of the STO from the STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note	<ul style="list-style-type: none"> STO Processing MRP Processing (this scenario covers the MRP run for a District in batch, batch creation of the STOs from MRP generated STRs, batch creation of STO Delivery Notes, manually entering the Picked quantities/Post Goods Issue) Physical Inventory (this scenario covers the Creation of the Physical Invty Docs, printing the Docs, entering the Count, displaying the Count, Analyze the Results, posting the Count, displaying the Stock Status for the Plant/Storage location) Inventory Management (this scenario covers the Goods Issue of material(s) to a Cost Center. Movement Type 201) 		X
10.	SRM, MM, FI	Requisition to Payment	This covers Account Group 1000 and OTVD - PO Vendors	<ul style="list-style-type: none"> Non-Material Stock Material Non-Stock Material Services Contracts Multiple Shopping Carts to One Bid Invitation MRP Requisition 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> FI_AP_Payables Processes (This scenario covers transactions used with Purchase Order Invoices) 		
11.	FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT03 - Employee Reimbursement	<ul style="list-style-type: none"> Employee Reimbursements 		X
12.	FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT06 - Non-PO Vendors (vendor does not exist)	<ul style="list-style-type: none"> Process Sensitive Invoices 		X
13.	FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT06 - Non-PO Vendors (vendors exist)	<ul style="list-style-type: none"> Process Sensitive Invoices 		X
14.	FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT06 - Non-PO Vendors (Re-issuing payment for destroyed check during printing)	<ul style="list-style-type: none"> Process Sensitive Invoices 		X
15.	FI	Purchase to payment (non-PO items, SRM)	This covers All Account groups except 1000, OTVD, PF03, PT05	<ul style="list-style-type: none"> Process Non-PO and Non-Sensitive Invoices Purchase to payment (non-PO items, SRM) (This covers all AP Account Groups - disbursements from AP) Purchase to payment (non-PO items, SRM) (Process to Generate 1099 Listings and Forms) Purchase to payment (non-PO items, SRM) (This Covers Queries and Reports for Vendors - All Account Groups) FI_AP_Payables Process (This covers vendor account group PT05) 	X	
16.	PS, PM, FA	Revenue Generation to Payment Receipt	This scenario covers the creation of a Facilities Project with a manually assigned number, structure creation and project team assignment	<ul style="list-style-type: none"> Damage Claim 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
17.	PS, FI	Revenue Generation to Payment Receipt	This scenario covers Customer Account Group (COP One-time customers)	<ul style="list-style-type: none"> Certificate of Passage 		X
18.	FI	Revenue Generation to Payment Receipt	This scenario covers Process_ETC_Toll_host _ Interagency_Account_Group PT09	<ul style="list-style-type: none"> ETC Interagency/Tollhost 		X
19.	FI	Revenue Generation to Payment Receipt (incl. Property damage to collection)	This scenario covers transactions used to Process one-time Customers - Disabled Vehicles Acct Grp PT16	<ul style="list-style-type: none"> Revenue and Receivable Processes Retiree Billing (This scenario covers Customer Account Group PT15-Retiree benefit invoicing) 	X	
20.	FM	Fund Inception to close	This scenario covers fund master data transactions.	<ul style="list-style-type: none"> FM Master Data FM Budgeting (This scenario covers FM budgeting transactions) Fund derivation rules master data Fund Budgets Functional area master data Fund Budget Reports 		X
21.	N/A	Grant Inception to close [Set up, but not used]	This scenario covers transactions used in grants management.	<ul style="list-style-type: none"> Grant Inception to close 		X
22.	FI, TR	Cash Planning to Investments	This scenario will cover the creating, changing, and displaying of a business partner.	<ul style="list-style-type: none"> Master Data Electronic Bank Statements (This scenario covers kicking off the XI process to get the EBS) Lockboxes (This scenario covers the downloading and loading of the lockboxes to a secure site) Cash Management (This scenario covers the maintaining of memo records) [not in SAP] 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Investments - Security Transactions (This scenario covers the purchasing of fixed interest securities. This corresponds to product type ZIF) • Investments - Money Market Transactions (This scenario covers the purchasing of commercial paper. This is product type ZCP) • Derivatives Transactions • Investments/Derivatives Daily-Sundries Transactions (This scenario covers the processing of the US Bank file) • Investment Security Sales (This scenario covers the selling of fixed interest securities. This corresponds to product type ZIF) • Investments/Derivatives Month-End Processing (This scenario covers the entering of interest rates and prices in order to calculate interests and valuation) 		
23.	TR	Cash Planning to Investments	This scenario covers the as needed month-end processing. For example, when an error is made and need to reverse the entries.	<ul style="list-style-type: none"> • Investments/Derivatives Reporting/Money Market Position Reporting (This scenario covers the running of the various reports for money market transaction reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Money Market Revenue Analysis Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Money Market Accounting Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Money Market Master Data Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Position Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Position Trend Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Revenue Analysis Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Investments/Derivatives Reporting/Derivatives Accounting Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Master Data Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Security Position Information Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Transaction Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Position Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Revenue Analysis Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Accounting Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Master Data Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) 		
24.	N/A	Debt Management [not in SAP; 2 spreadsheets only]	This scenario will cover the creating, changing, and displaying of a business partner.	<ul style="list-style-type: none"> • Master Data • Debt Transactions (This scenario will cover the issuing of new debt with a fixed interest rate at a premium. This is product type DIF) • Daily-Sundries Trxs (This scenario will cover the processing the debt management transaction is a collective mode versus an individual mode as depicted in sub-process "02 Debt Transactions") • Month-end (This scenario covers the entering of reference interest rates manually. The reference interest rates are used to calculate the interest for debt with a variable interest (product type DIV)) 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Month-end (This scenario covers the as needed month-end processing for debt management. For example, when an error is made and need to reverse the entries) • Redemption-Defeasing (This scenario covers the redemption or defeasing of a bond before the due date) • Reporting (This scenario will cover the running of the various reports for position information for Debt. The reports can be run in any sequence) 		
25.	FI, MM	Month End Processing	Scenario not provided	<ul style="list-style-type: none"> • Process Month End (Close Period for Material Master Records; Check Open and Closed Periods for MM; Review Final Goods Receipt; Run MRP) • Process Month End (Reference Interest Rates Enter Net Present Value Reference Money market Enterprise for Derivatives and Securities Reference Interest Rates for Derivatives and Securities Load Reference Interest Rates from a Spreadsheet run accrual Interest for Money Market and Derivatives Execute Valuation of Money Market and Securities Run accrual/deferral of Interest for Security Instruments Update Plan Record for Variable Interest Rate Bonds Automatic Debit Position) • Process Month End (Reference Interest Rates Enter Net Present Value Reference Money market Enterprise for Derivatives and Securities Reference Interest Rates for Derivatives and Securities Load Reference Interest Rates from a Spreadsheet run accrual Interest for Money Market and Derivatives Execute Valuation of Money Market and Securities Run accrual/deferral of Interest for Security Instruments Update Plan Record for Variable Interest Rate Bonds Automatic Debit Position) • Process Month End (Close prior posting period and open new period in FI Post Pcards Transactions to FI Review and Post Park Documents Review Split Processor Clearing Account) 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				Post Accrual Postings GR/IR Clearing Finalize prepaid Accruals Final Parked Documents Mass reversal of documents Create posting document from recurring entries Review GL Account Balances Review GL Account Line Items Document change Reverse document Enter GL Document Add / Change GL Account Close prior posting period and open new period in ALL AREAS (remaining) Enter GL Document) <ul style="list-style-type: none"> • Process Month End (Manual Billings; Close prior posting period and open new period in AR) • Process Month End (Finalize Park Documents Close prior posting period and open new period in AP Final Payment Run AP Accruals) • Process Month End (Finalize Manual Asset Acquisitions Review Incomplete Assets Review Unposted Assets Delete Assets without posting APC Values Execute depreciation run check Depreciation Reconcile FA and GL Post charges directly to an asset) • Process Month End (Settle an individual project Settle multiple projects Settle work order line items individually Settle multiple work orders Define allocations for WBS settlements [FI, PS] Change work order [PM] 		

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				Allocations for assessments Allocations for distributions) <ul style="list-style-type: none"> • Process Month End (Close and Open CO Periods; Define period reposting; Define assessment) • Process Month End (Document change Reverse document Enter GL Document Add / Change GL Account Close prior posting period and open new period in ALL AREAS (remaining) Enter GL Document Reference Interest Rates Enter Net Present Value Reference Money market Enterprise for Derivatives and Securities Reference Interest Rates for Derivatives and Securities Load Reference Interest Rates from a Spreadsheet run accrual Interest for Money Market and Derivatives Execute Valuation of Money Market and Securities Run accrual/deferral of Interest for Security Instruments Update Plan Record for Variable Interest Rate Bonds Automatic Debit Position Close Period for Material Master Records Check Open and Closed Periods for MM Review Final goods Receipt Run MRP) 		
26.	MM, FI	Year End Processing	Scenario not provided	<ul style="list-style-type: none"> • Calendar Year End • Calendar Year End Display Vendor Master Vendor Balances Vendor Balances Change Document Line Item Reverse Document Postcard Printout of 1099 Vendor Addresses for Tax Code Request 1099 Listings S_PL0_09000314 - 1099-Misc 1042 Reporting (USA)) 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Calendar Year End (Display Vendor Master Vendor Balances Vendor Balances Change Document Line Item Reverse Document Postcard Printout of 1099 Vendor Addresses for Tax Code Request 1099 Listings S_PLO_09000314 - 1099-Misc 1042 Reporting (USA)) • Calendar Year End (Display Vendor Master Vendor Balances Vendor Balances Change Document Line Item Reverse Document Postcard Printout of 1099 Vendor Addresses for Tax Code Request 1099 Listings S_PLO_09000314 - 1099-Misc 1042 Reporting (USA) 941 W2 Reporting) • Process Year End (Balance Carried Forward) • Process Year End (Close Period for Material Master Records) • Process Year End (Commitment Carry Forward Commitment Carried Forward Fund Balance Carried Forward Open and Close Periods Open and Close Periods Close Commitment Items Budget reconstruct Reconcile FI to FM) • Process Year End (Reverse accrual / deferral documents Balance Carried Forward (NEW GL) Run Train Balance Reports Open and Close Periods) 		

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Process Year End (Close prior posting period and open new period in AR; Carry Forward Receivables/Payable; Balance Carried Forward AR) • Process Year End (Close prior posting period and open new period in AP; Balance Carried Forward AP) • Process Year End (Execute depreciation run Display log Post charges directly to an asset Post charges directly to an asset Recalculate Asset Values Incomplete Assets - Report RAUNVA00 Unposted Assets - Report RAANLA01 Delete Assets Insurance Index Period 12 Depreciation Reconcile FI to AA Ledger Year End Closing Asset Accounting Asset fiscal year change Undo Asset Close) • Process Year End (Settle an individual project Settle multiple projects Settle project line items individually Settle work order line items individually Settle multiple work orders Define period reposting Define assessment Define distribution Define allocations for WBS settlements Change work order Allocations for assessments Allocations for distributions Commitment Carry Forward Commitment Carry Forward Budget Carried forward) • Process Year End (Settle an individual project Settle multiple projects) 		

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				Settle project line items individually Settle work order line items individually Settle multiple work orders Define period reposting Define assessment Define distribution Define allocations for WBS settlements Change work order Allocations for assessments Allocations for distributions Commitment Carry Forward Commitment Carry Forward Budget Carried forward Execute depreciation run Display log Post charges directly to an asset Post charges directly to an asset Recalculate Asset Values Incomplete Assets - Report RAUNVA00 Unposted Assets - Report RAANLA01 Delete Assets Insurance Index Period 12 Depreciation Reconcile FI to AA Ledger Year End Closing Asset Accounting Asset fiscal year change Undo Asset Close Close prior posting period and open new period in AP Balance Carried Forward AP Close prior posting period and open new period in AR Carry Forward Receivables/Payable Balance Carried Forward AR Reverse accrual / deferral documents Balance Carried Forward (NEW GL) Commitment Carry Forward Commitment Carried Forward Fund Balance Carried Forward		

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				Open and Close Periods Open and Close Periods Close Commitment Items Budget reconstruct Reconcile FI to FM Run Train Balance Reports Open and Close Periods Close Period for Material Master Records Balance Carried Forward)		
27.	, PY, FI	Time Entry to Payroll	Scenario not provided	<ul style="list-style-type: none"> • Run payroll process • Off-cycle payroll process • Payroll reporting • Payment process • Payroll result posting process • Third Party (3PR) posting process • Payroll maintenance tools 	X	
28.	CATS, TM,	Time Entry	Scenario not provided	<ul style="list-style-type: none"> • Time Entry Process 		X
29.	CATS, TM,	Time Entry	Scenario not provided	<ul style="list-style-type: none"> • Time Transfer Process • Time Evaluation Process 	X	
30.	TEM (Training & Events Mgt.)	Training plan to completion	Scenario not provided	<ul style="list-style-type: none"> • Maintain Business Event Types • Maintain Business Events w/o ResourcesMaintain Training Resources • Maintain Business Event w/ Resource • Maintain Attendance Data and Processes 		X
31.	OM	Organization Management	Scenario not provided	<ul style="list-style-type: none"> • Maintain Organizational Objects and Relationships • Maintain Organizational Data and Processes • 		X
32.	HCM	Employee Lifecycle Management	Scenario not provided	<ul style="list-style-type: none"> • Maintain Employee Data and Processes • Year-End Legal Changes • EEO Complaints and ADA Accommodations 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> Benefit Plan Rates and Limits Update Benefit Open Enrollment Other Vendor Interfaces Compensation Management Employee Appraisals 		
33.	HCM	Employee Lifecycle Management	Scenario not provided	<ul style="list-style-type: none"> Benefit Interfaces 	X	
34.	MM/SRM	Demand Planning and Inventory Management (STO Processing)		<ul style="list-style-type: none"> Stock Transport Order Processing/Manual Stock Transport Execution (This scenario covers the manual creation of a STR, creation of the STO from the STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery Note) MRP Processing: Nightly MRP Run, Post GI, Receive (This scenario covers the MRP run for a District in batch, batch creation of the STOs from MRP generated STRs, batch creation of STO Delivery Notes, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) MRP Processing: Adhoc MRP Run, Manual Replenishment (This scenario covers the MRP run for a material, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) MRP Processing: SRM - MRP Run (This scenario covers the MRP run for a Plant that plans storage locations separately, the processing of the transfer reservations, and receiving the stock in at the destination storage location) MRP Processing: MRP Run, Plan Stor Loc Separately (This scenario covers the creation of a Work Order, the MRP run for a material, firming of the PR to go to SRM, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, receiving the Outbound Delivery for the STO using the Delivery Note, and doing the Goods Issue to a Work Order) 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Physical Inventory: Planned Physical Inventory (This scenario covers the Creation of the Physical Invty Docs, printing the Docs, entering the Count, displaying the Count, Analyze the Results, posting the Count, displaying the Stock Status for the Plant/Storage location) • Physical Inventory: Recount for Phy Inv Doc (This scenario overs the initiation of a recount, printing the new Invty Docs, entering the Count, Analyze the results, posting the Count) • Inventory Management: Goods Issue - Cost Center (This Scenario covers the Goods Issue of material(s) to a Cost Center. Movement Type 201) • Inventory Management: Goods Issue - Single Reservation (This Scenario covers the creation of a Reservation and the immediate Goods Issue to a Cost center (ad hoc reservation)) • Inventory Management: Goods Issue - Reservation Pick List (This Scenario covers the Creation of a Reservation and the Goods Issue of material(s) for the Reservation. The Movement Type depends on what cost object the reservation was charged to. Normally, Reservations are charged to a Cost Center) • Inventory Management: Transfer Posting (This Scenario covers the transfer of Material(s) from one Plane/Storage Location to another Plant/Storage Location. Movement Types 303 and 305) • Inventory Management: Receive material in stock w/o PO • Inventory Management: EIS Data Comparison 		
35.	MM/SRM	Demand Planning and Inventory Management (MRP Processing)		<ul style="list-style-type: none"> • MRP Processing: Nightly MRP run, Post GI, Receive (This Scenario covers the MRP run for a District in batch, batch creation of the STOs from MRP generated STRs, batch creation of STO Delivery Notes, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) • MRP Processing: Ad hoc MRP run, manual replenishment (This Scenario covers the MRP run for a material, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) • MRP Processing: MRP run, plan stor loc separately (This Scenario covers the MRP run for a Plant that plans storage locations separately, the processing of 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<p>the transfer reservations, and receiving the stock in at the destination storage location)</p> <ul style="list-style-type: none"> • MRP Processing: SRM - MRP run (This Scenario covers the creation of a Work Order, the MRP run for a material, firming of the PR to go to SRM, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, receiving the Outbound Delivery for the STO using the Delivery Note, and doing the Goods Issue to a Work Order) 		
36.	MM/SRM	MRP Processing		<ul style="list-style-type: none"> • Plant MRP run to Move Materials Between Storage Locations: This business process describes the steps involved in the running MRP manually to move material between storage locations. It includes the creation of transfer reservations and the inventory movements necessary to fulfill the reservations. This is used on a daily basis by fare collection to move material from one fare collection inventory location to another. This results in a direct update of the fare collection receiving locations inventory. • Nightly MRP Run and Processing of Automatic Stock Transport Requisitions: This business process describes the steps involved in the MRP processing run that is run automatically each night, review of MRP run results, the subsequent processing of the stock transport requisitions into stock transport orders, and the inventory movements necessary to fulfill the stock transport orders. 		X
37.	MM	Demand Planning and Inventory Management (Physical Inventory)		<ul style="list-style-type: none"> • Physical Inventory: Planned Physical Inventory (This Scenario covers the Creation of the Physical Invty Docs, printing the Docs, entering the Count, displaying the Count, Analyze the Results, posting the Count, displaying the Stock Status for the Plant/Storage location) 		X
38.	MM/SRM	Demand Planning and Inventory Management (Inventory Management)		<ul style="list-style-type: none"> • Inventory Management: Goods Issue - Cost Center (This Scenario covers the Goods Issue of material(s) to a Cost Center. Movement Type 201) • Inventory Management: Goods Issue - Single Reservation (This Scenario covers the creation of a Reservation and the immediate Goods Issue to a Cost center (ad hoc reservation)) • Inventory Management: Goods Issue - Reservation Pick List (This Scenario covers the Creation of a Reservation and the Goods Issue of material(s) for the 		

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<p>Reservation. The Movement Type depends on what cost object the reservation was charged to. Normally, Reservations are charged to a Cost Center)</p> <ul style="list-style-type: none"> • Inventory Management: Transfer Posting (This Scenario covers the transfer of Material(s) from one Plant/Storage Location to another Plant/Storage Location. Movement Types 303 and 305) • Inventory Management: EIS Data Comparison 		
39.	MM/SRM	Inventory Management		<ul style="list-style-type: none"> • Over-the-Counter Goods Issue: This business process describes the steps to fulfill “over-the-counter” requests for materials. It includes the steps to determine whether or not there is sufficient inventory to fulfill the request, the steps that can be taken if there is not sufficient inventory and the processing of the goods issue transaction in the SAP system. • Manual Reservation Process - Individual Processing: This business process describes the steps involved in the creation and processing of manual material reservations. Manual material reservations are a request to the storeroom to reserve material available for issue out of inventory at a future date. At the PTC, this includes issuing out of inventory and expensing to a cost object (such as cost center or WBS element). The purpose of a reservation is to ensure that material will be available when it is needed. In this process, the inventory or storeroom clerk completes the goods issue for each reservation individually. This process is used by Fare Collection and Administration. • Manual Reservation Process - Collective Processing: This business process describes the steps involved in the creation and collective processing of manual material reservations. Manual material reservations are a request to the storeroom to reserve material available for issue out of inventory at a future date. The purpose of a reservation is to ensure that material will be available when it is needed. At the PTC, this includes issuing out of inventory and expensing to a cost object (such as cost center or WBS element.) In this process, the inventory or storeroom clerk generates the pick list and executes the goods issues for all of the reserved materials on the pick list in one step. This process is used by Fare Collection and Administration. • Transfer Posting Process: MRP Controller Business Process Description: This business process describes the steps involved in the manual movement of materials between storage locations. This “on-request” process is sometimes used when the material is inventory but not at the location where it is needed 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<p>and there is an immediate need for the material. This process may also be used in Central Office to correct misplaced inventory.</p> <p>In Maintenance, this process may be used to move materials within a District:</p> <ol style="list-style-type: none"> 1. from a District storage location to a Section storage location 2. from one Section to another within a District <p>Or between storage locations in different Districts:</p> <ol style="list-style-type: none"> 1. from one District storage location to another District storage location 2. from a one Section storage location in one District to a Section storage location in another District <p>This process may be completed in the SAP system “after the fact” in emergency situations.</p>		
40.	MM/SRM	Generate, Approve and Evaluate Purchasing Requirements		<ul style="list-style-type: none"> • Generate and Evaluate Purchasing Requirements: This process describes the steps to create, review, approve and evaluate purchasing requirements. Requirements are generated as a result of direct requests from employees entered as Shopping Carts in SRM; as a result of the MRP process to replenish stock or procure material for executing an order; or are generated as a result of a project need. • Approve Shopping Cart for Cost Center: This process illustrates the steps in the approval process workflow for a Shopping Cart that is has a cost assignment to a cost center. • Approve Shopping Cart for Order: This process illustrates the steps in the approval process workflow for a Shopping Cart that is has a cost assignment to a work order. • Approve Shopping Cart for WBS Element/Network: This process illustrates the steps in the approval process workflow for a Shopping Cart that is has a cost assignment to a work order. 	X	
41.	MM/SRM	Fulfill Purchasing Requirements		<ul style="list-style-type: none"> • Satisfy Purchasing Requirements via Release from an Existing Contract: This process illustrates the steps involved in creating a release (purchase order) from a contract to fulfill one or more purchasing requirements. A prerequisite to this process is that a valid, released contract for the item(s) already exists in the system. • Satisfy Purchasing Requirements via Piggy Back Purchase Order: This process illustrates the steps to be followed to purchase materials or services by way of piggy-backing on a prior purchase. In order to qualify for piggy- 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<p>backing, the PTC must have bid the item(s) or service(s) within one year and the value of the purchase order must be \$3000 or less.</p> <ul style="list-style-type: none"> • Satisfy Purchasing Requirements via Phone/Email Quote Bid: This process illustrates the steps in the process of creating a purchase order via phone or email quote bid. Verbal quotations may be solicited for purchases of an estimated value not exceeding three thousand dollars. A Buyer may select for solicitation two or more qualified vendors. A minimum of two quotations should be maintained before any purchase order is issued. • Satisfy Purchasing Requirements via Bid: This process illustrates the steps in the process of creating a purchase order via formal bid. It details the steps to create a bid invitation, communicate the big opportunity to prospective vendors, receive and enter vendor bids into the SAP SRM system, compare and award the contract or purchase order and create the contract or purchase order in the SAP SRM system. • Satisfy Purchasing Requirements via P-Card: This process describes the steps involved in using a Procurement Card (P-Card) to purchase goods or services. P-Cards are used to purchase items that are needed immediately to meet PTC business needs. P-Card use must be pre-approved by the P-Card Holder’s supervisor prior to its use. • Approve Contracts and Purchase Orders: This process illustrates the steps in the approval process workflow for a contract or purchase order. • Finalize and Print Contracts and Purchase Orders Process: This process describes the steps that are completed after a contract or purchase order has been approved. • After-the-Fact Purchase Order Process: This process details the steps to create a purchase order after the goods have been purchased. This process is used to purchase critical non-stock items such as fuels, bituminous, and items from the office supplies open order. A contract MUST exist in the system in order to use this process. • Satisfy Purchasing Requirements via Sole Source Process: This process illustrates the steps involved in creating a sole source purchase order. 		
42.	MM/SRM	Fulfill Purchasing Requirements		<ul style="list-style-type: none"> • Emergency Purchase Order Process: This process describes the steps to confirm an emergency purchase order. In some cases, there is a need to 	X	

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				purchase materials or services to meet an immediate need such as the result of an emergency situation.		
43.	MM/SRM	Receive Goods and Services		<ul style="list-style-type: none"> • Process and Confirm Goods Receipts: This process documents the steps in receiving externally purchased goods or services. • Return Goods to Vendor: This process describes the steps to return damaged, incorrect or surplus goods to a vendor. 		X
44.	MM/SRM	Change Contracts and Purchase Orders		<ul style="list-style-type: none"> • Change Contracts and Purchase Orders: This process illustrates the steps necessary to make changes to a contract or to a purchase order after it has been approved and released. This process applies only to changes that impact the value or terms of the contract or purchase order. • RFP and CON Purchasing Organization Approve Changes to Contracts and Purchase Orders: This process illustrates the steps in the RFP and CON Purchasing Organization approval process workflow for a contract or purchase order that has been changed. This process applies only to changes that impact the value or terms of the contract or purchase order. • PUR Purchasing Organization Approve Changes to Contracts and Purchase Orders: This process illustrates the steps in the PUR Purchasing Organization approval process workflow for a contract or purchase order that has been changed. This process applies only to changes that impact the value or terms of the contract or purchase order. 		X
45.	MM/SRM, FI	Process Invoices		<ul style="list-style-type: none"> • Receive and Enter Invoices: This process defines the steps in receiving, reviewing, scanning and entering vendor invoices into SAP. • Invoice Verification and Payment Process: This process documents the steps to match vendor invoices to purchase orders (2 Way Match) and goods receipts (3 Way Match) and to generate payments to vendors. • Research Invoice Issues Process: ensuring that the goods receipt (confirmation) information has been correctly entered into SRM. • Resolve Invoice Matching Error Process: This process details the steps to resolve invoice matching errors. Once we have determined that we have received the goods and entered the goods receipt (if required) through the Research Invoice Issues Process (8.5.3), the Buyer needs to address the remaining reasons why an invoice may be blocked for payment. 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> • Invoice Quantity is Greater than Purchase Order Quantity Issue Resolution Process: In this issue resolution scenario the Invoice Quantity is greater than Purchase Order Quantity. Purchase Order Quantity and Goods Receipt Quantity Match. • Invoice Quantity Greater than Goods Receipt Quantity Issue Resolution Process: In this issue resolution scenario the Invoice Quantity is greater than Goods Receipt Quantity. Purchase Order Quantity and Invoice Quantity Match. • Invoice Quantity Less Than Goods Receipt Quantity Issue Resolution Process: In this issue resolution scenario the Invoice Quantity is less than Goods Receipt Quantity. The Purchase Order Quantity and Goods Receipt Quantity match. • P-Card Invoice Processing: This process describes the steps in receiving, reconciling and paying for P-Card purchases. • Resolve P-Card Invoice Matching Errors Process: This process includes the steps to research P-Card invoice matching errors. It focuses on reviewing the information on the P-Card shopping cart and the corresponding P-Card Purchase Order and correcting any discrepancies. 		
46.	MM/SRM	Construction and RFP Purchasing Processes		<ul style="list-style-type: none"> • Initiate Engineering RFP Contracts and Contract Changes Process: This process illustrates the steps in the process of creating or changing an Engineering contract. Engineering contract requirements come from the Capital Plan. Engineering contract requirements that are not on the Capital Plan may also arise. It details the steps necessary to solicit the necessary approvals to initiate the process, develop the RFP, evaluate vendor submissions, facilitate review by the Technical Review Committee, generate recommendations, solicit technical proposal if required and secure the necessary approvals. • Initiate Non-Engineering RFP Contracts and Contract Changes: This process illustrates the steps in the process of creating or changing an RFP (Request for Proposal) based contract. It details the steps necessary to solicit the necessary approvals to initiate the process, form the evaluation committee, develop the RFP, evaluate vendor submissions, generate recommendations and secure the necessary approvals. 		X

Row	SAP Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
				<ul style="list-style-type: none"> Create and Change RFP Based Contracts: This process illustrates the steps necessary to change contracts that originated with an RFP once the change has been approved. It details the steps to prepare the legal contract documents, facilitate the execution of the legal contract documents, make the contract changes in the SAP SRM system and post the updated contract documents to comply with applicable Right-to-Know laws. 		

AgileAssets – Sign Manager, PAMS and System modules

Row	AgileAssets Main Business Process	Description	Critical	Non-Critical
1.	Signs – Inventory Management	Adding, updating, deleting sign data and associated attachments for same.	X	
2.	Signs – Work Request processing	Create, update and send to / receive from SAP Notification / Work Order information related to the work request.	X	
3.	Signs – Reporting	The ability to run reports against sign inventory / work requests		X
4.	Signs – Data Import	The ability to import sign records and attachments for LiDAR data collection efforts.	X	
5.	Signs – Interface processing	Sign Manager to SAP interface jobs (A, B, C and D)	X	
6.	PAMS – Construction History & Pavement Structure	Track Construction related projects and graph / report on the results of same projects	X	
7.	PAMS – Work Request processing	Create, update and send to / receive from SAP Notification / Work Order information related to the work request.	X	
8.	PAMS – Asset tracking (gates, roadway classification)	Ability to track assets along the roadway (various screens)		X
9.	PAMS – Data tracking (PCR, Skid, Condition, etc)	Ability to track historical data on roadway conditions & traffic		X
10.	PAMS – Data Import	The ability to import roadway condition data, contracts, etc.	X	
11.	PAMS – Interface Processing	PAMS to SAP interface jobs (B, C, D, E and F)	X	
12.	PAMS – Reporting	The ability to run reports against roadway data / work requests		X
13.	System – Security management	Ability to add, update and delete users of the system, assign roles, etc.		X
14.	System – General	Handle system settings, default values, job creation & scheduling	X	

Fuel System

Row	Fuel System Main Business Process	Description	Critical	Non-Critical
1.	Gasboy Fuel Islander Pedestal	System allows Turnpike employees to access fuel at the Maintenance sheds	X	
2.	EKOS Fuel Management system (web app)	Allows management of key fobs, assigned vehicles, and maintains backoffice connection to the islander pedestals	X	
3.	WEX transactions (Wright Express)	Transactions using a WEX card at any accepting gas station feed the EKOS system	X	
4.	EKOS to SAP data feed	Daily transaction file sending gallons pumped, odometer readings, etc from EKOS to SAP Plant Maintenance system	X	

PONTIS – Bridge Asset Management application

Row	PONTIS Main Business Process	Description	Critical	Non-Critical
1.	PONTIS to SAP Interface processing	PONTIS to SAP Interfaces (A & B (Daily) and C (Monthly))		X

ServiceNow

Row	ServiceNow Main Business Process	Description	Critical	Non-Critical
1.	Incident Management Process	The ability to submit Incident service tickets	X	
2.	Catalog Management	The listing of services being provided	X	
3.	Request Management	The ability to request actions and equipment	X	
4.	Dynamic Message Sign	System to update Road Signs along the Turnpike. Impacts Public Safety.	X	
5.	Change Management	Managing system changes		X
6.	Problem Management	Managing Problems		X
7.	Knowledge Management	Managing and Accessing Knowledge Articles		X

Row	ServiceNow Main Business Process	Description	Critical	Non-Critical
8.	Project Management	Managing Projects		X

MS Dynamics

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
1.	Property Damage Claims Management System (PDCMS)	This scenario covers the seven distinct stages of the PDCMS process.	<p>Create Incident: Create Incident Description</p> <p>Create Claim:</p> <ul style="list-style-type: none"> • Input: Claim information (WBS Number, Claim Type, Owner, Review Date, etc.); • Link documents and artifacts to the claim record or upload them to OnBase; <p>Damage claim created in SAP.</p> <p>Complete Repair:</p> <ul style="list-style-type: none"> • As Incident damage is repaired, work items are logged against the DC in SAP by the appropriate personnel; • The Repairs Stage will provide a view of all logged work elements in SAP for the DC; • PD Staff will be able to review repair activities and charges; <p>When the EU is satisfied that all repairs are completed and realistic activities and replacement charges for the damage have been recorded in SAP, they will enter the TECO Date field to move the Claim to the Invoicing Stage.</p> <p>Invoice:</p> <ul style="list-style-type: none"> • Accounting will be notified that a claim is ready to be invoiced when repairs are completed and recorded in SAP, PD Staff have input a TECO date on the Claim, and 60 days from the Incident Date has elapsed; 		X

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
			<ul style="list-style-type: none"> • Accounting Staff will access SAP and export repair work element details to an Excel spreadsheet; • Accounting Staff will utilize the exported data to create a Draft Summary Invoice; Upon completion of the Draft Summary Invoice, Accounting will attach it and Repair Details spreadsheet to the PDCMS claim; • When this is complete, Accounting Staff will select the Summary Attached check box to move the Claim to Accounting Supervisor review; • The Accounting Supervisor utilizes the attached Draft Summary Invoice and attachments to input the Invoice into SAP; • A Final Invoice will be created from SAP and attached to the Claim. <p>The Accounting Supervisor (approver) will select the Invoice Attached check box to move the Claim to the Review Stage (PD Claims Supervisor Review).</p> <p>Review Final Invoice:</p> <ul style="list-style-type: none"> • PD Staff Supervisor will be notified that a Final Invoice is ready for review. In the Review Stage, the EU will see all artifacts that have been uploaded to OnBase and continue to add further documents to the repository (i.e. Cover Letter(s), Final Invoice package). <p>After final review is complete and all applicable documentation uploaded to OnBase, the PD Staff Supervisor will enter the Invoice Sent Date to move the Claim to the Payments Stage.</p> <p>View Payment:</p> <p>In the Payments Stage, the EU will be able to view payment information recorded in SAP.</p> <p>Record Final Status of Claim:</p> <ul style="list-style-type: none"> • In the Resolution Stage, the final status of the claim is recorded. 		

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
			PD Staff will indicate whether the claim has been Paid in Full, is In Legal, the License [has been] Suspended, is in Negotiated Settlement, referred to Office of Attorney General, or deemed Uncollectable.		
2.	Property Damage Claim - Creation to Adjudication (Closure)	This scenario covers all stages of the lifecycle for a Property Damage Claim, which are created and managed as Case records	<p>Create Record:</p> <ul style="list-style-type: none"> • Create new incident case record with all relevant initial information and save the case. Convert incident case to claim case. <p>Create children incident cases and assign to parent case record (if more than 1 incident exists per claim).</p> <p>Repair:</p> <ul style="list-style-type: none"> • Create Responsible Party records (as necessary). • Send claim notification letter to responsible parties. • Use the Notes field to enter any relevant information or correspondence. • Coordinate repairs with the SAP WBS record. Enter date repair is completed (TECO). <p>Move case to the Invoicing stage when repairs complete.</p> <p>Invoice:</p> <ul style="list-style-type: none"> • Accounting staff are notified that claim is ready for invoice. • Accounting staff access SAP to obtain all information needed to create the invoice. • Invoice letter is created by Accounting and attached in the Notes field. <p>Case is moved to Review stage when Final invoice is ready for review by Claims administrator.</p> <p>Review:</p> <ul style="list-style-type: none"> • Claim Supervisor is notified that a Final Invoice is ready for review, will review all claim artifacts to date, will add further 		X

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
			<p>documents to the OnBase (Cover Letter(s), Final Invoice Letter).</p> <p>Final Invoice is mailed to responsible party.</p> <p>Indicate Claim Status:</p> <ul style="list-style-type: none"> • Claims administrator indicates adjudication status of the claim (e.g. Paid in Full, In Legal review, Uncollectable, etc.). <p>Once the claim is Adjudicated, the Case record status is changed to Inactive.</p>		
3.	Card Management/Badge ID creation to destruction of card	<p>This scenario covers from the initial card application to the final return and destruction of the card.</p> <p>NOTE: There are several different types of cards, including employee ID, summer employee, tour card, non-revenue card, special revenue card, maintenance card. This impacts public and employee safety if card cannot be deactivated in a timely manner.</p>	<p>Create New Application Record:</p> <ul style="list-style-type: none"> • The Card application is sent to the Access Coordinator, typically emailed to the cardkey@paturnpike.com email address. <p>The Access Coordinator logs into Dynamics, selects the Application entity, and creates a new Application record for the card request.</p> <p>Approve Application:</p> <ul style="list-style-type: none"> • The Access Coordinator approves the application record that was just created. <p>The Card status is set to PRINTQ and is ready to be printed.</p> <p>Alt Flow:</p> <ul style="list-style-type: none"> • If PTC Card Group (e.g. card type) equals “Employees,” then employee photo is attached to the card record prior to printing. <p>The Access Coordinator prints the card and sends card along with a copy of the original application to the requesting person.</p> <p>Alt Flow:</p> <p>If the card to be created is Non-Revenue or Special Revenue, an Account record is created for the requesting organization prior to the creating of the card application and card.</p>	X	

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
			<p>Alt Flow: If the card is worn and needs to be replaced, the card is returned to Access Coordinator, who reprints and reissues the same card number.</p> <p>Alt Flow:</p> <ul style="list-style-type: none"> When an employee is terminated or retired, the employee ID card (and tour card if applicable) is returned to the Access Coordinator, and the card status is updated to Returned. <p>The employee's corresponding SAP Object on Loan record for that card number is updated to denote the date the card was returned.</p>		
4.	Engineering Utility Crossing Management	<p>This scenario covers the process used by the Utility Crossing Coordinator to manage Engineering Utility Companies and Crossings.</p> <p>NOTE: OnBase documents for a Utility Crossing are uploaded to OnBase by logging into the OnBase system, and not via the Dynamics application.</p>	<p>Access Detail Record:</p> <ul style="list-style-type: none"> The Utility Crossings entity contains detail records for a specific crossing. Access detail records by navigating to the entity view named "Active Utility Crossing" and selecting a record. <p>NOTE: For each record, all data associated with the crossing is listed on the form, including any OnBase documents associated to this crossing number.</p> <p>View "Active Utility Companies:"</p> <p>Navigate to the entity view "Active Utility Companies" to open a record. Every utility is associated with a Utility Company.</p>		X
5.	Engineering Contract Status - Maintain WBS Information	<p>This scenario covers the process used by the Engineering Contract Status Administrator and Users.</p> <p>NOTE: Within SAP, the "Program Priority" on the WBS element must be maintained with value of "CRM." This will include the WBS record in the daily sync job from SAP WBS to Dynamics WBS record.</p>	<p>Maintain/Modify WBS Status:</p> <ul style="list-style-type: none"> Within Dynamics, navigate to "Engineering Contract Status", "WBS Elements" entity. Search for and open existing WBS record. <p>Modify detail information as needed.</p> <p>Alt Flow:</p> <ul style="list-style-type: none"> For Open End WBS contracts, navigate to "Open-End Contracts" entity. Select an existing WBS record. 		X

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
			<ul style="list-style-type: none"> Maintain information on the WBS record. Create new or maintain existing Work Authorization records associated with the Open End WBS record. Modify detail information as needed.		
6.	Engineering Consultant Evaluation - Create and Maintain Evaluation Records	This scenario covers the process of creating, modifying, and printing consultant evaluation records, for both Design and CMCI evaluations.	<p>Search for and Open Existing Record:</p> <ul style="list-style-type: none"> Navigate to the "Consultant Evaluation", "Contracts" entity. Search for and open existing contract record. <p>NOTE: Contracts are imported from SAP automatically via daily interface process.</p> <p>Alt Flow: If Design Consultant Evaluation record does not exist, create new record.</p> <p>Alt Flow: If CMCI Consultant Evaluation record does not exist, create new record.</p> <p>Select and Edit: Select and edit existing evaluation record.</p> <p>Print Report: Print Evaluation reports as needed.</p>		X
7.	Work Zone Conflicts	This scenario covers the process regarding ENS Travel advisories, data import of lane charts, and Red Flag creation and monitoring. <i>NOTE: Travel Advisories from the www.paturnpike.com website are imported into the "ENS Advisories" entity, via Dynamics background job.</i>	<p>Import Lane Charts (on annual basis) into the "Lane Requirements" and "Lane Segments" Entities.</p> <p>NOTE: Import by using a custom .NET developed program called the parser, which is hosted on PTC internal web server.</p> <p>The Engineering Department maintains a set of Lane charts in Microsoft Excel.</p> <p>Maintain "Special Events" Entity.</p> <p>NOTE: The "Special Events" Entity is maintained with the list of PTC Holidays and any special events, such as the Carlisle auto show.</p>	X	

Row	MS Dynamics Main Business Process	Description	Sub-Processes	Critical	Non-Critical
			<p>Create “Red Flag” Entity Records.</p> <p>NOTE: "Red Flag" entity records are created via a Dynamics background job, by comparing the ENS travel advisories against a defined set of business rules.</p> <p>View “Red Flag Entity” record.</p> <p>NOTE: The “Red Flag” records are viewable by means of several system views on the entity.</p>		

OnBase

Row	OnBase Main Business Process	Description	Sub-Processes	Critical	Non-Critical
1.	Archival	SAP Late Archival (PM, AP, NM, FI)	N/A		X
2.		SAP Late Archival (HCM)	<ul style="list-style-type: none"> • General Documents • Employee Photos • W2s – PDF COLD • Performance Evaluations – PDF COLD 		X
3.		Treasury	N/A		X
4.		Policy Letters	N/A		X
5.	Access and View	View Attached Documents			X
6.	Attach Documents	Attach new documents (Create – Store business document)	<ul style="list-style-type: none"> • Document Maintenance - OAAD • Early Storage - OAWD • HCM attachments - OAWD 		X
7.	Scan	N/A	N/A		X
8.	Sweep	N/A	N/A		X

Row	OnBase Main Business Process	Description	Sub-Processes	Critical	Non-Critical
9.	DIP	N/A	N/A		X
10.	Autofill Keyword Set Update	N/A	N/A		X

GIS/BIDA

Row	GIS/BIDA Main Business Process	Description	Sub-Processes	Critical	Non-Critical
1.	E911			X	
2.	Fleet Telematics			X	
3.	Traffic and Engineering Operations (TEO) Viewer			X	
4.	Early Warning Detection Dashboard			X	
5.	ASP Dashboard				X
6.	Access Gates Comparison Viewer				X
7.	Aerial Photo Viewer				X
8.	Automated Vehicle Locator (AVL) Tracking Viewer				X
9.	Capital Plan Dashboard				X
10.	Interactive Travel Map				X
11.	Municipal Separate Sanitary Sewer Systems (MS4) Viewer				X
12.	Operating Budget				X
13.	Property Management Viewer – Planned				X
14.	PSP TraCs Viewer				X
15.	PTC Smart Map				X
16.	State General Assembly				X
17.	TEO Authorized Service Providers (ASP; Tow Trucks, Fire and EMS contracted by the Commission) Dashboard				X

Row	GIS/BIDA Main Business Process	Description	Sub-Processes	Critical	Non-Critical
18.	TEO Crash Analytics				X
19.	Toll Violations Viewer				X
20.	Utility Lines and Projects Viewer				X

Other Systems / Platforms

Row	Other System / Platform Name	Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
1.	SCORE	Any Identified	Information tracking for the Turnpike Commissioners and their direct staff	Tracks new articles, meeting content, meeting minutes, and other highly sensitive and confidential information for the Turnpike Commissioners and their support staff.	Any Identified	X	

Scheduled and/or Emergency Patching or Upgrades

Row	Scheduled/Emergency Patching/Upgrades Platform/Activity	Component	Main Business Process	Description	Sub-Processes	Critical	Non-Critical
1.	All Platforms	Any Identified	All Processes and Sub-Processes	Provide Patching and Upgrades based on the Criticality identified by the Commission. The Commission has the sole authority to determine the if the activity is Critical or Non-Critical for each even.	Any Identified	X	

Instructions

This Appendix (I) consists of three sections. Section 1 is Transition Major Deliverables, Section 2 is Proposal Service Levels, and Section 3 is Recommended Transition Major Deliverables and Service Levels

Section 1 contains the “Transition Major Deliverables” as defined in Appendix A (Standard Agreement) See Section Titled “Liquidated Damages”.

Section 2 contains the Service Levels the Proposer is to review, include with their Technical Proposal, and use to assist in pricing and requirement analysis. These SLAs are included as samples as a starting point for negotiations with the Awarded Proposer and to use as part of the Evaluations.

Section 3 is where the Proposer is to provide any recommend Transition Major Deliverables and Service Levels that meet the Commission’s objectives. No pricing is to be provided for the content within Section 3.

Section 1 – Transition Major Deliverables

This section (Major Deliverables) is not subject to any At-Risk limitations as defined in Section 2 (Proposal Service Level) below.

Deliverable Number	Name	Description	Artifact	Minimum *	Liquidated Damages **
1	Transition Activities Complete <i>[Reference IV-4(h)]</i> Delivery of a Transition Complete Report is due within 30 days of completed transition.	Complete the Transition to full support as described within this agreement. The Proposer will provide a Project Completion Report and the Commission will accept the report.	Transition Milestone Completion Statement Document approved by all parties	Two calendar months from Notice to Proceed	\$ 250,000
2	Transition Plan <i>[Reference IV-4(b), IV-3(a)(vi)], Appendix I - Service Levels,</i> The Transition Plan will contain the following sections as appendices: 1. Transition Task Plan - “Ramp-up” 2. Transition Plan – “Disentanglement” 3. Knowledge Transition Work Plan 4. System and Scope Assessment Report 5. Staff Plan 6. Training Plan 7. Transition Staffing Matrix (RACI) 8. SLA Management Plan 9. Recurring Issue Maintenance Response Plan 10. Planned Maintenance Schedule 11. Documentation Management Plan	Details around the content of this plan are described throughout sections II, IV and IV-4 plus Appendices D, W, J, and H, and of this RFP and will be finalized with the Commission after Notice to Proceed.	Transition Plan Document	30 calendar days from Notice to Proceed	\$ 10,000
3	Staffing Onboarding <i>[Reference IV-4(c)]</i>	Perform the Onboarding of staff assigned to this project	Written Statement from Contactor that all staff have been onboarded. The reports will include Staff’s name.	45 calendar days from Notice to Proceed	\$ 5,000
4	Initial Operational Procedures Update <i>[Reference IV-4(d)]</i>	Review and update operational procedures to fit the services required by this agreement.	Written Statement from Awarded Proposer that documentation has been updated and approved by the Commission	50 calendar days from Notice to Proceed	\$ 5,000

Deliverable Number	Name	Description	Artifact	Minimum *	Liquidated Damages **
5	ServiceNow modifications to enable Incident Management, Change Management, Problem Management, CMDB processes to be used by the Proposer <i>[Reference IV-4(e)]</i>	Change routing of tickets, create groups/support department, create user documentation for Awarded Proposer's Staff, create reports as needed for immediate support		55 Calendar Days from Notice to Proceed	\$ 5,000
6	Software Development Life Cycle (SDLC) documentation <i>[Reference IV-4(f)]</i>	Create / Update SDLC documentation on how enhancement and upgrade projects will proceed. This documentation must be approved by the Commission before use.	Document(s) describing the details of the SDLC process – this may differ by application. This document must be approved by the Commission before use.	30 Calendar Days for ServiceNow and 60 Calendar Days for all other applications	\$ 1,000
7	Training <i>[Reference IV-4(g)]</i>	Perform appropriate training of Contract staff to enable them to assume support functions. A training report will be provided which shows the names and training of Contract Staff.	Provide a document stating the Contactor Staff and the Training received.	50 Calendar days from Notice to Proceed	\$ 5,000

Major Deliverables Notes:

- * Default is defined as a failure to meet the threshold described in the Minimum column of this worksheet. For example: if the minimum = 18 hours and the value calculated is 18.1 hours. Then the Awarded Proposer is in Default on this Milestone.
- ** Refer to Appendix A (Standard Agreement) section Liquidated Damages. Note: Liquidated Damages can be “Earned-Back” based if Milestone 1 (Transition Complete) is completed within the “Minimum” timeframe.

Section 2 – Proposal Service Levels

INSTRUCTIONS: Proposer is to review and understand the Service Levels contained within this section and use these in determining work effort and pricing only. Service Levels will be finalized during contract negotiations. Reference RFP IV-3(b) “Performance Requirements”

Definitions and Calculations

Business Hours	Commission business hours are from 7:30 am to 5:30 pm Monday through Friday excluding Commission holidays. Commission holidays are as follows: <ul style="list-style-type: none">a) New Year’s Day;b) Martin Luther King, Jr. Day;c) President’s Day;d) Good Friday;e) Memorial Day;f) Independence Day;g) Labor Day;h) Veteran’s Day;i) Thanksgiving Day; andj) Christmas Day.
	Reference RFP IV-3(b)(viii)
Disincentive At Risk	The amount that the Awarded Proposer will have at risk for all Service Level Disincentive Remedies in each month. The “Disincentive At-Risk Amount” is 15.0% of the total monthly invoice submitted to the Commission by the Awarded Proposer each month.

Exception Minutes	<p>Usability minutes that are directly attributable to any of the following:</p> <ul style="list-style-type: none">(i) The failure or unavailability of equipment or other resources for which the Commission is operationally and managerially responsible. This includes but is not limited to the time(s) where Network, Hardware, Operating System faults or failures, Emergency Updates or Patches performed by non-Awarded Proposer staff and subcontractors, Human Error by non-Awarded Proposer staff and subcontractors are resolving their issues.(ii) Changes made to the environment by the Commission that were not communicated in accordance with the Change Control Procedure or other method agreed upon by the Parties(ii) Scheduled and approved maintenance windows <p>Note: Exception Minutes are calculated from the time the ticket is referred to the responsible person or contact. This means that the time between ticket referred to the Awarded Proposer and the time the ticket is referred to a 3rd party (or the Commission) is NOT considered Exception Time when calculating these SLAs.</p>
Incentive At Risk	<p>The amount that the Commission will have at risk for all Service Level Incentive Remedies in each month. The “Incentive At-Risk Amount” is 5.0% of the total monthly invoice submitted to the Commission by the Awarded Proposer each month.</p>
Key Project	<p>A series of related activities or tasks needed to plan and execute in order to accomplish an objective within a set timeline. The Commission will notify the contractor when a Key Project is required and will work with the Contractor on clearly defined Deliverables, Milestones, and Due Dates. These will be clearly defined within a Project Initiation document and any changes to Scope, Schedule, Milestones, or Due Dates require a Project Change Request.</p> <p>A Project Change Request document will follow an agreed-to and documented process and can be agreed to by both the Commission and the Contractor to alter the Project Initiation document and once approved will be used to evaluate the success of a Key Project for SLA purposes.</p> <p>Key Projects will have varying levels of impact on the Commission; thus, the Project Initiation document will detail the level of impact and be assigned a “<i>Small</i>”, “<i>Medium</i>”, or “<i>Large</i>” impact designation. Impact ratings are at the sole discretion of the Commission.</p> <p>Examples of Key Projects could be the Upgrade of the Commission’s SAP system, Fiscal Year End, or Calendar Year End activities, other upgrades and enhancement packs. Projects are not limited to Work Order Requests nor are they limited to only Operational activities.</p> <p>The Commission currently estimates there are 6 to 12 Key Projects occur during any single Calendar Year.</p>

Service Level Remedy(s) 100% of the value identified within the “Remedy” Column of “Service Level Matrix” below, to a maximum credit not to exceed the Disincentives At-Risk Amount as defined above.

If more than one Service Level Remedy has occurred in a single month, the sum of the corresponding Service Level Remedies shall be credited to the Commission.

In no event shall the amount of Disincentive Service Level Remedies occurring in a single month exceed, in total, the Disincentives At-Risk Amount.

Incentive Remedies can be used to offset Disincentive Remedies.

Reporting must be sufficient for the Commission to be able to validate all Incentives and Disincentives Service Level Remedies as a part of the monthly invoice.

Usability “Usable” shall be defined as an application or service that

- a.) provides the expected outcomes for use by Commission staff, contractors, business partners, or customers and function properly with software utilized to poll, control, or otherwise access the application or service
- b.) substantially performs the functions for which the application or service was intended.

This standard shall apply to all application or service included in this contract. The Commission shall have authority for determining when an application or service is considered usable or not. Reference: RFP IV-3 (b)(i).

Service Level Matrix

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
1	Critical Severity Incident Responsiveness	How quickly will Critical incident tickets be acknowledged as received and work has begun	15 Minutes	For Critical Systems \$ 50.00 for every 10 minutes past minimum. For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum Each Critical Severity Incident ticket is evaluated separately. Refer to Appendix H for Critical and Non-Critical System identifications.	The sum of minutes the Critical Severity Incident Ticket was in an Active or Pending Acknowledgment State, minus the "Minimum" value from the Minimum Column for this Service Level. = [Sum time ticket in "Active" plus "Pending Acknowledgement" states] - ["Minimum" value documented in Minimum column for this SLA] Note: If there are no Critical Severity Tickets Resolved during the reporting period the value will equal 100% compliant Incentives.

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
2	High Severity Incident Responsiveness	How quickly will High incident tickets be acknowledged as received and work has begun	30 Minutes	<p>For Critical Systems \$ 50.00 for every 10 minutes past minimum.</p> <p>For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum</p> <p>Each High Severity Incident ticket is evaluated separately.</p> <p>Refer to Appendix H for Critical and Non-Critical System identifications.</p>	<p>The sum of minutes the High Severity Incident Ticket was in an Active or Pending Acknowledgment State, minus the "Minimum" value from the Minimum Column for this Service Level.</p> <p>= [Sum time ticket in "Active" plus "Pending Acknowledgement" states] - ["Minimum" value documented in Minimum column for this SLA]</p> <p>Note: If there are no High Severity Tickets Resolved during the reporting period the value will equal 100% compliant.</p>
3	Moderate Incident Responsiveness	How quickly will Moderate incident tickets be acknowledged as received and work has begun	2 hours	<p>For Critical Systems \$ 50.00 for every 10 minutes past minimum.</p> <p>For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum</p> <p>Each Moderate Severity Incident ticket is evaluated separately.</p> <p>Refer to Appendix H for Critical and Non-Critical System identifications.</p>	<p>The sum of minutes the Moderate Severity Incident Ticket was in an Active or Pending Acknowledgment State, minus the "Minimum" value from the Minimum Column for this Service Level.</p> <p>= [Sum time ticket in "Active" plus "Pending Acknowledgement" states] - ["Minimum" value documented in Minimum column for this SLA]</p> <p>Note: If there are no Moderate Severity Tickets Resolved during the reporting period the value will equal 100% compliant.</p>

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
4	Low Incident Responsiveness	How quickly will Low incident tickets be acknowledged as received and work has begun	4 Hours	For Critical Systems \$ 50.00 for every 10 minutes past minimum. For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum Each Low Severity Incident ticket is evaluated separately. Refer to Appendix H for Critical and Non-Critical System identifications.	The sum of minutes the Low Severity Incident Ticket was in an Active or Pending Acknowledgment State, minus the "Minimum" value from the Minimum Column for this Service Level. = [Sum time ticket in "Active" plus "Pending Acknowledgement" states] - ["Minimum" value documented in Minimum column for this SLA] Note: If there are no Low Severity Tickets Resolved during the reporting period the value will equal 100% compliant.
5	Critical Severity Incident Update Timeliness	Time intervals between ticket updates for the life of the Critical Severity incident ticket	30 Minute Intervals <i>(communications every 30 minutes until Incident Ticket is in Resolved State)</i>	\$ 50 for every 10 minutes past minimum. Each Critical Severity Incident ticket is evaluated separately.	The maximum of time between each update within the ServiceNow Critical Severity Incident ticket. Note: If there are no Critical Severity Tickets Resolved during the reporting period the value will equal 100% compliant.
6	High Severity Incident Update Timeliness	Time intervals between ticket updates for the life of the High Severity incident ticket	60 Minute Intervals <i>(communications every 60 minutes until Incident Ticket is in Resolved State)</i>	\$ 50 for every 10 minutes past minimum. Each High Severity Incident ticket is evaluated separately.	The maximum of time between each update within the ServiceNow High Severity Incident ticket. Note: If there are no High Severity Tickets Resolved during the reporting period the value will equal 100% compliant.

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
7	Moderate Severity Incident Update Timeliness	Time intervals between ticket updates for the life of the Moderate Severity incident ticket	4 Hour Intervals <i>(communications every 4 Hours until Incident Ticket is in Resolved State)</i>	\$ 50 for every 10 minutes past minimum. Each Moderate Severity Incident ticket is evaluated separately.	The maximum of time between each update within the ServiceNow Moderate Severity Incident ticket. Note: If there are no Moderate Severity Tickets Resolved during the reporting period the value will equal 100% compliant.
8	Low Severity Incident Update Timeliness	Time intervals between ticket updates for the life of the Low Severity incident ticket	1 Business Day Intervals <i>(communications every Business Day until Incident Ticket is in Resolved State)</i>	\$ 50 for every 10 minutes past minimum. Each Low Severity Incident ticket is evaluated separately.	The maximum of time between each update within the ServiceNow Low Severity Incident ticket. Note: If there are no Low Severity Tickets Resolved during the reporting period the value will equal 100% compliant.
9	Critical Severity Incident Communications Update Timeliness	Time intervals between verbal or written updates with Commission Leadership	Every 30 Minutes	\$ 50 for every 10 minutes past minimum. Each Critical Severity Incident ticket is evaluated separately.	The maximum of time between each Customer update captured within the ServiceNow High Severity Incident ticket. Note: If there are no Critical Severity Tickets Resolved during the reporting period the value will equal 100% compliant.
10	High Severity Incident Communications Update Timeliness	Time intervals between verbal or written updates with Commission Leadership	Every 2 Hours	\$ 50 for every 10 minutes past minimum. Each High Severity Incident ticket is evaluated separately.	The maximum of time between each Customer update captured within the ServiceNow High Severity Incident ticket. Note: If there are no High Severity Tickets Resolved during the reporting period the value will equal 100% compliant.

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
11	Critical Severity Incident Resolution Timeliness	Time interval allowed for an individual Critical Severity Incident Ticket	3 Hours	<p>For Critical Systems \$ 50.00 for every 10 minutes past minimum.</p> <p>For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum</p> <p>Each Critical Severity Incident ticket is evaluated separately.</p> <p>Refer to Appendix H for Critical and Non-Critical System identifications.</p> <p>If Zero (0) remedies on this SLA (SLA 11) occurs within the reporting period = Incentive of + 0.5% of Monthly Invoice</p>	<p>The total time between “Creation” / “Acknowledgement” and the “Resolution” Date/Time Stamp of the Critical Severity ticket</p> <p>If the Ticket is created by Proposer: = [Resolution Date/Time] – [Creation Date/Time]</p> <p>If the Ticket is created by Commission: = [Resolution Date/Time] – [Acknowledgement Date/Time]</p> <p>Note: If there are no Critical Severity Tickets Resolved during the reporting period, the value will equal 100% compliant but will not be eligible for SLA Incentives.</p>
12	High Severity Incident Resolution Timeliness	Time interval allowed for an individual High Severity Incident Ticket	6 Hours	<p>For Critical Systems \$ 50.00 for every 10 minutes past minimum.</p> <p>For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum</p> <p>Each Critical Severity Incident ticket is evaluated separately.</p> <p>Refer to Appendix H for Critical and Non-Critical System identifications.</p> <p>If Zero (0) remedies on this SLA (SLA 12) occurs within the reporting period = Incentive of + 0.5% of Monthly Invoice</p>	<p>The total time between “Creation” / “Acknowledgement” and the “Resolution” Date/Time Stamp of the High Severity ticket</p> <p>If the Ticket is created by Proposer: = [Resolution Date/Time] – [Creation Date/Time]</p> <p>If the Ticket is created by Commission: = [Resolution Date/Time] – [Acknowledgement Date/Time]</p> <p>Note: If there are no Relevant Tickets Resolved during the reporting period the value will equal 100% compliant but will not be eligible for SLA Incentives.</p>

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
13	Moderate Severity Incident Resolution Timeliness	Time interval allowed for an individual Moderate Severity Incident Ticket	18 Hours	<p>For Critical Systems \$ 50.00 for every 10 minutes past minimum.</p> <p>For Non-Critical Systems \$ 5.00 for every 10 minutes past minimum</p> <p>Each Moderate Severity Incident ticket is evaluated separately.</p> <p>Refer to Appendix H for Critical and Non-Critical System identifications.</p> <p>If Zero (0) remedies on this SLA (SLA 13) occurs within the reporting period = Incentive of + 0.5% of Monthly Invoice</p>	<p>The total time between “Creation” / “Acknowledgement” and the “Resolution” Date/Time Stamp of the Moderate Severity ticket</p> <p>If the Ticket is created by Proposer: = [Resolution Date/Time] – [Creation Date/Time]</p> <p>If the Ticket is created by Commission: = [Resolution Date/Time] – [Acknowledgement Date/Time]</p> <p>Note: If there are no Relevant Tickets Resolved during the reporting period the value will equal 100% compliant but will not be eligible for SLA Incentives.</p>
14	Critical Systems Usability Reference RFP IV-3 (b)(i).	<p>The percentage of time a Critical system is usable by a customer</p> <p>Reference: Appendix H (Critical and Non-critical Systems) for the Critical Systems</p>	<p>99.95% - 100.00%</p> <p>99.50% - 99.94%</p> <p>99.00% - 99.49%</p> <p>less than 99.00%</p>	<p>+ 0.5 %</p> <p>+ 0 .0%</p> <p>- 2.0 %</p> <p>Major Service Delivery Failure ***</p> <p>Refer to Appendix H for Critical and Non-Critical System identifications.</p> <p>Remedies are also assessed per named systems as detailed within Appendix H.</p>	<p>The Service Level for Usability measures the Usable percentage of time as defined within RFP IV-3 (b)(ii). The sum of actual Usable Time for the individual applications divided by the sum of expected, scheduled Usable Time for the applications, with the result expressed as a percentage.</p> <p>= 1 – ((Sum of minutes the application component is not Usable) / (([1,440 minutes per day] X [calendar days in month]) – [Exception Minutes])) expressed as a percentage</p> <p>Reference: RFP IV-3 (b)(ii).</p>

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
15	Non-Critical Systems Usability Reference: RFP IV-3 (b)(i).	The percentage of time a Non-critical system is usable by a customer Reference: Appendix H (Critical and Non-critical Systems) for the Non-Critical Systems	99.95% - 100.00% 99.50% - 99.94% 99.00% - 99.49% 98.00% - 98.99% less than 98.00%	+ 0.5 % + 0 .0% - 1.0 % - 2.0 % Major Service Delivery Failure*** Refer to Appendix G for Critical and Non-Critical System identifications. Remedies are also assessed per named systems as detailed within Appendix H.	The Service Level for Usability measures the Usable percentage as defined within RFP IV-3 (b)(ii). The sum of actual Usable Time for the individual applications divided by the sum of expected, scheduled Usable Time for the applications, with the result expressed as a percentage. = 1 – ((Sum of minutes the application component is not Usable) / (([1,440 minutes per day] X [calendar days in month]) – [Exception Minutes])) expressed as a percentage Reference: RFP IV-3 (b)(ii).
16	Release Management Effectiveness	The percentage of Successful Releases	95%	\$ 100.00 per individual Release Request record that violates the required "Minimum" value for this SLA 16. Example: 50 Releases Approved 46 Releases were Successful = 92% 95% of 50 Releases = 48 Releases (47.5) is Minimum Criteria 48 - 46 = 2 Releases within Remedy Criteria Remedy = 2 X \$100 = \$200	Number of Successful Releases divided by the total number of approved Releases that were completed during the reporting period. = [Successful Releases] / [Total Approved Releases] * 100 Note: If there are no Relevant Tickets Closed during the reporting period the value will equal 100% compliant.

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
17	Change Management Effectiveness	<p>The percentage of Successful Changes.</p> <p>Changes are considered successful when the Change:</p> <ol style="list-style-type: none"> follows the change process and procedure has authorization, is performed within the authorized change window is technically correct and without Incident Ticket for 48 hours 	95%	<p>\$ 100.00 per individual Change Request record that violates the required "Minimum" value above.</p> <p>Example:</p> <p>50 Changes Approved</p> <p>46 Changes were Successful = 92%</p> <p>95% of 50 changes = 48 Changes (47.5) is Minimum Criteria</p> <p>48 - 46 = 2 changes within Remedy Criteria</p> <p>Remedy = 2 X \$100 = \$200</p>	<p>Number of Successful Change Requests divided by the total number of approved Change Requests completed during the reporting period.</p> <p>= [Successful Changes] / [Total Approved Changes] * 100</p> <p>Note: If there are no Relevant Tickets Closed during the reporting period the value will equal 100% compliant.</p>
18	Root Cause Analysis Report Timeliness	The number of RCAs not delivered in a timely manner or incomplete.	<p>30 Calendar Days for Final Report</p> <p>5 Business Days for Initial or 1st Draft Report</p>	\$ 50.00 per calendar day beyond minimum	<p>Number of days after Problem/Incident Ticket was placed in a "Resolved" condition.</p> <p>-- Or --</p> <p>Number of Days after written request from the Commission.</p> <p>= [Delivered Date] - [Requested/Resolved Date] (in whole days)</p> <p>Note: If there are no RCA Reports required during the reporting period the value will equal 100% compliant</p>

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
19	Security Incident Notification Timeliness	The Assurance that when a Security Incident is discovered by the Proposer, timely notification to the Commission occurs.	72 Hours from discovery of incident	\$1,000	Every Incident that exceeds the Minimum will incur the disincentive Note: If there are no Relevant Tickets Resolved during the reporting period the value will equal 100% compliant.
20	Report Delivery Timeliness	The Assurance that regular and/or routine reports are delivered in a timely manner. Reports include: 1. Monthly Service Level Report: Delivered no later than the 5th business day of the calendar month. 2. 1st Draft of Annual Report: Delivered no later than 30 calendar days prior to contract anniversary date.	98%	\$ 100.00 per late report Note: Remedy includes all late reports once SLA Remedy occurs If Zero (0) remedies on this SLA (SLA 20) occurs within the reporting period = Incentive of + 0.5% of Monthly Invoice	Number of Timely Reports divided by the total number of Reports due during the reporting period. = [Timely Reports] / [Total Reports Due] * 100 Note: If there are no Relevant Reports due during the reporting period the value will equal 100% compliant but will not be eligible for SLA Incentives.

SLA Number	Name	Description	Minimum *	Remedy **	Calculation
21	Key Project Successfulness	The successful delivery of a Key Project, where all Deliverables, Milestones, and Due Dates are met and accepted by the Commission as defined within the agreed-to Project Request Document.	Each Project is evaluated individually Project must meet all documented Milestones, Deliverables, and Due Dates and be accepted by the Commission	<p>\$100,000 for <i>Small</i> Impact Projects \$250,000 for <i>Medium</i> Impact Projects \$500,000 for <i>Large</i> Impact Projects</p> <p>Examples: Upgrade to the Commission’s Financial System would be considered a <i>Large</i> Impact Project Upgrade to a General Business Use application may be considered a <i>Medium</i> Impact Project (i.e. OrgPublisher) Security Patches to an application may be considered a <i>Small</i> Impact Project</p>	The Key Project is considered unsuccessful when the Key Project is delivered after the Due Date, there are unsatisfied Deliverables, Milestones dates are late, or the Commission does not accept the work completed

Service Level Notes:

- * Remedy is defined as a failure to meet the threshold described in the Minimum column of this worksheet. For example: if the minimum = 18 hours and the value calculated is 18.1 hours. Then the Awarded Proposer is in Remedy on this SLA.
- ** Disincentive Remedies are Liquidated Damages due the Commission for a failure to provide acceptable service performance. Incentives and Disincentives will be listed with enough detail to identify the SLA(s) that qualified for the Incentive/Disincentive.
- *** Refer below within this Appendix I section titled “Service Delivery Failures”

Incident Ticket Priority Definitions

The following table defines the current configuration of Incident Ticket Priority as calculated based upon the value placed within the “Urgency” and “Impact” fields within Service Now:

ServiceNow Calculated Incident Ticket Priority		Urgency		
		1 - High	2 - Moderate	3 - Low
Impact	1 - High	1 - Critical	2 - High	3 - Moderate
	2 - Moderate	2 - High	3 - Moderate	4 - Low
	3 - Low	3 - Moderate	4 - Low	5 - Planning

Note: Ticket Priority is a calculated value based on the Impact and Severity and the following definitions are a generalization of Priority.

ServiceNow Ticket Priority	Priority Definition
	<i>See RFP Section IV-3-b-ii (Usability Requirements) for additional details</i>
Planning	To be considered the same as a “Low” Priority for purposes of this contract and shall be treated as Low Priority.
Low	Any non-desirable condition that does not meet the standard but does not impact overall usability and does not impact uptime.
Moderate	Any non-desirable condition that does not meet the standard and impacts usability but not substantially enough to impact uptime.
High	Any non-desirable condition that does not meet the standard, impacts usability, and impacts uptime for one (1) operator, select devices or system.
Critical	Any non-desirable condition that does not meet the asset standard, impacts usability for multiple systems, impacts uptime for multiple operators, or has the potential to create unsafe. Appendix H provides a listing of assets and associated business processes that would rate always critical due to being mission-critical to the commission’s business.

Incentive and Disincentive

Incentives and Disincentives will accumulate and be reported in a separate location on the invoice with enough detail for the Commission to validate. The Commission has the sole approval of the information required. For example, the following information may be required based on the SLA event:

- Incident, Change, or Problem Number(s)
- Dates and Times,
- Application Name(s)
- Document Name(s)
- Service Level Number(s)
- Other supporting documentation as required by the Commission

Major Service Delivery Failure

A *Major Service Delivery Failure* occurs when SLA 14 and/or SLA 15 “*Usability Service Levels’ Remedy*” indicates a “*Major Service Delivery Failure*” event has occurred. The Commission at its sole discretion, will consider the Awarded Proposer in default of this agreement and may terminate the contract (Termination) as referenced in Appendix A.

Service Delivery Failure

A *Service Delivery Failure* occurs when:

1. Three (3) Service Level Disincentive Remedies occur in a rolling six (6) month period
2. The Commission declares a service condition as identified as a *Major Recurring Problem* and there is no formal Chronic Problem Issue Project underway to address such Problem

Then, within thirty (30) days of the occurrence of such *Service Delivery Failure*, Awarded Proposer will provide the Commission with a written plan (the “*Service Delivery Service Improvement Plan*”) for improving the Awarded Proposer’s performance to address the Service Delivery Failure, which plan will include a specific implementation timetable. The *Service Delivery Service Improvement Plan* will be subject to the Commission’s approval. Within 30 days of the Commission’s approval, or such other timeframe agreed to by the Commission, Awarded Proposer will implement the *Service Delivery Service Improvement Plan*, which will include making timely and appropriate investments in people, processes and technology. In addition, the Awarded proposer will demonstrate to the Commission’s reasonable satisfaction, that the changes implemented by Awarded Proposer have been made in normal operational processes to sustain compliant performance results in the future.

If Awarded Proposer fails to implement the *Service Delivery Service Improvement Plan* in the specified timetable, or if after the implementation of the *Service Delivery Service Improvement Plan* performance has not consistently improved, Awarded Proposer, at the sole discretion of the Commission, this agreement (RFP 19-103520-8476) can be terminated as referenced in Appendix A.

Further, the Awarded Proposer will work with the Commission to define and document a repeatable Chronic Service Issue Resolution process. At a minimum, the process should address:

- Establishment of a project team to drive and manage the process improvement
- Approach to development of an Improvement Plan which will include milestones, resources and dependencies
- Approach to Program Management of Plan implementation including integration of improvements/changes into daily operational processes
- Implementation of Progress Reporting within the Awarded Proposer’s management structure, the Commission and the Commission Customers
- Closure process to transition solution into normal operations including alignment of processes.

Single Incident/Multiple Remedies

If a single incident results in the failure of the Awarded Proposer to meet more than one Service Level Minimum, the Awarded Proposer shall issue Service Level Remedy for the highest Service Level Remedy not to exceed the At-Risk Amount.

An example would be if a monthly invoice is \$50,000 and one Service Level Remedy is defined as “-1% of Monthly Invoice” (\$500 in this example) and one Service Level Remedy is defined as \$5,000. The Remedy would be calculated at the higher amount (\$5,000 in this example).

Times

Unless otherwise set forth herein, all references in this Schedule to Times shall refer to Calendar Days and 24-Hour clocks.

Exclusions

For purposes of calculating Usable Time and Usability, the Scheduled Usable shall not include any period of Un-Usable time that is the result of scheduled time required to perform system maintenance (for example, preventive maintenance, system upgrades, etc.), provided that such time has been mutually agreed between the Parties and is scheduled. The Proposer shall maintain Usability during such periods to the extent reasonably practicable. In addition, Service Level failures shall be excluded if or when caused by actions taken by the Commission.

Section 3 – Recommended Transition Major Deliverables and Service Levels

INSTRUCTIONS: Proposers are requested to recommend industry-standard Transition Major Deliverables and Service Levels by completing this section. The categories in the Tables contained within Section 1 and Section 2 of this Document (Appendix I) are not meant to be exhaustive. **Proposer** may recommend additional Transition Major Deliverables and Service Levels.

A set of Transition Major Deliverables and Service Levels shall be negotiated as part of the Commission and the Awarded Proposer negotiating the agreement following bid award.

The “Recommended Service Levels” should encourage a service provider to meet or exceed the following Service Objectives:

1. Assure the services are functional and reliable when needed
2. Assure all work being performed is performed with quality and timeliness
3. Assure when defects and failures do occur:
 - a. actions are expeditiously taken to restore functionality quickly
 - b. open and often communications occur for the duration of the failure
 - c. the actions taken to resolve the event are captured and reviewed to learn from the event and avoid reoccurrence

[PROPOSER - INSERT SERVICE LEVEL RECOMMENDATIONS HERE]

Key Positions

Key personnel shall be defined as Selected Proposer personnel who are essential to managing and/or carrying out the work included in the Contract and whose absence would be expected to negatively impact tasks/services and/or deliverables. Reference RFP II-1(E), Section IV-3(a)(iv) and Appendix I.

Position	Duties	Named Person
Engagement Manager	<p>Responsible for the daily oversight and interactions with the Commission’s management team providing reports, information, escalations, and other duties required by the Commission.</p> <p>This is a leadership position.</p> <p>The Engagement Manager is required to be exclusive dedicated to the Commission with no other responsibilities than those within this agreement. This position will remain exclusive and on-site for the duration of the contract.</p> <p>The Engagement Manager will be provided office/cubicle space within the Commission’s campus in Harrisburg PA and is required to make this his/her normal reporting location.</p>	
Service Delivery Manager	<p>Responsible for the daily services and operations of the services provided to the Commission. This role is responsible to manage the technical and operational people assigned to this contract.</p> <p>This is a leadership position.</p> <p>The Engagement Manager is required to be exclusive dedicated to the Commission with no other responsibilities than those within this agreement for the first 12 months of this agreement.</p> <p>This position <u>is</u> required to be located at the Commission’s campus in Harrisburg PA.</p>	
Contract Manager	<p>Reasonable for contract oversight, compliance, and administration.</p> <p>This is not a dedicated position and may support other customers and duties.</p> <p>This is not required to be located at the Commissions campus in Harrisburg PA.</p>	

Position	Duties	Named Person
Change Manager	<p>Responsible for being the Point of Contact on all Change and Release activities relating to the services provided to the Commission.</p> <p>This is not a dedicated position and may support other customers and duties.</p> <p>This is not required to be located at the Commissions campus in Harrisburg PA.</p>	
Problem Manager	<p>Responsible for being the Point of Contact on all Problem activities including repeating or chronic issues and outages.</p> <p>This is not a dedicated position and may support other customers and duties.</p> <p>This is not required to be located at the Commissions campus in Harrisburg PA.</p>	
Contract Executive	<p>Responsible for the overall engagement between the Selected Proposer and the Commission. This is a point of escalation for contract and service issues and disputes.</p> <p>This is not a dedicated position and may support other customers and duties.</p> <p>This is not required to be located at the Commissions campus in Harrisburg PA.</p>	

Key Positions: The positions identified in this Appendix J (Key Positions), are designated by the Commission and the Selected Proposer as Key Positions within the Selected Proposer’s Personnel. The Commission Project Manager and the Selected Proposer’s Engagement Manager shall meet once every year beginning with the first anniversary of the Effective Date or upon the request of either the Commission’s Project Manager or the Selected Proposer’s Engagement Manager to update the list of the Key Personnel. Each Key Personnel shall at all times be subject to Commission's continuing approval. Except for a replacement or reassignment of Key Personnel, Selected Proposer shall not reassign or replace any Key Personnel.

Reassignment Waivers: Selected Proposer shall not reassign or replace the Selected Proposer Engagement Manager unless Commission consents to such reassignment or replacement or unless the individual (1) voluntarily resigns from Selected Proposer, (2) is dismissed by Selected Proposer for cause or replaced as a result of unsatisfactory performance in respect of his or her duties and responsibilities to Selected Proposer or Commission pursuant to this Contract, or (3) is unable to work due to his or her death or disability. In addition, Selected Proposer shall, in connection with its assignment of other Key Personnel, use commercially reasonable efforts to assure the greatest degree of continuity possible among such Key Personnel.

If, in any instance, Commission withholds or withdraws its approval of any Personnel or representative of Selected Proposer for the performance of the Services, including without

limitation, the Selected Proposer Engagement Manager, or any other Key Employee, Selected Proposer promptly shall reassign and replace such personnel or representative.

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1. Notice

The information contained within this document is a point in time snapshot of the SAP systems and applications. This information is intended to provide knowledge on the Commission SAP world but be aware that the SAP systems are in a constant state of change as upgrades and projects occur. The Selected Proposer must support the SAP systems for the duration of this agreement with the understanding that the configuration may not be completely documented in this Appendix K.

2. SAP Environment

This document is a high-level source of reference for the many various versions and application components surrounding the SAP system, which have been implemented at the Pennsylvania Turnpike Commission. SAP Production Layout

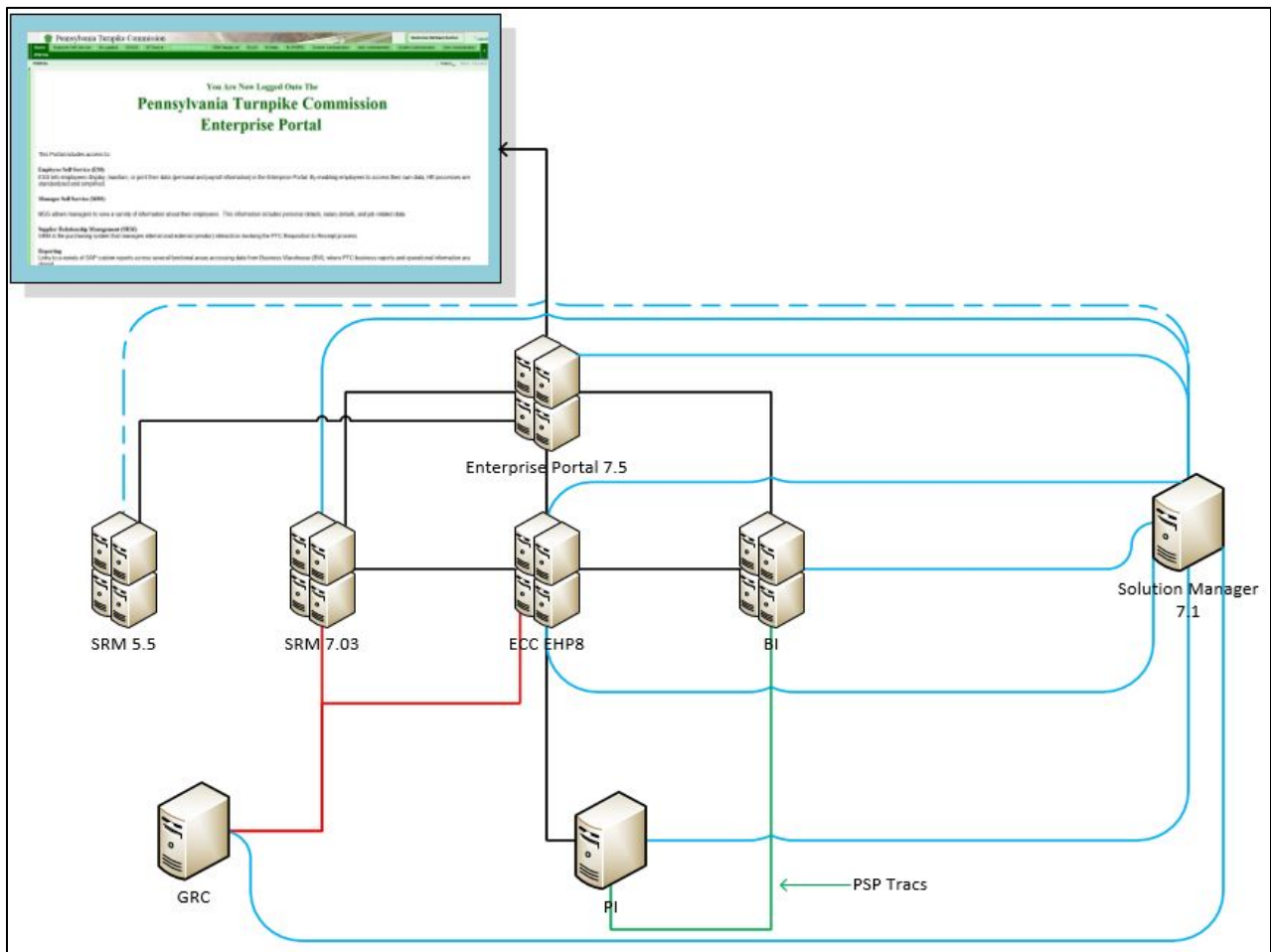


Figure 1. SAP Production Layout.

2.1. SAP Versions & OS platform (where applicable)

Application Name	Current Version Level	Operating System Platform & Version
Enterprise Core Component (ECC) Netweaver 7.5	6.0 – EHP8 SP10	Windows 2012 Server R2 X64
Supplier Relationship Management (SRM) Netweaver 7.4	SRM 7.03/ Server SP19 SRM 5.5/SP 19	Windows 2012 Server R2 X64
Business Warehouse (BI) Netweaver 7.31	7.3 EHP1 SP22	Windows 2012 Server R2 X64
Enterprise Portal - Netweaver 7.5	7.5 SP10	Windows 2012 Server R2 X64
Process Infrastructure (PI) Netweaver 7.31	7.31 SP17	Windows 2012 Server R2 X64
Governance Risk Compliance (GRC) Netweaver 7.52	Access Control 12.0 Process Control 10.1	Windows 2012 Server R2 X64
Mobility Platform (SMP)	3.0 SP07	Windows 2012 Server R2 X64
SAP GUI	7.50 SP4	Windows 10
BSI Tax Factory	10	Windows 2012 Server R2 X64
Business Objects Edge BI w/Data Integration	Xcelsius Ent. 2008 Crystal Reports 2008 v1	Windows 2012 Server R2 X64
Agile Systems/RWD uPerform	SAP Premier V10.0	Cloud Service
OrgPublisher for SAP from Acquire Solutions	5.01	Windows 2012 Server R2 X64
OnBase DMS from Hyland Software	11	Windows 2012 Server R2 X64
OnBase Archivelink for SAP	11.0.1.560 SP1	Windows 2012 Server R2 X64
SAP Solution Manager	7.2 EHP2 SP18	Windows 2012 Server R2 X64
Extended Diagnostics by CA Wily	2	Windows 2012 Server R2 X64
Microsoft SQL Server	SQL 2012	Windows 2012 Server R2 X64
SAPRouter	40.4	Windows 2012 Server R2 X64
Panaya Standard SAP Support Pack Automation & Test Management	9.1	Cloud Service
HP Quality Center (includes HP Quick Test Pro, HP Quality Center Dashboard and HP Sprinter)	11.52	Windows 2012 Server R2 X64
UltraEdit	7.1	
UltraCompare	8.1	

Figure 2. SAP Version and OS Platforms.

2.2. Applications/License Inventory & Usage for SAP Environment

Application Owned by PTC	QTY or LL	Actual Usage	Install Date	Go Live Date	Comments
MySAP 2005 Business Suite: Professional User License	750	683	May 2006	2006-2008	Named License - Usage as of May 2012 SAP License Audit
MySAP 2005 Business Suite: Employee User License	1,745	61	May 2006	2006-2008	Named License - Usage as of May 2012 SAP License Audit
MySAP 2005 Business Suite: Developer License	10	8	May 2006	2006-2008	Named License - Usage as of May 2012 SAP License Audit
Payroll Processing Engine	2,500	2,300	May 2006	2007	Licensed by Master Records

Application Owned by PTC	QTY or LL	Actual Usage	Install Date	Go Live Date	Comments
e-Recruiting	2,500	N/A	May 2006	Not Implemented	Licensed by Number of Employees
Treasury	1	1	May 2006	2008 [Limited]	Licensed by Number of Users
Risk Management	1	N/A	Not Installed	Not Implemented	Licensed by Number of Users
MySAP SRM - Strategic Sourcing	\$500M	\$500M	May 2006	2008	Licensed by Annual Spend Volume
MySAP - Supplier Enablement (SE)	250	N/A	Not Installed	Not Implemented	Licensed by Number of Trading Partners
Exchange Infrastructure (XI)	50	50	May 2006	2007-2008	Licensed by Number of Gb's per Month
Interactive Forms based on Adobe	2,500	2,300	May 2006	2007-2008	Licensed by Number of Employees
Interactive Forms based on Adobe - Templates	100	0	May 2006	2007-2008	Licensed by Number of Templates – Not actively using any interactive forms
SAP Public Sector Solution: Grants Management for Grantee	1	N/A	Not Installed	Not Implemented	All licensed Named Users are authorized to use to the extent of their named user type
SAP Public Sector Solution: EA-PS	1	1	May 2006	Mar 2008	All licensed Named Users are authorized to use to the extent of their named user type
SAP Public Sector Solution: HR-PS	1	1	May 2006	Dec 2007	All licensed Named Users are authorized to use to the extent of their named user type
BSI U.S. Payroll Tax Processing	2,500	2,300	May 2006	2007	Licensed by Master Records
SAP Productivity Pak by RWD (Ancile Systems uPerform)	755 Prof 1,745 Emp	683/61	Oct 2006	N/A	Named License - Usage as of May 2012 SAP License Audit
SAP Productivity Pak Help Launchpad by RWD (Ancile Systems uPerform)	755 Prof 1,745 Emp	683/61	Oct 2006	N/A	Named License - Usage as of May 2012 SAP License Audit
SAP BusinessObjects Edge BI, Standard Package w/Data Integration	1	1	Apr 2010	May 2010	Single named license for standalone PC install - Evaluation purposes/Not actively in use
SAP BusinessObjects Xcelsius Enterprise w/Crystal Reports 2008	2	N/A	Apr 2010	May 2010	Single named licenses for standalone PC install - Evaluation purposes/Not installed
SAP Business Objects Enterprise Pro (for Crystal Reports) CPU	1	1	2004	2004	Licensed by CPU

Application Owned by PTC	QTY or LL	Actual Usage	Install Date	Go Live Date	Comments
SAP Business Objects Enterprise Pro (for Crystal Reports) Test/Dev	41	13	2004	2004	Named User License
Crystal Reports	61	37	2004	2004	Named User License
SAP IT Service Desk Operation	1	N/A	Apr 2010	Apr 2010	Defined business transactions (units of 25,000) - Not actively in use (Using MS Service Desk)
SAP Loadrunner by Mercury (HP)	250	N/A	Mar 2007	Apr 2007	Licensed by Virtual User - Used during implementation/ Not actively in use
SAP Test Acceleration & Optimization (TAO)	5	N/A	Mar 2009	Not Implemented	Licensed by Number of Testers - Not actively in use
SAP Solution Manager Adapter for SAP Quality Center by HP	1	N/A	Mar 2009	Not Implemented	Licensed by Number of Connected Systems - Not actively in use
Microsoft SQL Server Enterprise Edition	Multiple	Multiple	May 2006	2006-2008	MS-SQL2005 Licensed for each piece of SAP SW as appl.
SAP Solution Manager/SAP SM Enterprise Edition	1	1	May 06/10	May 06/10	Technical use only (business-oriented functionality not utilized)
SAP Extended Diagnostics by CA Wily	1	1	May 2006	2007	
SAP Enhancement Package 4 (EHP4)	1	1	May 2010	Oct 2010	No new functionality turned on from this as of yet
SAP Enhancement Package 5 (EHP5)	1	N/A	May 2012	Oct 2012	
Panaya Standard SaaS – SAP Supp. Pack Auto. & Test Mngmnt w/HP QC Integration	1	1	N/A	Jan 2012	Licensed by Number of Analyzed Objects - 3-year License thru Dec 2014
SAP cProject Suite – Collaboration Projects	1	N/A	Not Installed	Not Implemented	
SAP Customer Relationship Management (CRM)	1	N/A	Not Installed	Not Implemented	
Org Publisher for SAP from Acquire Solutions	1	N/A	Jul 2008	Oct 2008	Licensed by number of systems
HP Quality Center Enterprise	35	Varies	May 2006	Jun 2006	Licensed by Concurrent Usage
OnBase SAP Archivelink - Connector	1	1	2006	Dec 2007	Licensed by number of systems
OnBase SAP Archivelink - Barcode import	1	1	2006	Dec 2007	Licensed by number of systems
OnBase SAP Archivelink - OLE Viewer	2	2	2006	Dec 2007	Licensed by number of systems
OnBase SAP Archivelink - Business Indexing Connector	1	1	2006	Dec 2007	Licensed by number of systems
Hayes Gold			Dec 2013	Jan 2014	Licensed by database size

Figure 3. Applications/License Inventory & Usage for SAP Environment.

2.3. SAP Functional Areas Implemented

Functional Module	Install Date	Go-Live Date	Business Owner	Comments
Human Capital Management (HCM)	May 2006			
Time Management (TM)/Time Entry (TE)		Dec 2006	Human Resources – Dir.	
Cross-Application Time Sheets (CATS)		Dec 2006	Human Resources – Dir.	
Payroll (PY)		Dec 2007	Human Resources – Dir.	
Compensation Management (CM)		Dec 2007	Human Resources – Dir.	
Personnel Administration (PM)		Dec 2007	Human Resources – Dir.	
Benefits Administration (BN)		Dec 2007	Human Resources – Dir.	
Organizational Management (OM)		Dec 2007	Human Resources – Dir.	
Employee Self-Service (ESS)		Dec 2007	Human Resources – Dir.	
Manager Self-Service (MSS)		Dec 2007	Human Resources – Dir.	
Training & Events Management (TE)		Feb 2009	Human Resources – Dir.	
Employee Evaluations		Jul 2009	Human Resources – Dir.	
Finance (FI)	May 2006			
Controlling (CO)		Mar 2008	Finance - CFO	
Funds Management (FM)		Mar 2008	Finance - CFO	Limited usage
Financial Accounting (FA)		Mar 2008	Finance - CFO	
General Ledger (GL)		Mar 2008	Finance - CFO	
Accounts Payable (AP)		Mar 2008	Finance - CFO	
Accounts Receivable (AR)		Mar 2008	Finance - CFO	
Treasury (TR)		Mar 2008	Finance - CFO	Limited overall functionality
Treasury/Investment Management		Nov 2010	Finance - CFO	Upgrade to full functionality
Fixed Assets (FA)		Mar 2008	Finance - CFO	
Budgeting & Forecasting		Mar 2008	Finance - CFO	Limited usage
Banking		Mar 2008	Finance - CFO	For EBS and in-house banking
Logistics (LOG)	May 2006			
Projects Systems (PS)		Mar 2008	Engineering - CE	
Plant Maintenance (PM)		Mar 2008	Maint. & FEMO - Dirs.	
Materials Management (MM) Purchasing		Mar 2008	Finance - CFO	
Investment Program Management (IM)		Feb 2009	Engineering - CE	
Purchasing (PUR)				Not installed – all Purchasing activities thru SRM
Linear Asset Management (LAM)	Jul 2013	Oct 2013	Maintenance	
Governance Risk Compliance (GRC)	Nov 2013	May 2014	Compliance	
Supplier Relationship Management (SRM)	May 2006	Mar 2008	Finance - CFO	In 1 st year of ext. maintenance

Functional Module	Install Date	Go-Live Date	Business Owner	Comments
Enterprise Buying Professional - ECS				Functions as part of SRM
Business Warehouse (BW)	May 2006	Mar 2008	I.T. - CIO	

Figure 4. SAP Functional Areas Implemented.

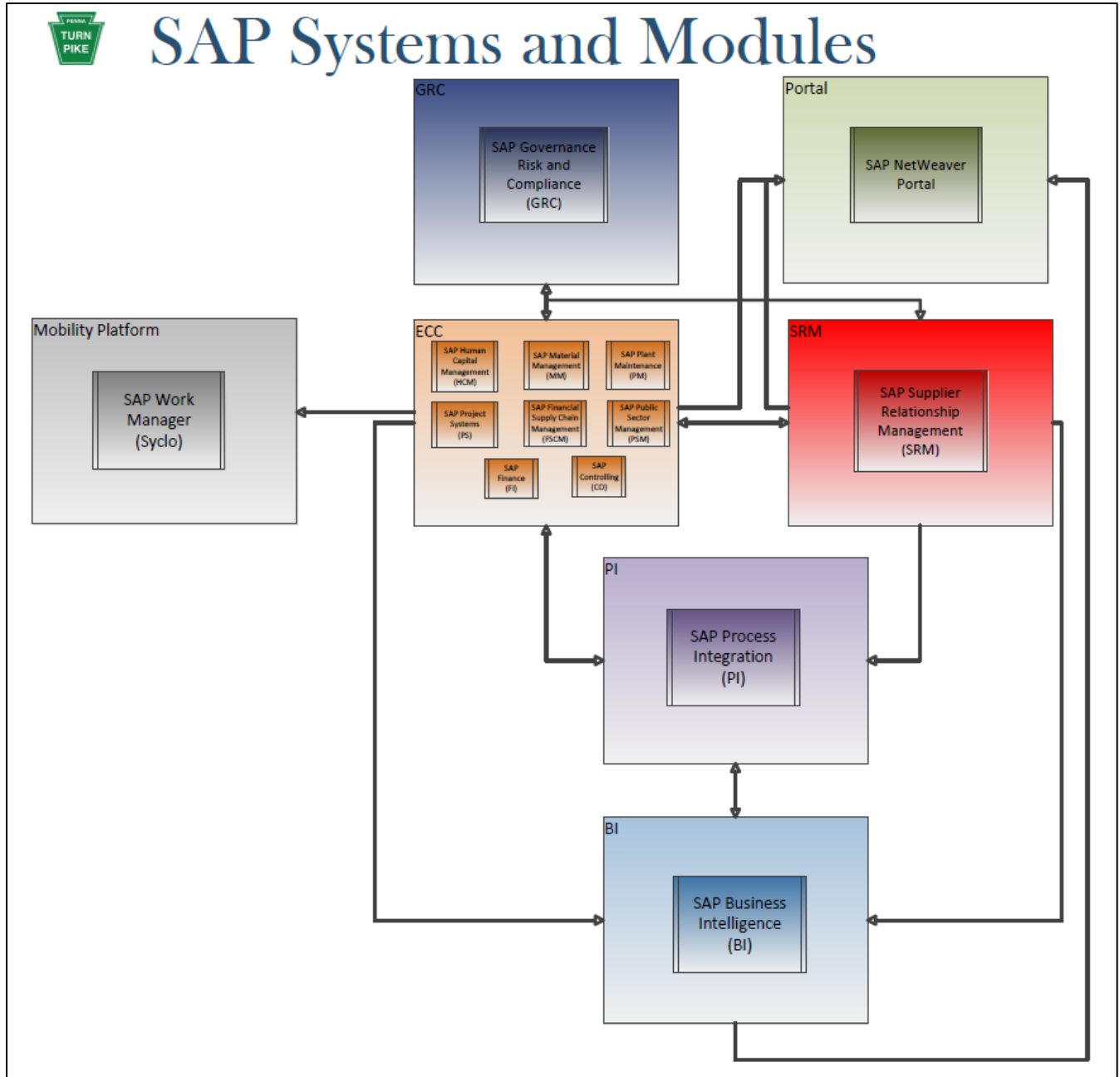


Figure 5. SAP System and Modules.

2.4. SAP Application Version Levels and OS Platform (All SAP systems are 64-bit)

2.4.1. Applications Currently in Use

Application Name	Current Version Level	Operating System Platform & Version
Enterprise Core Component (ECC):	6.0 – EHP5 SP15	Windows 2012 Server R2 X64
SAP GUI	7.5	Most PTC Desktops – some at PL 6
EA Screen (Menu)	6.05.18	
BSI Tax Factory	10.0	
Service Pack	4	
Service Pack	8 (to be implemented June – September 2018)	
Supplier Relationship Management	5.0/Server 5.5 SP19	Windows 2012 Server R2 X64
Business Warehouse	7.3 EHP1	Windows 2012 Server R2 X64
BI Content	7.31 SP13	
NetWeaver	7.3 EHP1	
BEx	7.x Revision 681 SP0	
Portal	SA EHP1 for SAP NW 7.31	Windows 2012 Server R2 X64
Business Objects Edge BI w/Data Integration	Xcelsius Ent. 2008/ Crystal Reports 2008 v1	Standalone Desktop Install
Agile Systems/RWD uPerform	5.01	Windows 2008 Server R2 X64, SP1
OrgPublisher for SAP from Acquire Solutions	SAP Premier V10.0	Standalone Desktop Install
OnBase DMS from Hyland Software	11.0.1.560 SP1	
OnBase Archivelink for SAP	4.5	
Process Infrastructure (XI) / NetWeaver	<ul style="list-style-type: none"> SAP EHP1 for SAP NetWeaver 7.0 (XI) PI NetWeaver 7.3 EHP1 (PI) 	
SAP Solution Manager	7.01 SP14	
SAP Testing Acceleration and Optimization (TAO)	2.0	
Extended Diagnostics by CA Wily	8.0.2.0	
Microsoft SQL Server	2012 11.0.3460	
SAPRouter	39.3 SP4	To be upgraded 3/2015
SAP LoadRunner by Mercury (HP)	8.10/9.10	
Panaya Standard SAP Support Pack Automation & Test Management	7.3	Web-based Software-as-a-Service [SaaS]
HP Quality Center (includes HP Quick Test Pro, HP Quality Center Dashboard and HP Sprinter)	11.52	
UltraEdit	17.1	
UltraCompare	8.1	

Figure 6. SAP Application Version Levels and OS Platform (All SAP systems are 64-bit).

2.4.2. SAP Client Structure

2.4.2.1. Development (DEV)

Software Application	SID	Client	Description	Connected Systems
ECC	ED2	200	Configuration	None
ECC	ED2	210	Test Client	SD1-100, BD2-100, XD2-100, PD2, OnBase
ECC	ED2	300	Test Client	None – Special for Finance & other testing
ECC	ED2	500	Development	None
SRM	SD1	100	Test Client	ED2-210, BD2-100, XD2-100, PD2
SRM	SD1	200	Configuration/Development	None
SRM	SD1	400	Hayes	
BI Portal	BD2	100	Configuration/Testing	ED2-210, SD1-100, XD2-100, PD2
Portal	PD2	N/A	Configuration/Testing	ED2-210, SD1-100, XD2-100, BD2-100
XI	XD2	100	Configuration/Testing	ED2-210, SD1-100, BD2-100
PI	XD2	100	Configuration/Testing	ED2-210, SD1-100, BD2-100

Figure 7. SAP Client Structure – Development.

2.4.2.2. Quality Assurance (QA)

Software Application	SID	Client	Description	Connected Systems
ECC	EQ2	200	QA & Integration Testing/UAT	SQ1-100, BQ2-100, XQ2-100, PQ2, OnBase
ECC	EQ2	300	Year End/Specialized Testing	None
SRM	SQ1	100	QA & Integration Testing/UAT	EQ2-200, BQ2-100, XQ2-100, PQ2
BI Portal	BQ2	100	QA & Integration Testing/UAT	EQ2-200, SQ1-100, XQ2-100, PQ2
Portal	PQ2	N/A	QA & Integration Testing/UAT	EQ2-200, SQ1-100, XQ2-100, BQ2-100
XI	XQ2	100	QA & Integration Testing/UAT	EQ2-200, SQ1-100, BQ2-100
PI	XQ2	100	QA & Integration Testing/UAT	EQ2-200, SQ1-100, BQ2-100

Figure 8. SAP Client Structure - Quality Assurance.

2.4.2.3. Production (PROD)

Software Application	SID	Client	Description	Connected Systems
ECC	EP2	200	ECC 6.0	SP1-100, BP2-100, XP2-100, PP2
SRM	SP1	100	SRM 5.0 Server (5.5)	EP2-200, BP2-100, XP2-100, PP2, OnBase
BI Portal	BP2	100	BI Production	EP2-200, SP1-100, XP2-100, PP2
Portal	PP2	N/A	Portal	EP2-200, BP2-100, SP1-100, XP2-100
XI	XP0	100/500	Exchange Infrastructure (active upgrade to PI)	XP0-100, XP0-500
PI	XP2	100	Exchange Infrastructure	EP2-200, BP2-100, SP1-100

Figure 9. SAP Client Structure - Production.

2.4.2.4. Training

Software Application	SID	Client	Description	Connected Systems
ECC	ET2	200	ECC Training Client	ST1-100, PT2, OnBase
SRM	ST1	100	SRM Training Master	ET2-200, ST1-100, PT2, BT2
Portal	PT2	N/A	Portal Training	ET2-200, ST1-100
BI	BT2	100	BI Training	ET2-200, ST1-100

Figure 10. SAP Client Structure - Training.

2.4.2.5. Sandbox 1

Software Application	SID	Client	Description	Connected Systems
ECC	ES2	200	Configuration	None
ECC	ES2	210	Test Client	SS1-100, BS2-100, XS2-100, PS2, (SS2 in build)
ECC	ES2	500	Development	None
SRM 5.0	SS1	100	Configuration/Testing	ES2-210, BS2-100, XS2-100, PS2
BI Portal	BS2	100	Configuration/Testing	ES2-210, SS1-100, XS2-100, PS2
Portal	PS2	N/A	Configuration/Testing	ES2-210, SS1-100, XS2-100, BS2-100
PI	XS2	100	Configuration/Testing	ES2-210, SS1-100, BS2-100
SRM 7.0	SS2	100		

Figure 11. SAP Client Structure - Sandbox 1.

2.4.2.6. Sandbox 2

Software Application	SID	Client	Description	Connected Systems
ECC	ES3	200	Configuration	None
ECC	ES3	210	Test Client	SS1-100, BS3-100, XS3-100, PS3, (SS2 in build)
ECC	ES3	500	Development	None
SRM 5.0	SS1	100	Configuration/Testing	ES3-210, BS3-100, XS3-100, PS3
BI Portal	BS3	100	Configuration/Testing	ES3-210, SS1-100, XS3-100, PS3
Portal	PS3	N/A	Configuration/Testing	ES3-210, SS1-100, XS3-100, BS3-100
PI	XS3	100	Configuration/Testing	ES3-210, SS1-100, BS3-100
SRM 7.0	SS3	100		

Figure 12. SAP Client Structure - Sandbox 2.

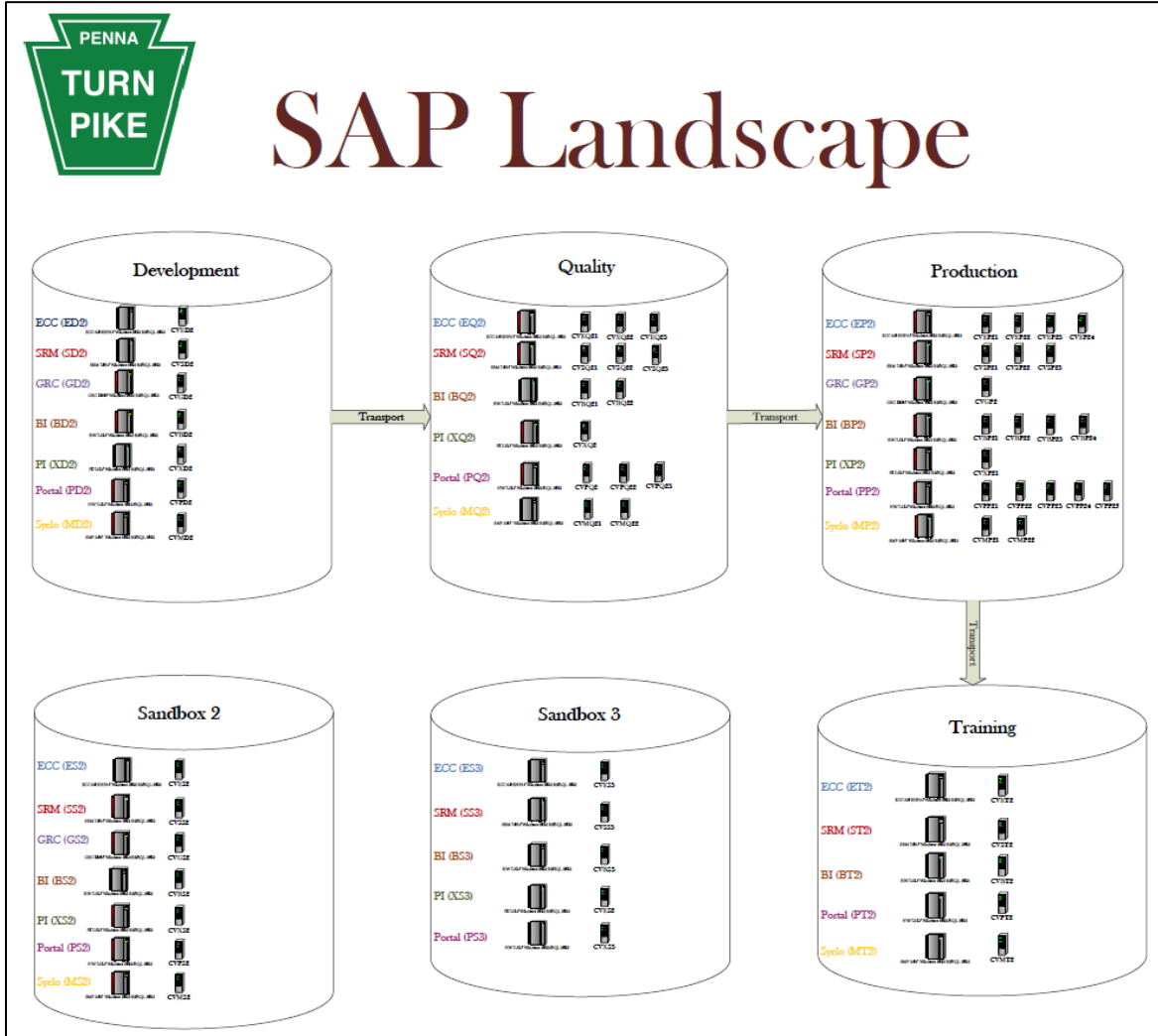


Figure 13. SAP Landscape.

2.4.3. SAP Support Pack Levels

2.4.3.1. BW:

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	731	0013	SAPKB73113	SAP Basis Component
SAP_ABA	731	0013	SAPKA73113	Cross-Application Component
PI_BASIS	731	0013	SAPK-73113INPIBASIS	Basis Plug-In
ST-PI	2008_1_710	0011	SAPKITLREK	SAP Solution Tools Plug-In
BI_CONT	747	0008	SAPK-74708INBICONT	Business Intelligence Content
SAP_BW	731	0013	SAPKW73113	SAP Business Warehouse
ST-A/PI	01R_731	0000	-	Service tools for SAP Basis 731

Figure 14. SAP Support Pack Levels - BW.

2.4.3.2.ECC:

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	702	0017	SAPKB70217	SAP Basis Component
SAP_ABA	702	0017	SAPKA70217	Cross-Application Component
PI_BASIS	702	0017	SAPK-70217INPIBASIS	Basis Plug-In
ST-PI	2008_1_7 00	0014	SAPKITLRDN	SAP Solution Tools Plug-In
SAP_BS_FND	702	0015	SAPK-70215INSAPBSFND	SAP Business Suite Foundation
SAP_BW	702	0017	SAPKW70217	SAP Business Warehouse
GRCPINW	V1000_70 0	0024	SAPK-10324INGRCPINW	SAP GRC NW Plug-in
SAP_AP	700	0033	SAPKNA7033	SAP Application Platform
SMFND	610_700	0005	SAPK-61005INSMFND	Agency SAP Framework Integration Foundation
WEBCUIF	701	0014	SAPK-70114INWEBCUIF	SAP Web UI Framework
SAP_APPL	605	0014	SAPKH60514	Logistics and Accounting
SAP_HR	604	0105	SAPKE604A5	Human Resources
SAP_HRCAR	604	0105	SAPK-604A5INSAPHRCAR	Sub component SAP_HRCAR of SAP_HR
SAP_HRCAT	604	0105	SAPK-604A5INSAPHRCAT	Sub component SAP_HRCAT of SAP_HR
SAP_HRCAU	604	0105	SAPK-604A5INSAPHRCAU	Sub component SAP_HRCAU of SAP_HR
SAP_HRCBE	604	0105	SAPK-604A5INSAPHRCBE	Sub component SAP_HRCBE of SAP_HR
SAP_HRCBR	604	0105	SAPK-604A5INSAPHRCBR	Sub component SAP_HRCBR of SAP_HR
SAP_HRCCA	604	0105	SAPK-604A5INSAPHRCCA	Sub component SAP_HRCCA of SAP_HR
SAP_HRCCH	604	0105	SAPK-604A5INSAPHRCCH	Sub component SAP_HRCCH of SAP_HR
SAP_HRCCL	604	0105	SAPK-604A5INSAPHRCCL	Sub component SAP_HRCCL of SAP_HR
SAP_HRCCN	604	0105	SAPK-604A5INSAPHRCCN	Sub component SAP_HRCCN of SAP_HR
SAP_HRCDE	604	0105	SAPK-604A5INSAPHRCDE	Sub component SAP_HRCDE of SAP_HR
SAP_HRCDK	604	0105	SAPK-604A5INSAPHRCDK	Sub component SAP_HRCDK of SAP_HR
SAP_HRCES	604	0105	SAPK-604A5INSAPHRCES	Sub component SAP_HRCES of SAP_HR
SAP_HRCFI	604	0105	SAPK-604A5INSAPHRCFI	Sub component SAP_HRCFI of SAP_HR
SAP_HRCFR	604	0105	SAPK-604A5INSAPHRCFR	Sub component SAP_HRCFR of SAP_HR
SAP_HRCGB	604	0105	SAPK-604A5INSAPHRCGB	Sub component SAP_HRCGB of SAP_HR
SAP_HRCHK	604	0105	SAPK-604A5INSAPHRCHK	Sub component SAP_HRCHK of SAP_HR
SAP_HRCID	604	0105	SAPK-604A5INSAPHRCID	Sub component SAP_HRCID of SAP_HR
SAP_HRCIE	604	0105	SAPK-604A5INSAPHRCIE	Sub component SAP_HRCIE of SAP_HR
SAP_HRCIN	604	0105	SAPK-604A5INSAPHRCIN	Sub component SAP_HRCIN of SAP_HR
SAP_HRCIT	604	0105	SAPK-604A5INSAPHRCIT	Sub component SAP_HRCIT of SAP_HR
SAP_HRCJP	604	0105	SAPK-604A5INSAPHRCJP	Sub component SAP_HRCJP of SAP_HR
SAP_HRCKR	604	0105	SAPK-604A5INSAPHRCKR	Sub component SAP_HRCKR of SAP_HR
SAP_HRCKW	604	0105	SAPK-604A5INSAPHRCKW	Sub component SAP_HRCKW of SAP_HR
SAP_HRCKZ	604	0105	SAPK-604A5INSAPHRCKZ	Sub component SAP_HRCKZ of SAP_HR
SAP_HRCMX	604	0105	SAPK-604A5INSAPHRCMX	Sub component SAP_HRCMX of SAP_HR
SAP_HRCMY	604	0105	SAPK-604A5INSAPHRCMY	Sub component SAP_HRCMY of SAP_HR
SAP_HRCNL	604	0105	SAPK-604A5INSAPHRCNL	Sub component SAP_HRCNL of SAP_HR
SAP_HRCNO	604	0105	SAPK-604A5INSAPHRCNO	Sub component SAP_HRCNO of SAP_HR
SAP_HRCNZ	604	0105	SAPK-604A5INSAPHRCNZ	Sub component SAP_HRCNZ of SAP_HR

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_HRCOM	604	0105	SAPK-604A5INSAPHRCOM	Sub component SAP_HRCOM of SAP_HR
SAP_HRCPH	604	0105	SAPK-604A5INSAPHRCPH	Sub component SAP_HRCPH of SAP_HR
SAP_HRCPT	604	0105	SAPK-604A5INSAPHRCPT	Sub component SAP_HRCPT of SAP_HR
SAP_HRCQA	604	0105	SAPK-604A5INSAPHRCQA	Sub component SAP_HRCQA of SAP_HR
SAP_HRCRU	604	0105	SAPK-604A5INSAPHRCRU	Sub component SAP_HRCRU of SAP_HR
SAP_HRCSE	604	0105	SAPK-604A5INSAPHRCSE	Sub component SAP_HRCSE of SAP_HR
SAP_HRCSG	604	0105	SAPK-604A5INSAPHRCSG	Sub component SAP_HRCSG of SAP_HR
SAP_HRCTH	604	0105	SAPK-604A5INSAPHRCRH	Sub component SAP_HRCTH of SAP_HR
SAP_HRCTW	604	0105	SAPK-604A5INSAPHRCRW	Sub component SAP_HRCTW of SAP_HR
SAP_HRCUN	604	0105	SAPK-604A5INSAPHRCUN	Sub component SAP_HRCUN of SAP_HR
SAP_HRCUS	604	0105	SAPK-604A5INSAPHRCUS	Sub component SAP_HRCUS of SAP_HR
SAP_HRCVE	604	0105	SAPK-604A5INSAPHRCVE	Sub component SAP_HRCVE of SAP_HR
SAP_HRCZA	604	0105	SAPK-604A5INSAPHRCZA	Sub component SAP_HRCZA of SAP_HR
SAP_HRGXX	604	0105	SAPK-604A5INSAPHRGXX	Sub component SAP_HRGXX of SAP_HR
SAP_HRRXX	604	0105	SAPK-604A5INSAPHRRX	Sub component SAP_HRRXX of SAP_HR
EA-IPPE	400	0027	SAPKGPID27	SAP iPPE
EA-APPL	605	0014	SAPK-60514INEAAPPL	SAP Enterprise Extension PLM, SCM, Financials
EA-DFPS	600	0027	SAPKGPDD27	SAP Enterprise Extension Defense Forces & Public Security
EA-FINSERV	605	0015	SAPK-60515INEAFINSRV	SAP Enterprise Extension Financial Services
EA-GLTRADE	600	0027	SAPKGPGD27	SAP Enterprise Extension Global Trade
EA-HR	605	0082	SAPK-60582INEAHR	SAP Enterprise Extension HR
EA-HRCAR	605	0082	SAPK-60582INEAHRCAR	Sub component EA-HRCAR of EA-HR
EA-HRCAT	605	0082	SAPK-60582INEAHRCAT	Sub component EA-HRCAT of EA-HR
EA-HRCAU	605	0082	SAPK-60582INEAHRCAU	Sub component EA-HRCAU of EA-HR
EA-HRCBE	605	0082	SAPK-60582INEAHRCBE	Sub component EA-HRCBE of EA-HR
EA-HRCBR	605	0082	SAPK-60582INEAHRCBR	Sub component EA-HRCBR of EA-HR
EA-HRCCA	605	0082	SAPK-60582INEAHRCCA	Sub component EA-HRCCA of EA-HR
EA-HRCCH	605	0082	SAPK-60582INEAHRCCCH	Sub component EA-HRCCH of EA-HR
EA-HRCCL	605	0082	SAPK-60582INEAHRCCCL	Sub component EA-HRCCL of EA-HR
EA-HRCCN	605	0082	SAPK-60582INEAHRCCN	Sub component EA-HRCCN of EA-HR
EA-HRCDE	605	0082	SAPK-60582INEAHRCDE	Sub component EA-HRCDE of EA-HR
EA-HRCDK	605	0082	SAPK-60582INEAHRCDK	Sub component EA-HRCDK of EA-HR
EA-HRCES	605	0082	SAPK-60582INEAHRCES	Sub component EA-HRCES of EA-HR
EA-HRCFI	605	0082	SAPK-60582INEAHRCFI	Sub component EA-HRCFI of EA-HR
EA-HRCFR	605	0082	SAPK-60582INEAHRCFR	Sub component EA-HRCFR of EA-HR
EA-HRCGB	605	0082	SAPK-60582INEAHRCGB	Sub component EA-HRCGB of EA-HR
EA-HRCHK	605	0082	SAPK-60582INEAHRCHK	Sub component EA-HRCHK of EA-HR
EA-HRCID	605	0082	SAPK-60582INEAHRCID	Sub component EA-HRCID of EA-HR
EA-HRCIE	605	0082	SAPK-60582INEAHRCIE	Sub component EA-HRCIE of EA-HR
EA-HRCIN	605	0082	SAPK-60582INEAHRRCIN	Sub component EA-HRCIN of EA-HR
EA-HRCIT	605	0082	SAPK-60582INEAHRRCIT	Sub component EA-HRCIT of EA-HR
EA-HRCJP	605	0082	SAPK-60582INEAHRRCJP	Sub component EA-HRCJP of EA-HR
EA-HRCKR	605	0082	SAPK-60582INEAHRCKR	Sub component EA-HRCKR of EA-HR

Component	Release	SP-Level	Support Package	Short Description of Component
EA-HRCKW	605	0082	SAPK-60582INEAHRCKW	Sub component EA-HRCKW of EA-HR
EA-HRCKZ	605	0082	SAPK-60582INEAHRCKZ	Sub component EA-HRCKZ of EA-HR
EA-HRCMX	605	0082	SAPK-60582INEAHRCMX	Sub component EA-HRCMX of EA-HR
EA-HRCMY	605	0082	SAPK-60582INEAHRCMY	Sub component EA-HRCMY of EA-HR
EA-HRCNL	605	0082	SAPK-60582INEAHRCNL	Sub component EA-HRCNL of EA-HR
EA-HRCNO	605	0082	SAPK-60582INEAHRCNO	Sub component EA-HRCNO of EA-HR
EA-HRCNZ	605	0082	SAPK-60582INEAHRCNZ	Sub component EA-HRCNZ of EA-HR
EA-HRCPH	605	0082	SAPK-60582INEAHRCPH	Sub component EA-HRCPH of EA-HR
EA-HRCPT	605	0082	SAPK-60582INEAHRCPPT	Sub component EA-HRCPT of EA-HR
EA-HRCQA	605	0000	-	Sub component EA-HRCQA of EA-HR
EA-HRCRU	605	0082	SAPK-60582INEAHRCRU	Sub component EA-HRCRU of EA-HR
EA-HRCSE	605	0082	SAPK-60582INEAHRCSSE	Sub component EA-HRCSE of EA-HR
EA-HRCSG	605	0082	SAPK-60582INEAHRCSG	Sub component EA-HRCSG of EA-HR
EA-HRCTH	605	0082	SAPK-60582INEAHRCTH	Sub component EA-HRCTH of EA-HR
EA-HRCTW	605	0082	SAPK-60582INEAHRCTW	Sub component EA-HRCTW of EA-HR
EA-HRCUN	605	0082	SAPK-60582INEAHRGUN	Sub component EA-HRCUN of EA-HR
EA-HRCUS	605	0082	SAPK-60582INEAHRGUS	Sub component EA-HRCUS of EA-HR
EA-HRCVE	605	0082	SAPK-60582INEAHRGVE	Sub component EA-HRCVE of EA-HR
EA-HRCZA	605	0082	SAPK-60582INEAHRGZA	Sub component EA-HRCZA of EA-HR
EA-HRGXX	605	0082	SAPK-60582INEAHRGXX	Sub component EA-HRGXX of EA-HR
EA-HRRXX	605	0082	SAPK-60582INEAHRHXX	Sub component EA-HRRXX of EA-HR
EA-PS	605	0014	SAPK-60514INEAPS	SAP Enterprise Extension Public Services
EA-RETAIL	600	0027	SAPKGPRD27	SAP Enterprise Extension Retail
FINBASIS	605	0014	SAPK-60514INFINBASIS	Financial Basis
ECC-DIMP	600	0017	SAPK-60017INECCDIMP	DIMP
ERECRUIT	605	0014	SAPK-60514INERECRUIT	E-Recruiting
FI-CA	605	0014	SAPK-60514INFICA	FI-CA
FI-CAX	605	0014	SAPK-60514INFICAX	FI-CA Extended
INSURANCE	600	0017	SAPK-60017ININSURANC	SAP Insurance
IS-CWM	600	0017	SAPK-60017INISCWM	Industry Solution Catch Weight Management
IS-H	600	0021	SAPK-60021INISH	SAP Healthcare
IS-M	600	0017	SAPK-60017INISM	SAP MEDIA
IS-OIL	600	0017	SAPK-60017INISOIL	IS-OIL
IS-PS-CA	605	0014	SAPK-60514INISPSCA	IS-PUBLIC SECTOR CONTRACT ACCOUNTING
IS-UT	600	0017	SAPK-60017INISUT	SAP Utilities/Telecommunication
LSOFE	600	0027	SAPK-60027INLSOFE	SAP Learning Solution Front-End
SEM-BW	605	0014	SAPK-60514INSEMBW	SEM-BW: Strategic Enterprise Management
GRCPIERP	V1000_700	0022	SAPK-10322INGRCPIERP	GRCPIERP
SMERP	610_700	0005	SAPK-61005INSMERP	Agency SAP Framework ERP AddOn
ACLDL	700_700	0000	-	Direct Link
ST-A/PI	01S_700	0001	SAPKITAB7R	Servicetools for other App./Netweaver 04

Figure 15. SAP Support Pack levels - ECC.

2.4.3.3. **GRC:**

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	740	0009	SAPKB74009	SAP Basis Component
SAP_ABA	740	0009	SAPKA74009	Cross-Application Component
SAP_GWFND	740	0009	SAPK-74009INSAPGWFND	SAP Gateway Foundation 7.40
SAP_UI	740	0011	SAPK-74011INSAPUI	User Interface Technology 7.40
PI_BASIS	740	0009	SAPK-74009INPIBASIS	Basis Plug-In
ST-PI	740	0001	SAPK-74001INSTPI	SAP Solution Tools Plug-In
SAP_BW	740	0009	SAPKW74009	SAP Business Warehouse
GRCFND_A	V1000	0018	SAPK-V1018INGRCFND A	GRC Foundation ABAP
GRCPINW	V1000_731	0009	SAPK-10509INGRCPINW	SAP GRC NW Plug-in
ST-A/PI	01R_731	0001	SAPKITAB9N	Servicetools for SAP Basis 731

Figure 16. SAP Support Pack levels - GRC.

2.4.3.4. **PI:**

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	731	0017	SAPKB73117	SAP Basis Component
SAP_ABA	731	0017	SAPKA73117	Cross-Application Component
PI_BASIS	731	0017	SAPK-73117INPIBASIS	Basis Plug-In
ST-PI	2008_1_710	0013	SAPKITLREM	SAP Solution Tools Plug-In
SAP_BW	731	0017	SAPKW73117	SAP Business Warehouse
ST-A/PI	01S_731	0000	-	Servicetools for SAP Basis 731

Figure 17. SAP Support Pack levels - PI.

2.4.3.5. **SRM:**

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	740	0009	SAPKB74009	SAP Basis Component
SAP_ABA	740	0009	SAPKA74009	Cross-Application Component
SAP_GWFND	740	0010	SAPK-74010INSAPGWFND	SAP Gateway Foundation 7.40
SAP_UI	740	0011	SAPK-74011INSAPUI	User Interface Technology 7.40
PI_BASIS	740	0009	SAPK-74009INPIBASIS	Basis Plug-In
ST-PI	740	0002	SAPK-74002INSTPI	SAP Solution Tools Plug-In
SAP_BW	740	0009	SAPKW74009	SAP Business Warehouse
GRCPINW	V1000_731	0009	SAPK-10509INGRCPINW	SAP GRC NW Plug-in
IW_FNDGC	100	0003	SAPK-10003INIWFNDGC	SAP IW FNDGC 100
MDG_FND	747	0007	SAPK-74707INMDGFND	MDG Foundation 732
SAP_AP	700	0032	SAPKNA7032	SAP Application Platform
SAP_BS_FND	747	0007	SAPK-74707INSAPBSFND	SAP Business Suite Foundation
WEBCUIF	747	0007	SAPK-74707INWEBCUIF	SAP Web UI Framework
SRM_PLUS	713	0007	SAPK-71307INSRMPLUS	SRM_PLUS for mySAP SRM
SRM_SERVER	713	0007	SAPK-71307INSRMSRV	SRM_SERVER
GBSRM001	700	0014	SAPK-70014INGBSRM001	GBSRM001 SRM Shopping Cart Approval 1.0
SMCSRMIT	100	0009	SAPK-10009INSMCSRMIT	Integration Comp. for Integration of Sup
SRMNXPO1	100	0006	SAPK-10006INSRMNXPO1	SRM Add-on New Experience
SRMSMC	200	0000	-	SAP Supplier Lifecycle Management 2.0

Component	Release	SP-Level	Support Package	Short Description of Component
BP-CANW	731V7	0000	-	Tech. Obj. for SAP BP pkg. act. based on
BP-SOLBLD	70V9	0000	-	Best Practices Solution Builder on EHP5
ST-A/PI	01R_731	0002	SAPKITAB9P	Servicetools for SAP Basis 731

Figure 18. SAP Support Pack Levels - SRM.

2.4.3.6. Solutions Manager:

Component	Release	SP-Level	Support Package	Short Description of Component
SAP_BASIS	702	0015	SAPKB70215	SAP Basis Component
SAP_ABA	702	0015	SAPKA70215	Cross-Application Component
CTS_PLUG	200	0015	SAPK-20015INCTSPLUG	SAP CTS Plugin
PI_BASIS	702	0015	SAPK-70215INPIBASIS	Basis Plug-In
ST-PI	2008_1_700	0011	SAPKITLRDK	SAP Solution Tools Plug-In
BI_CONT	707	0007	SAPK-70707INBICONT	Business Intelligence Content
GW_CORE	200	0008	SAPK-20008INGWCORE	SAP GW CORE 200
SAP_BS_FND	702	0013	SAPK-70213INSAPBSFND	SAP Business Suite Foundation
SAP_BW	702	0015	SAPKW70215	SAP Business Warehouse
UISAPUI5	100	0007	SAPK-10007INUISAPUI5	SAP UI5
UI_INFRA	100	0007	SAPK-10007INUIINFRA	SAP UI INTEGRATION INFRASTRUCTURE
IW_GIL	100	0004	SAPK-10004INIWGIL	Generic Interaction Layer
SAP_AP	700	0031	SAPKNA7031	
WEBCUIF	701	0012	SAPK-70112INWEBCUIF	SAP Web UI Framework
BBPCRM	701	0012	SAPKU70112	BBPCRM
CPRXRPM	500_702	0011	SAPK-50011INCPRXRPM	SAP Portfolio and Project Management 5.0 (ABAP)
IW_BEP	200	0008	SAPK-20008INIWBEP	Backend Event Provider
IW_FND	250	0008	SAPK-25008INIWFND	SAP IW FND 250
ST	710	0012	SAPKITL712	SAP Solution Manager Tool
ST-BCO	710	0010	SAPK-71010INSTBCO	BI Content for SAP Solution Manager
RTCISM	100	0000	-	Integration into SAP IT Infrastructure Management
SOCO	101	0003	SAPK-10103INSOCO	SAP Solution Composer Server
ST-A/PI	01R_700	0001	SAPKITAB7N	Application Servicetools for SolMan 7.0-
ST-ICC	200	0000	-	Innovation Control Center
ST-ICO	150_700	0045	SAPK-15089INSTPL	SAP Solution Manager Implementation Content
ST-SER	701_2010_1	0026	SAPKITLOSQ	SAP Solution Manager Service Tools

Figure 19. SAP Support Pack Levels - Solutions Manager.

2.4.3.7. Portal:

/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Location	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element / Name	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Vendor	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Version
SAP AG	ADSSAP	sap.com	1000.7.31.15.0.20150108170900
SAP AG	AJAX-RUNTIME	sap.com	1000.7.31.15.2.20150313192200
SAP AG	BASETABLES	sap.com	1000.7.31.15.0.20150108170900
SAP AG	BI-BASE-B	sap.com	1000.7.31.15.0.20150108174900
SAP AG	BI-BASE-E	sap.com	1000.7.31.15.0.20150108174900
SAP AG	BI-BASE-S	sap.com	1000.7.31.15.0.20150108174900
SAP AG	BI-IBC	sap.com	1000.7.31.15.0.20150108174900
SAP AG	BI-REPPLAN	sap.com	1000.7.31.15.0.20150108180600
SAP AG	BI-WDALV	sap.com	1000.7.31.15.0.20150108173400
SAP AG	BI-WDEXT	sap.com	1000.7.31.15.0.20150108180600
SAP AG	BIWEBAPP	sap.com	1000.7.31.15.0.20150108174900
SAP AG	BI_UDI	sap.com	1000.7.31.15.0.20150108174900
SAP AG	BPEM-BASIS	sap.com	1000.7.31.15.0.20150108180600
MAIN_ERP55VAL_C	BPERPUTXSS	sap.com	1000.1.51.7.0.20130923055722
MAIN_ERP55VAL_C	BPERP_TECINF	sap.com	1000.1.51.7.0.20130923052449
SAP AG	BP_BIADMIN	sap.com	1000.60.3.1.0.20110213113400
MAIN_ERP54VAL_C	BP_DMSCONN	sap.com	1000.7.0.0.0.20110210105016
MAIN_ERP553VA_C	BP_ERP5ASS	sap.com	1000.1.3.0.0.20110705124613
MAIN_ERP56VAL_C	BP_ERP5BUY	sap.com	1000.1.61.5.0.20130918090015
MAIN_ERP56VAL_C	BP_ERP5COM	sap.com	1000.1.61.6.0.20130918091100
MAIN_ERP54VAL_C	BP_ERP5ESS	sap.com	1000.1.41.11.0.20120402111759
MAIN_ERP55VAL_C	BP_ERP5HRA	sap.com	1000.1.51.6.0.20130923050608
MAIN_ERP55VAL_C	BP_ERP5MSS	sap.com	1000.1.51.7.0.20130923050751
MAIN_SRM73VAL_C	BP_SRM	sap.com	1000.7.03.6.0.20140905094533
SAP AG	CAF	sap.com	1000.7.31.15.0.20150108175000
SAP AG	CAF-MF	sap.com	1000.7.31.15.0.20150108175000
SAP AG	CAF-UI	sap.com	1000.7.31.15.0.20150108180600
SAP AG	CFG_ZA	sap.com	1000.7.31.15.0.20150108170900
SAP AG	CFG_ZA_CE	sap.com	1000.7.31.15.0.20150108170900
SAP AG	COLLAB-ADP	sap.com	1000.7.31.15.0.20150108180600
SAP AG	COMP_BUILD	sap.com	1000.7.31.15.0.20150108174800
SAP AG	CORE-TOOLS	sap.com	1000.7.31.15.0.20150108170900
SAP AG	CU-BASE-JAVA	sap.com	1000.7.31.15.0.20150108174900
SAP AG	CU-BASE-WD	sap.com	1000.7.31.15.0.20150108180600
SAP AG	CU-WD4VC-ADPT	sap.com	1000.7.31.15.0.20150108180600
SAP AG	DATA-MAPPING	sap.com	1000.7.31.15.0.20150108174900
SAP AG	DI_CLIENTS	sap.com	1000.7.31.15.0.20150108170900
SAP AG	ECM-ADMIN	sap.com	1000.7.31.15.0.20150108173400
SAP AG	ECM-APPS	sap.com	1000.7.31.15.0.20150108173400
SAP AG	ECM-CORE	sap.com	1000.7.31.15.0.20150108173400
SAP AG	ECM-JEE-COMP	sap.com	1000.7.31.15.0.20150108173400

/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Location	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element / Name	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Vendor	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Version
SAP AG	ECM-STORE	sap.com	1000.7.31.15.0.20150108173400
SAP AG	ENGFACADE	sap.com	1000.7.31.15.0.20150102180600
SAP AG	ENGINEAPI	sap.com	1000.7.31.15.0.20150108170900
SAP AG	EP-ADMIN	sap.com	1000.7.31.15.0.20150108175000
SAP AG	EP-APPS-EXT	sap.com	1000.7.31.15.0.20150108175000
SAP AG	EP-BASIS	sap.com	1000.7.31.15.2.20150313220100
SAP AG	EP-BASIS-API	sap.com	1000.7.31.15.2.20150310214000
SAP AG	EP-CONNECTIVITY	sap.com	1000.7.31.15.0.20150108175000
SAP AG	EP-CONNECTIVITY-EXT	sap.com	1000.7.31.15.0.20150108175000
SAP AG	EP-MODELING	sap.com	1000.7.31.15.0.20150108175000
SAP AG	EP-RUNTIME	sap.com	1000.7.31.15.4.20150322190446
SAP AG	EP-WPC	sap.com	1000.7.31.15.0.20150108175000
SAP AG	EP_BUILDDT	sap.com	1000.7.31.15.0.20150108174800
SAP AG	ESCONF_BUILDDT	sap.com	1000.7.31.15.0.20150108174800
SAP AG	ESI-UI	sap.com	1000.7.31.15.0.20150108180600
SAP AG	ESMP_BUILDDT	sap.com	1000.7.31.15.0.20150108174900
SAP AG	ESP_FRAMEWORK	sap.com	1000.7.31.15.0.20150108174900
SAP AG	ESREG-BASIC	sap.com	1000.7.31.15.0.20150108174900
SAP AG	ESREG-SERVICES	sap.com	1000.7.31.15.0.20150108174900
SAP AG	FRAMEWORK	sap.com	1000.7.31.15.0.20150108170900
SAP AG	FRAMEWORK-EXT	sap.com	1000.7.31.15.2.20150310213700
SAP AG	GP-CORE	sap.com	1000.7.31.15.0.20150108180500
SAP AG	GP-PP	sap.com	1000.7.31.15.0.20150108180500
SAP AG	GP-VC	sap.com	1000.7.31.15.0.20150108180500
SAP AG	GROUPWARE	sap.com	1000.7.31.15.0.20150108174900
SAP AG	J2EE-APPS	sap.com	1000.7.31.15.0.20150108170900
SAP AG	J2EE-FRMW	sap.com	1000.7.31.15.0.20150108170900
SAP AG	JSPM	sap.com	1000.7.31.15.0.20150108170900
SAP AG	JWF	sap.com	1000.7.31.15.0.20150108174900
SAP AG	KM-KW_JIKS	sap.com	1000.7.31.15.0.20150108174900
SAP AG	KMC-BC	sap.com	1000.7.31.15.0.20150108174900
SAP AG	KMC-CM	sap.com	1000.7.31.15.0.20150108174900
SAP AG	KMC-COLL	sap.com	1000.7.31.15.0.20150108174900
SAP AG	KMC-WPC	sap.com	1000.7.31.15.0.20150108174900
SAP AG	LM-CORE	sap.com	1000.7.31.15.0.20150108170900
SAP AG	LM-CTS	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LM-CTS-UI	sap.com	1000.7.31.15.0.20150108170900
SAP AG	LM-MODEL-BASE	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LM-MODEL-NW	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LM-PORTAL	sap.com	1000.7.31.15.0.20150108180600
SAP AG	LM-SLD	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LM-TOOLS	sap.com	1000.7.31.15.0.20150108180600

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SAP AG	LMCFG	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LMCTC	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LMNWABASICAPPS	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LMNWABASICCOMP	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LMNWABASICMBEAN	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LMNWACDP	sap.com	1000.7.31.15.0.20150108173400
SAP AG	LMNWATOOLS	sap.com	1000.7.31.15.0.20150108180600
SAP AG	LMNWAUIFRMRK	sap.com	1000.7.31.15.0.20150108173400
SAP AG	MESSAGING	sap.com	1000.7.31.15.0.20150108174900
SAP AG	MMR_SERVER	sap.com	1000.7.31.15.0.20150108174900
SAP AG	MOIN_BUILD	sap.com	1000.7.31.15.0.20150108170900
SAP AG	NET-PDK	sap.com	1000.7.31.15.0.20150108175000
SAP AG	NWTEC	sap.com	1000.7.31.15.0.20150108173400
SAP AG	ODATA-CXF-EXT	sap.com	1000.7.31.15.0.20150108173400
SAP AG	RTC	sap.com	1000.7.31.15.0.20150108174900
SAP AG	RTC-STREAM	sap.com	1000.7.31.15.0.20150108174900
SAP AG	SAP-XI3RDPARTY	sap.com	1000.7.31.11.0.20140116225100
MAIN_ERP553VA_C	SAPPCUI_GP	sap.com	1000.633.0.1.0.20120427113021
SAP AG	SAP_BUILD	sap.com	1000.7.31.15.0.20150108170900
MAIN_ERP553PA_C	SAP_ESS	sap.com	1000.633.0.1.1.20120802180711
MAIN_ERP553VA_C	SAP_MSS	sap.com	1000.630.0.1.0.20120427113023
SAP AG	SEA-CORE	sap.com	1000.7.31.15.0.20150108174900
SAP AG	SEA-FACADE	sap.com	1000.7.31.15.0.20150108174900
SAP AG	SEA-UI	sap.com	1000.7.31.15.0.20150108180500
SAP AG	SECURITY-EXT	sap.com	1000.7.31.15.0.20150108170900
SAP AG	SERVERCORE	sap.com	1000.7.31.15.0.20150108170900
SAP AG	SERVICE-COMP	sap.com	1000.7.31.15.0.20150108174900
SAP AG	SOAMONBASIC	sap.com	1000.7.31.15.0.20150108180600
SAP AG	SR-UI	sap.com	1000.7.31.15.0.20150108180600
MAIN_SRMNW73V_C	SRMJVTB	sap.com	1000.7.30.0.0.20110413142321
SAP AG	SUPPORTTOOLS	sap.com	1000.7.31.15.0.20150108170900
SAP AG	SWLIFECYCL	sap.com	1000.7.31.15.0.20150108180600
SAP AG	UDDI	sap.com	1000.7.31.15.0.20150211190700
SAP AG	UISAPUI5_JAVA	sap.com	1000.7.31.15.0.20150108170900
SAP AG	UKMS_JAVA	sap.com	1000.7.31.15.0.20150108180600
SAP AG	UMEADMIN	sap.com	1000.7.31.15.0.20150108173400
SAP AG	UWLJWF	sap.com	1000.7.31.15.11.20160416020809
SAP AG	VC70RUNTIME	sap.com	1000.7.31.15.0.20150108174700
SAP AG	VCBASE	sap.com	1000.7.31.15.0.20150108174700
SAP AG	VCCORERT	sap.com	1000.7.31.15.0.20150108174700
SAP AG	VCFRAMEWORK	sap.com	1000.7.31.15.0.20150108174700
SAP AG	VCFREESTYLEKIT	sap.com	1000.7.31.15.0.20150108174700

/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Location	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element / Name	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Vendor	/SAP_ITSAMJ2ee Cluster Software Component Part Component Element/ Version
SAP AG	VCKITBI	sap.com	1000.7.31.15.0.20150108180600
SAP AG	VTP_BUILD	sap.com	1000.7.31.15.0.20150108174800
SAP AG	WD-ADOBE	sap.com	1000.7.31.15.0.20150108170800
SAP AG	WD-APPS	sap.com	1000.7.31.15.0.20150108174700
SAP AG	WD-FLEX	sap.com	1000.7.31.15.0.20150108170800
SAP AG	WD-RUNTIME	sap.com	1000.7.31.15.0.20150108170800
SAP AG	WD-RUNTIME-EXT	sap.com	1000.7.31.15.0.20150108174700
SAP AG	WDEXTENSIONS	sap.com	1000.7.31.15.0.20150108180500
SAP AG	WSRM	sap.com	1000.7.31.15.0.20150108174900

Figure 20. SAP Support Pack Levels - Portal.

2.4.4. SAP Technical Components

2.4.5. Supported Custom SAP Objects

The Custom Supported SAP Object Types is a list of Pennsylvania Turnpike Commission custom object descriptions and counts. This is an accumulation of the four SAP systems: ERP Central Component (ECC), Supplier Relationship Management (SRM), Business Intelligence (BI) and Exchange Infrastructure (XI). The object category and type descriptions have a direct correlation with objects in the SAP Repository Information System. The repository contains modeling objects, ABAP Dictionary objects, programming objects, and environment objects. Counts were derived by querying the repository for custom objects (object names starting with ‘Y’ and ‘Z’).

Object Category	Total
Programs (ABAP)	188
Function Modules	168
Includes	84
BADIs	62
Enhancements Customer Exits	23
Z Transactions	166
Forms	37
User Exits	17
Interface/XI Scenarios	68
Workflow Templates	38
Database Tables	108
GRAND TOTALS	959

Figure 21. SAP Objects.

2.4.6. Business Warehouse/Business Intelligence Objects

The BW/BI technical objects are the building blocks of the data warehouse. The counts include both standard business content and custom created objects. The objects are dependent upon one another. They encompass the loading of data into the system, the modeling of the data and the representation of the data to the user.

Object	Total	Standard	Custom
Cubes	162	50	112
Data Store Objects (DSO)	332	51	281
InfoObjects	6,589	3,052	3,537
Data Sources	979	510	469
Queries	995	139	856
Web Templates (Reports)	295	0	295
GRAND TOTALS	9,352	3,802	5,550

Figure 22. BI Objects.

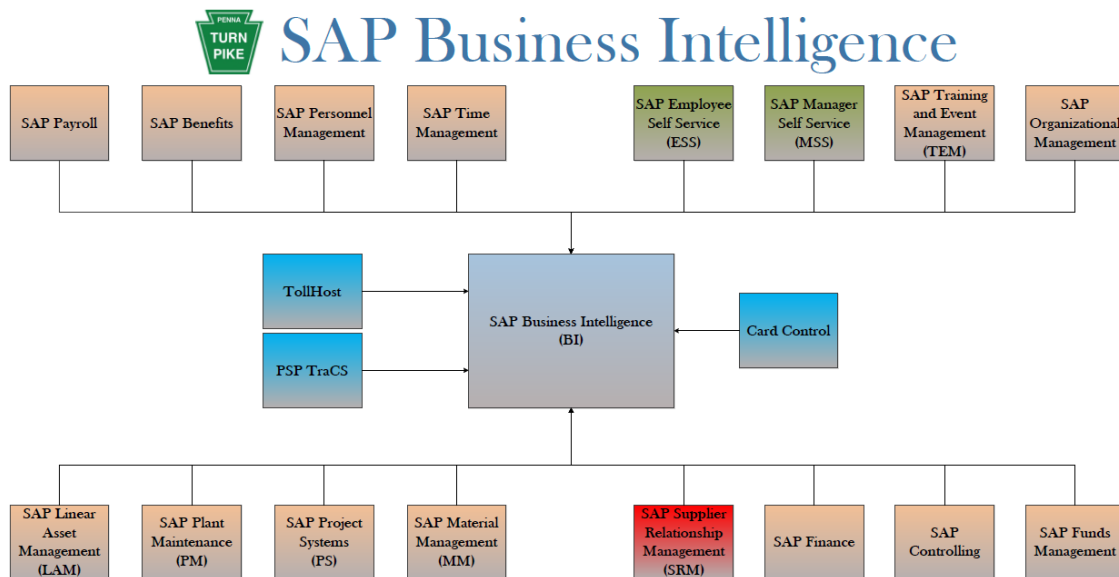


Figure 23. SAP Business Intelligence.

2.4.7. SAP Interfaces by Module

2.4.7.1. FI: 15 Interfaces

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
Accounts Receivable	Inbound	BI Data from CSC - Surety	NFS	PI	N/A

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
Accounts Receivable	Inbound	AR Feed from Toll Host COP - Customer and Invoice	NFS	ABAP	ZCOPFD01
Accounts Receivable	Inbound	AR Customer Invoice Upload from Excel File	NFS	ABAP	ZFIARLOAD
Accounts Receivable	Internal	HCM Retiree Benefits Data to AR - Create Parked Invoices	NFS	ABAP	ZFAR_I101_RETIREE_BILLING
Accounts Payable	Inbound	P-Card Transactions from PNC Bank	SFTP/ PI	PI ABAP	ZPTC_FI_PCARD, ZPTC_FI_TOLLHOST_PCARD_FC, ZPTC_FGL_I001_VES_TOLLHOST
General Ledger	Inbound	GL Data Feed from CSC - Toll Host Revenue Interface	NFS	PI ABAP	ZPTC_2_FGL_I003, ZPTC_FGL_I001_VES_TOLLHOST
Treasury	Inbound	Wells Fargo Inbound Electronic Bank Statements	SFTP/ PI	PI ABAP	ZPTC_FI_WELLSFARGO_EBS
Treasury	Inbound	Electronic Lockbox Information from Wells Fargo Inbound	SFTP/ PI	PI ABAP	ZPTC_FI_WELLSFARGO_LOCKBOX
Treasury	Inbound	Electronic Bank Statement Data from BNY Mellon	SFTP/ PI	PI ABAP	ZPTC_FI_BNYM_EBS
Treasury	Inbound	Electronic Bank Statement Data from Wells Fargo Corporate Trust (WFCT)	SFTP/ PI	PI ABAP	ZPTC_FI_WFCT_EBS
Treasury	Outbound	Positive Pay File to Wells Fargo	SFTP/ PI	PI ABAP	ZPOSITIVE_PAYFILE_UPLOAD
Payroll	Outbound	ACH Payment Files from PY to Wells Fargo	SFTP/ PI	PI ABAP	ZPTC_FI_WELLSFARGO_PY_ACH_PMT
AP	Internal	AP Employee Vendor Address Process	NFS	ABAP	Z_FI_AP_EMP_VEND Z_FI_AP_EMP_VEND_CREATE_BDC Z_FI_AP_EMP_VEND_UPDT_BDC
N/A	Inbound	Upload FI JV from Excel File	NFS	ABAP	ZJV_UPLOAD

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
N/A	Inbound	Electronic Bank Statement for Treasury Transactions from US Bank	SFTP/ PI	PI ABAP	ZPTC_FI_USBANK_EBS

Figure 24. FI Interfaces.

2.4.7.2.HCM: 30 Interfaces

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
Benefits	Outbound	HCM Benefits Data to Aetna - Prescription	Manual File Upload to Vendor Website	PI ABAP .BAT	ZPTC_HCM_BENEFITS_A ETNA_2, RPUBEN52
Benefits	Outbound	HCM Benefits Data to AFLAC	SFTP/ PI	Not indicated	ZPTC_HCM_BENEFITS_A FLAC
Benefits	Outbound	HCM Benefits Data to United Concordia - Dental	Manual File Upload to Vendor Website	PI .BAT	ZPTC_HCM_BENEFITS_C ONCORDIA
Benefits	Outbound	HCM Benefits Data to Highmark Davis Vision - Vision	Manual File Upload to Vendor Website	PI .BAT	ZPTC_HCM_BENEFITS_D AVIS
Benefits	Outbound	HCM Benefits Data to Highmark - Medical	Manual File Upload to Vendor Website	PI .BAT	ZPTC_HCM_BENEFITS_H IGHMARK
Benefits	Outbound	HCM Benefits Data to Commonwealth of PA - SERS - Retirement	SFTP/ PI	PI	ZPTC_HCM_BENEFITS_S ERS
Benefits	Outbound	HCM Benefits Data to MetLife - Life Insurance	SFTP/ PI	Not indicated	ZPTC_HCM_METLIFE
Benefits	Inbound	HCM Benefits Data to MetLife - Life Insurance	SFTP/PGP/Globalscape	Not indicated	ZPTC_HCM_METLIFE
Benefits	Outbound	HCM Benefits Data to Commonwealth of PA - Eligibility File to SECA	SFTP /Globalscape	ABAP	ZHBN_I009_SECA ZHR010 ZHR011 BALSUB Z_SECA_ELIG_WEEKLY (job)
Benefits	Outbound	HCM Benefits Data to Commonwealth of PA - Deductions File to SECA	SFTP /Globalscape	Not indicated	Not indicated
Benefits	Outbound	MetLife Short Term Disability	SFTP/ PI	ABAP PI	ZHBM_I14402_METLIFE_ STD

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
					ZPTC_HCM_METLIFE_ST D
Benefits	Outbound	CVS	SFTP/PI	ABAP PI	Not indicated
Personnel Administration	Inbound	Employee Photos HCM Data from MS Dynamics CRM Card Management system Employee Pics	NFS	PI ABAP CRM/ MS Dynamics	Z_HPA_COPY_EMP_PICS ZHPA_I10250_EMP_PHOTO_EXTRACT ZPTC_HCM_EMPPHOTO
Personnel Administration	Outbound	HCM Data Extract to OnBase	NFS	ABAP	ZHPA_I380_EXTRACT_PA0002
Personnel Administration	Outbound	HCM Data Extract to LDAP (Active Directory)	NFS	ABAP	Z_SAP_HR_LDAP2
Personnel Administration	Outbound	HCM Data Extract to LOA	Email	ABAP	ZHPA_I407_EXTRACT_ACTIONS
Personnel Administration	Outbound	PennWATCH - Complement	SFTP/ Globalscape	ABAP	ZHPA_I25545_PENNWATCH
Personnel Administration	Outbound	PennWATCH - Salary	SFTP/ Globalscape	ABAP	ZHPA_I25545_PENNWATCH
Personnel Administration	Outbound	PennWATCH - Compensation	SFTP/ Globalscape	ABAP	ZHPA_I25545_PENNWATCH
Personnel Administration	Outbound	Disclosure Statements to the Office of Administration	SFTP/ Globalscape	ABAP	ZHPA_I52541_DISCLOSURES
Personnel Administration	Internal	Update AR from HCM - Customer Master	NFS	ABAP	ZHPA_I101_RET_BILL_CUSTOMERS
Accounts Payable	Outbound	ACH Payment Files from AP to Wells Fargo	SFTP/ PI	PI ABAP	ZPTC_FI_WELLSFARGO_AP_ACH_PMT
Payroll	Inbound	HCM Data Feed from Teamsters - Union Dues	NFS	ABAP	ZHPY_I016_UNION_DUES
Payroll	Outbound	ADP Print	SFTP/Globalscape	Not indicated	ZPTC_HCM_ADPPRINT
Payroll	Outbound	Monthly Local Wage Tax	SFTP	ABAP	ZHPY_I47233_MTHLY_LOCAL_EIT ZDFR_I332_INTERFACE_DSPY Batch job: Z_HPY_I47233_MTHLY_LOCAL_EIT
Payroll	Outbound	Annual Local Wage Tax	SFTP	ABAP	ZHPY_I596D_ANNUAL_LOCAL_WT

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
					ZDFR_I332_INTERFACE_DSPY
N/A	Inbound	Employee Driver's License Validation Interface	SFTP	PI ABAP	ZPTC_HCM_DRIVERSLIC ENSE
N/A	Inbound	HCM Benefits Data from Great West - Deferred Compensation - Inbound	SFTP/Globalscape	Not indicated	Not indicated
N/A	Inbound	HCM SERS REC75 Report	SFTP/PI	PI	Not indicated
N/A	Outbound	HCM Benefits Data to Great West - Deferred Compensation - Outbound	SFTP/Globalscape	Not indicated	Not indicated

Figure 25. HCM Interfaces.

2.4.7.3. PS/PM: 9 Interfaces

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
BI	Inbound	PSPTRACS BI TRACS Data from PSP - Inbound	SFTP/PI	PI ABAP RFC BI OnBa-se	ZPTC_BI_PSPTRACS
Plant Maintenance	Inbound	Plant Maintenance Measuring Points Feed from Trak Fuel System	NFS	PI ABAP	ZPTC_LO_FUELTRAK
Plant Maintenance	Inbound	PONTIS Interface A Inbound from Baker	SFTP/Global-scape	PI ABAP	ZPTC_LO_PONTIS
Plant Maintenance	Inbound	SIGNS -Interface A	SFTP/PI	ABAP PI	ZPTC_LO_PM_AASIGN S_A
Plant Maintenance	Outbound	SIGNS -Interface D	SFTP/PI	ABAP PI	Scenario: ZPTC_LO_PM_AASIGN S_D Program: ZLPM_I10210_AGILE_S IGNS_D

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
Plant Maintenance	Outbound	PONTIS Interface B Work Order Outbound to Baker	SFTP/Globals cape	PI ABAP	ZPTC_LO_PONTIS
Plant Maintenance	Outbound	PONTIS Interface C Master Data Outbound to Baker	SFTP/Globals cape	PI ABAP	ZPTC_LO_PONTIS
Materials Maintenance	Outbound	Right To Know Interface for PO and Contract Information	FTP process to an external PA State Treasury Department URL hosted by VoiceNet	Work-flow / ABAP / PI / .BAT - VPN (net use command)	Z_LM_PR_RT2KNOW_PO Z_LM_PR_RT2KNOW_CONTRACT
Vendor System	Internal	Load SRM Vendor Contact Information	NFS	ABAP	ZVENDOR_CREATE_EMPLOYEE

Figure 26. PS/PM Interfaces.

2.4.7.4. MM/SCM: 1 Interface

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
N/A	Outbound	Right to Know	File	Not specified	Not indicated

Figure 27. MM/SCM Interfaces.

2.4.7.5. GIS: 1 Interface

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
N/A	Outbound	Copy PSP TraCS csv's files to GIS	File	PI	ZPTC_GIS_PSPTRACS_CSV

Figure 28. GIS Interface.

2.4.7.6. BI: 1 Interface

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
N/A	Inbound	EZPACCTS and EZPTAGS files from Toll Host to BI	NFS	PI ABAP	ZPTC_BI_EZPACCTAG, ZPTC_FGL_I001_VES_TOLLHOST

Figure 29. BI Interface.

2.4.7.7. Miscellaneous: 1 Interface

Functionality	Direction	Interfaces	Data Transmission	Dev Type	Transaction Code
N/A	N/A	PI Mail	NFS	PI ABAP	ZPTC_MAIL

Figure 30. Miscellaneous Interface.

2.4.8. Interface Management

The ES / GIS Enterprise Development and Functional Teams manage interfaces.

Business requirements are identified and reviewed to determine the types of interfaces to be developed for both inbound and outbound interfaces to/from the PTC. These requirements primarily come from Business Owners and/or the functional support team. Some requests are received directly from outside Commission entities such as Commonwealth of PA agencies. All requirements for interfaces to sources outside the PTC are coordinated through Business Owners.

Our strategy is to, whenever possible, create only standard interfaces. At times however, custom interface development is done when standardization is not possible.

Once an interface is identified, the ES / GIS Enterprise Development and Functional teams work together with the requesting business unit to develop the interface and conduct unit and integration testing. Functional and technical specifications are written by the ES / GIS in the development of the interfaces.

Before the interfaces are moved to production, multiple test files are sent to/received from the outside entities (when possible). These files are tested in our QA environment. Through this process the ES / GIS works directly with the business units and representatives from the applicable outside entity to identify, interpret and correct any errors. Multiple iterations of testing are performed until all involved parties are satisfied with the results.

The ES / GIS, along with the applicable business unit, then coordinates with the outside entity on an effective date that the interface will be moved into a production status.

After the interface is moved into a production status, the ES / GIS performs daily monitoring activities on the production interface and addresses any problems that occur. The resolution to any problems identified with the interface that the outside entity encounters is coordinated through the ES / GIS Functional Teams.

We have currently implemented and support 24 inbound, 46 outbound and 5 internal interfaces to entities such as financial institutions, benefit providers, Commonwealth agencies, etc.

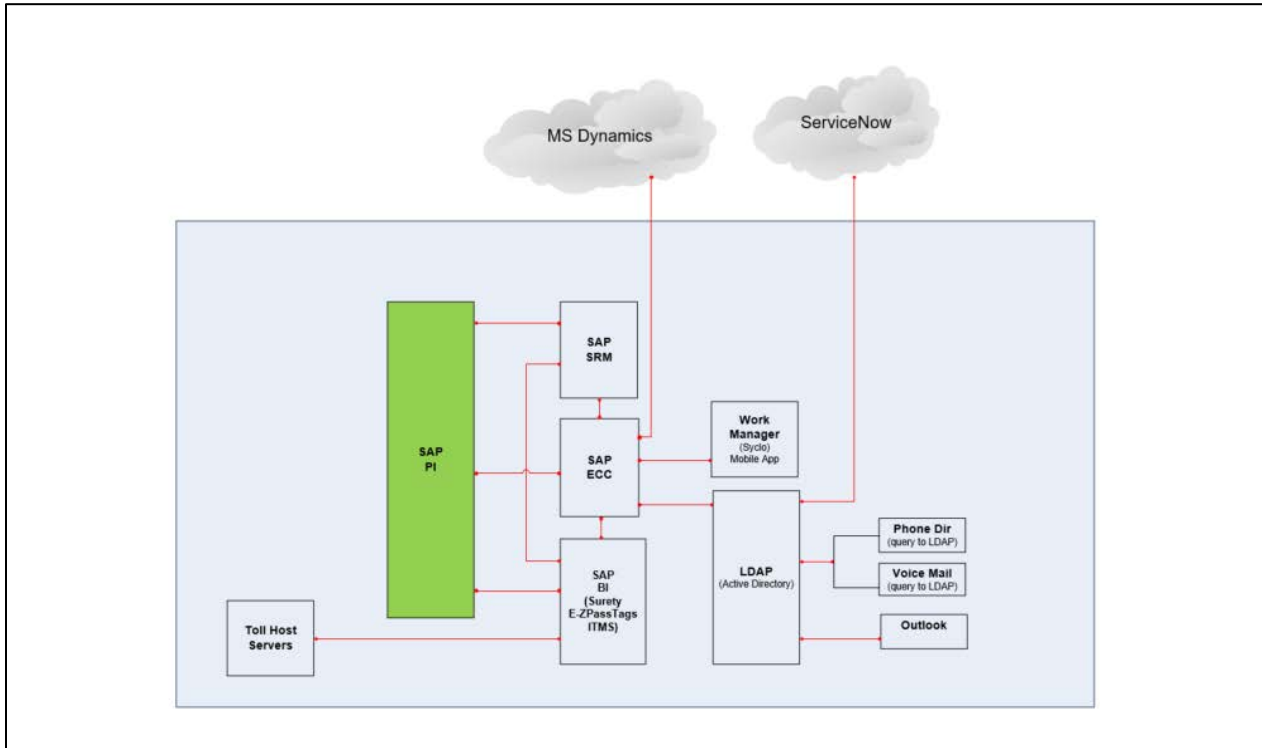


Figure 31. SAP Integration Diagram 1.

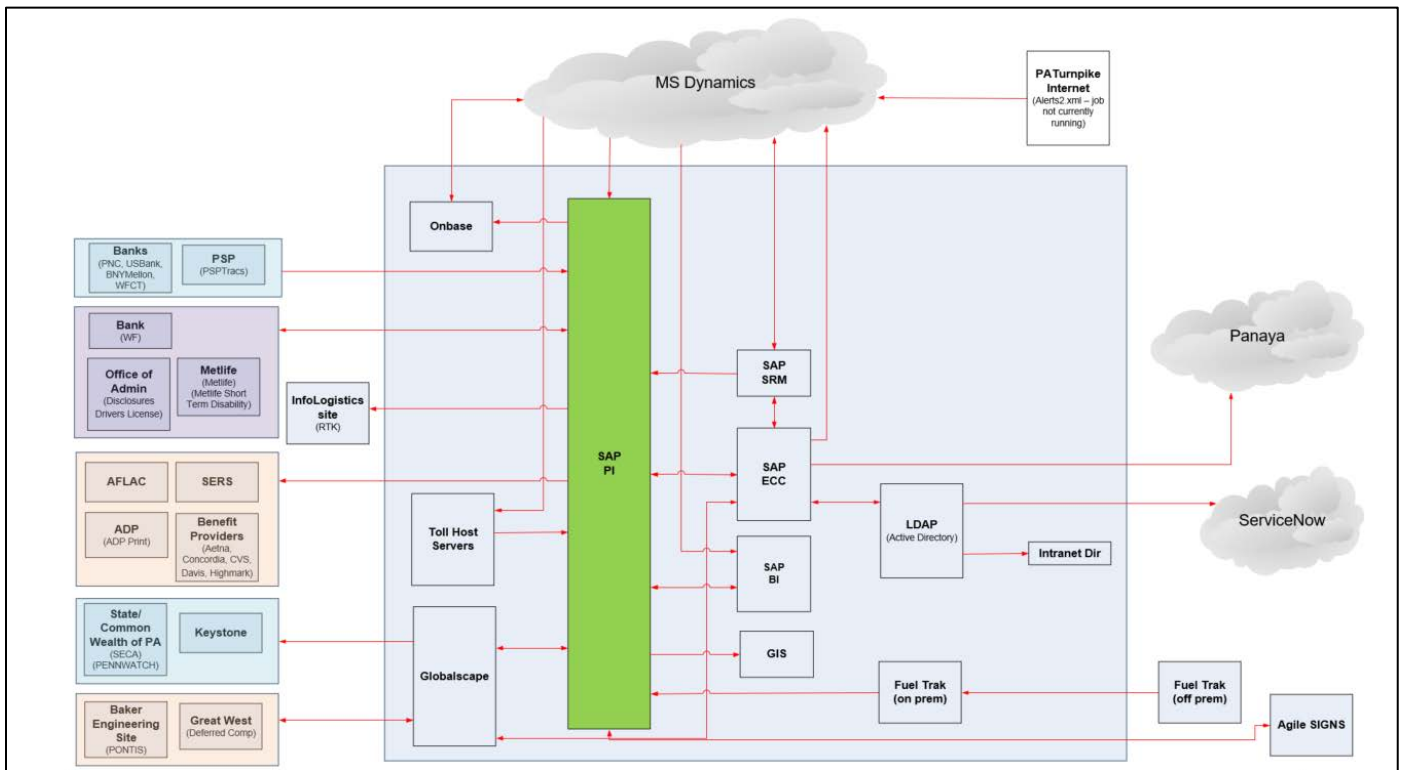


Figure 32. SAP Integration Diagram 2.

2.4.8.1.SAP Business Processes and Sub-Processes

SAP Module	Business Process	Scenario Description	Sub-Processes
FI/GL	Budget Creation to Close	This scenario covers budget prep for the operating budget.	<ul style="list-style-type: none"> Budget Prep Budget Execution Budgeting Close
FI/GL	Budget Creation to Close	This scenario covers review and reporting transactions for budgeting.	<ul style="list-style-type: none"> Budgeting Close
PS	Capital Plan creation to In-year close	This scenario covers funding master data used in capital planning.	<ul style="list-style-type: none"> Capital Planning Master Data Capital Planning Transactions
PS	Project Planning to Close	This scenario covers the creation of an Engineering Project with a manually assigned number, structure creation and project team assignment	<ul style="list-style-type: none"> Engineering Capital Plan Project IT Capital with Operational Budget Funding (This scenario covers the creation of an IT Project with a system assigned number, structure creation and project team assignment) Facilities Project with Orders (This scenario covers the creation of a Facilities Project with a manually assigned number, structure creation and project team assignment) Fleet Equipment Purchase Program (This scenario covers the creation of an annual Fleet Equipment Purchase Project with a system assigned number, using a predefined template) Legal Expense Project A (This scenario covers the creation of a Legal Expense Project with a system assigned number, using a predefined template, and project team assignment) Legal Expense Project B (The execution piece of this test includes charging time to a WBS of this type, procurement through SRM as well as Network Activities, goods / service receipts, and settlement) Miscellaneous Engineering Project for Open-End Contract Activities (This scenario covers the creation of an Engineering Project for miscellaneous Open-End work, with a system assigned number, structure creation and project team assignment)
PM, FA (Fixed Assets)	Asset Management to Disposition	This scenario will cover the setup of all Fleet equipment. Examples are cars, dump trucks and vans.	<ul style="list-style-type: none"> Equipment Functional Locations Fleet Assignment and Reporting (This will test the Fleet Tracking Requirements. The bulk of this requires FRICE Objects and should probably only be tested in IT2) Asset Master Data (This covers the PTC Asset Classes 2000-Improvements, 3000-Vehicles and Equipment, 4000-Office and Electronic Equipment)

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Retire an Asset (This covers the PTC Asset Classes 2000-Improvements, 3000-Vehicles and Equipment, 4000-Office and Electronic Equipment) • Assets Inquiries and Reports (This covers the PTC Asset Classes 2000-Improvements, 3000-Vehicles and Equipment, 4000-Office and Electronic Equipment)
PI, LAM, IM	Maintenance Plan to Execution	This scenario covers Roadway Preventive Maintenance plans that are executed with the same pattern.	<ul style="list-style-type: none"> • Single Cycle Maintenance Plan • Strategy Maintenance Plan (This scenario covers Facility Preventive Maintenance plans that are executed with multiple patterns) • Multiple counter Maintenance Plan with Utilization (This scenario covers Preventive Maintenance plans that are triggered based on entries against multiple counters)
PM	Maintenance Request to Close	This scenario covers Order Type PM02, which includes any maintenance request from outside maintenance that requires an approval process	<ul style="list-style-type: none"> • External Maintenance Request to Completion • Internal Maintenance Request to Completion with Approvals (This scenario covers Order Type PM01 - Roadway) • Internal Maintenance Request to Completion, no Approval Process (This scenario covers Order Type PM03 - Equipment)
MM	Demand Planning and Inventory Management	This scenario covers the manual creation of a STR, creation of the STO from the STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note	<ul style="list-style-type: none"> • STO Processing • MRP Processing (this scenario covers the MRP run for a District in batch, batch creation of the STOs from MRP generated STRs, batch creation of STO Delivery Notes, manually entering the Picked quantities/Post Goods Issue) • Physical Inventory (this scenario covers the Creation of the Physical Inventory Docs, printing the Docs, entering the Count, displaying the Count, Analyze the Results, posting the Count, displaying the Stock Status for the Plant/Storage location) • Inventory Management (this scenario covers the Goods Issue of material(s) to a Cost Center. Movement Type 201)
SRM, MM, FI	Requisition to Payment	Scenario not provided	<ul style="list-style-type: none"> • Non-Material • Stock Material • Non-Stock Material • Services • Contracts • Multiple Shopping Carts to One Bid Invitation • MRP Requisition • FI_AP_Payables Processes (This scenario covers transactions used with Purchase Order Invoices)

SAP Module	Business Process	Scenario Description	Sub-Processes
SRM, PUR, FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT03 - Employee Reimbursement	<ul style="list-style-type: none"> Employee Reimbursements
SRM, PUR, FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT06 - Non-PO Vendors (vendor does not exist)	<ul style="list-style-type: none"> Process Sensitive Invoices
SRM, PUR, FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT06 - Non-PO Vendors (vendors exist)	<ul style="list-style-type: none"> Process Sensitive Invoices
SRM, PUR, FI	Purchase to payment (non-PO items, SRM)	This covers Account Group PT06 - Non-PO Vendors (Re-issuing payment for destroyed check during printing)	<ul style="list-style-type: none"> Process Sensitive Invoices
SRM, PUR, FI	Purchase to payment (non-PO items, SRM)	This covers All Account groups except 1000, OTVD, PF03, PT05	<ul style="list-style-type: none"> Process Non-PO and Non-Sensitive Invoices Purchase to payment (non-PO items, SRM) (This covers all AP Account Groups - disbursements from AP) Purchase to payment (non-PO items, SRM) (Process to Generate 1099 Listings and Forms) Purchase to payment (non-PO items, SRM) (This Covers Queries and Reports for Vendors - All Account Groups) FI_AP_Payables Process (This covers vendor account group PT05)
PS, PM, FA	Revenue Generation to Payment Receipt	This scenario covers the creation of a Facilities Project with a manually assigned number, structure creation and project team assignment	<ul style="list-style-type: none"> Damage Claim
PS, FI	Revenue Generation to Payment Receipt	This scenario covers Customer Account Group (COP One-time customers)	<ul style="list-style-type: none"> Certificate of Passage
FI	Revenue Generation to Payment Receipt	This scenario covers Process_ETC_Toll_host_Interagency_Account_Group PT09	<ul style="list-style-type: none"> ETC Interagency/Tollhost
FI	Revenue Generation to Payment Receipt (incl. Property damage to collection)	This scenario covers transactions used to Process one-time Customers - Disabled Vehicles Acct Grp PT16	<ul style="list-style-type: none"> Revenue and Receivable Processes Retiree Billing (This scenario covers Customer Account Group PT15-Retiree benefit invoicing)

SAP Module	Business Process	Scenario Description	Sub-Processes
FM	Fund Inception to close	This scenario covers fund master data transactions.	<ul style="list-style-type: none"> • FM Master Data • FM Budgeting (This scenario covers FM budgeting transactions) • Fund derivation rules master data • Fund Budgets • Functional area master data • Fund Budget Reports
N/A	Grant Inception to close [Set up, but not used]	This scenario covers transactions used in grants management.	<ul style="list-style-type: none"> • Grant Inception to close
FI, TR	Cash Planning to Investments	This scenario will cover the creating, changing, and displaying of a business partner.	<ul style="list-style-type: none"> • Master Data • Electronic Bank Statements (This scenario covers kicking off the XI process to get the EBS) • Lockboxes (This scenario covers the downloading and loading of the lockboxes to a secure site) • Cash Management (This scenario covers the maintaining of memo records) [not in SAP] • Investments - Security Transactions (This scenario covers the purchasing of fixed interest securities. This corresponds to product type ZIF) • Investments - Money Market Transactions (This scenario covers the purchasing of commercial paper. This is product type ZCP) • Derivatives Transactions • Investments/Derivatives Daily-Sundries Transactions (This scenario covers the processing of the US Bank file) • Investment Security Sales (This scenario covers the selling of fixed interest securities. This corresponds to product type ZIF) • Investments/Derivatives Month-End Processing (This scenario covers the entering of interests and prices in order to calculate interests and valuation)
TR	Cash Planning to Investments	This scenario covers the as needed month-end processing. For example, when an error is made and need to reverse the entries.	<ul style="list-style-type: none"> • Investments/Derivatives Reporting/Money Market Position Reporting (This scenario covers the running of the various reports for money market transaction reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Money Market Revenue Analysis Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Money Market Accounting Reporting (This scenario covers the running of the various reports for money market

SAP Module	Business Process	Scenario Description	Sub-Processes
			<p>revenue analysis reporting. The reports can be run in any sequence)</p> <ul style="list-style-type: none"> • Investments/Derivatives Reporting/Money Market Master Data Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Position Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Position Trend Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Revenue Analysis Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Accounting Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Derivatives Master Data Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Security Position Information Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Transaction Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Position Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence)

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Investments/Derivatives Reporting/Securities Revenue Analysis Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Accounting Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence) • Investments/Derivatives Reporting/Securities Master Data Reporting (This scenario covers the running of the various reports for money market revenue analysis reporting. The reports can be run in any sequence)
N/A	Debt Management [not in SAP; 2 spreadsheets only]	This scenario will cover the creating, changing, and displaying of a business partner.	<ul style="list-style-type: none"> • Master Data • Debt Transactions (This scenario will cover the issuing of new debt with a fixed interest rate at a premium. This is product type DIF) • Daily-Sundries Trxs (This scenario will cover the processing the debt management transaction is a collective mode versus an individual mode as depicted in sub-process "02 Debt Transactions") • Month-end (This scenario covers the entering of reference interest rates manually. The reference interest rates are used to calculate the interest in debt with a variable interest (product type DIV)) • Month-end (This scenario covers the as needed month-end processing for debt management. For example, when an error is made and need to reverse the entries) • Redemption-Defeasance (This scenario covers the redemption or defeasing of a bond before the due date) • Reporting (This scenario will cover the running of the various reports for position information for Debt. The reports can be run in any sequence)
FI	Month End Processing	Scenario not provided	<ul style="list-style-type: none"> • Process Month End (Close Period for Material Master Records; Check Open and Closed Periods for MM; Review Final Goods Receipt; Run MRP) • Process Month End (Reference Interest Rates • Enter Net Present Value • Reference Money market • Enterprise for Derivatives and Securities • Reference Interest Rates for Derivatives and Securities

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Load Reference Interest Rates from a Spreadsheet • run accrual Interest for Money Market and Derivatives • Execute Valuation of Money Market and Securities • Run accrual/deferral of Interest for Security Instruments • Update Plan Record for Variable Interest Rate Bonds • Automatic Debit Position) • Process Month End (Reference Interest Rates • Enter Net Present Value • Reference Money market • Enterprise for Derivatives and Securities • Reference Interest Rates for Derivatives and Securities • Load Reference Interest Rates from a Spreadsheet • run accrual Interest for Money Market and Derivatives • Execute Valuation of Money Market and Securities • Run accrual/deferral of Interest for Security Instruments • Update Plan Record for Variable Interest Rate Bonds • Automatic Debit Position) • Process Month End (Close prior posting period and open new period in FI • Post Pcards Transactions to FI • Review and Post Park Documents • Review Split Processor Clearing Account • Post Accrual Postings • GR/IR Clearing • Finalize prepaid Accruals • Final Parked Documents • Mass reversal of documents • Create posting document from recurring entries • Review GL Account Balances • Review GL Account Line Items • Document change • Reverse document • Enter GL Document • Add / Change GL Account • Close prior posting period and open new period in ALL AREAS (remaining) • Enter GL Document) • Process Month End (Manual Billings; Close prior posting period and open new period in AR) • Process Month End (Finalize Park Documents

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Close prior posting period and open new period in AP • Final Payment Run • AP Accruals) • Process Month End (Finalize Manual Asset Acquisitions • Review Incomplete Assets • Review Unposted Assets • Delete Assets without posting • APC Values • Execute depreciation run • check Depreciation • Reconcile FA and GL • Post charges directly to an asset) • Process Month End (Settle an individual project • Settle multiple projects • Settle work order line items individually • Settle multiple work orders • Define allocations for WBS settlements [FI, PS] • Change work order [PM] • Allocations for assessments • Allocations for distributions) • Process Month End (Close and Open CO Periods; Define period reposting; Define assessment) • Process Month End (Document change • Reverse document • Enter GL Document • Add / Change GL Account • Close prior posting period and open new period in ALL AREAS (remaining) • Enter GL Document • Reference Interest Rates • Enter Net Present Value • Reference Money market • Enterprise for Derivatives and Securities • Reference Interest Rates for Derivatives and Securities • Load Reference Interest Rates from a Spreadsheet • run accrual Interest for Money Market and Derivatives • Execute Valuation of Money Market and Securities • Run accrual/deferral of Interest for Security Instruments • Update Plan Record for Variable Interest Rate Bonds • Automatic Debit Position • Close Period for Material Master Records

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Check Open and Closed Periods for MM • Review Final goods Receipt • Run MRP)
PUR, FI	Month End Processing	Scenario not provided	<ul style="list-style-type: none"> • Calendar Year End • Calendar Year End Display Vendor Master • Vendor Balances • Vendor Balances • Change Document Line Item • Reverse Document • Postcard Printout of 1099 Vendor Addresses for Tax Code Request • 1099 Listings • S_PL0_09000314 - 1099-Misc • 1042 Reporting (USA)) • Calendar Year End (Display Vendor Master • Vendor Balances • Vendor Balances • Change Document Line Item • Reverse Document • Postcard Printout of 1099 Vendor Addresses for Tax Code Request • 1099 Listings • S_PL0_09000314 - 1099-Misc • 1042 Reporting (USA)) • Calendar Year End (Display Vendor Master • Vendor Balances • Vendor Balances • Change Document Line Item • Reverse Document • Postcard Printout of 1099 Vendor Addresses for Tax Code Request • 1099 Listings • S_PL0_09000314 - 1099-Misc • 1042 Reporting (USA) • 941 • W2 • Reporting) • Process Year End (Balance Carried Forward) • Process Year End (Close Period for Material Master Records) • Process Year End (Commitment Carry Forward • Commitment Carried Forward • Fund Balance Carried Forward • Open and Close Periods • Open and Close Periods

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Close Commitment Items • Budget reconstruct • Reconcile FI to FM) • Process Year End (Reverse accrual / deferral documents • Balance Carried Forward (NEW GL) • Run Train Balance Reports • Open and Close Periods) • Process Year End (Close prior posting period and open new period in AR; Carry Forward Receivables/Payable; Balance Carried Forward AR) • Process Year End (Close prior posting period and open new period in AP; Balance Carried Forward AP) • Process Year End (Execute depreciation run • Display log • Post charges directly to an asset • Post charges directly to an asset • Recalculate Asset Values • Incomplete Assets - Report RAUNVA00 • Unposted Assets - Report RAANLA01 • Delete Assets • Insurance Index • Period 12 Depreciation • Reconcile FI to AA Ledger • Year End Closing Asset Accounting • Asset fiscal year change • Undo Asset Close) • Process Year End (Settle an individual project • Settle multiple projects • Settle project line items individually • Settle work order line items individually • Settle multiple work orders • Define period reposting • Define assessment • Define distribution • Define allocations for WBS settlements • Change work order • Allocations for assessments • Allocations for distributions • Commitment Carry Forward • Commitment Carry Forward • Budget Carried forward) • Process Year End (Settle an individual project • Settle multiple projects

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Settle project line items individually • Settle work order line items individually • Settle multiple work orders • Define period reposting • Define assessment • Define distribution • Define allocations for WBS settlements • Change work order • Allocations for assessments • Allocations for distributions • Commitment Carry Forward • Commitment Carry Forward • Budget Carried forward • Execute depreciation run • Display log • Post charges directly to an asset • Post charges directly to an asset • Recalculate Asset Values • Incomplete Assets - Report RAUNVA00 • Unposted Assets - Report RAANLA01 • Delete Assets • Insurance Index • Period 12 Depreciation • Reconcile FI to AA Ledger • Year End Closing Asset Accounting • Asset fiscal year change • Undo Asset Close • Close prior posting period and open new period in AP • Balance Carried Forward AP • Close prior posting period and open new period in AR • Carry Forward Receivables/Payable • Balance Carried Forward AR • Reverse accrual / deferral documents • Balance Carried Forward (NEW GL) • Commitment Carry Forward • Commitment Carried Forward • Fund Balance Carried Forward • Open and Close Periods • Open and Close Periods • Close Commitment Items • Budget reconstruct • Reconcile FI to FM • Run Train Balance Reports • Open and Close Periods

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Close Period for Material Master Records • Balance Carried Forward)
CATS, TM, TE (Time Entry), PY, FI	Time Entry to Payroll	Scenario not provided	<ul style="list-style-type: none"> • Time entry process • Time evaluation process • Run payroll process • Off-cycle payroll process • Payroll reporting • Payment process • Payroll result posting process • Third Party (3PR) posting process • Payroll maintenance tools
TE (Training & Events Mgt.)	Training plan to completion	Scenario not provided	<ul style="list-style-type: none"> • Create Business Event w/o Resources • Create training resources • Create business event w/ Resource • Create Attendance
OM	Organization Management	Scenario not provided	<ul style="list-style-type: none"> • Organizational Unit • Job • Position
HCM	Employee Lifecycle Management	Scenario not provided	<ul style="list-style-type: none"> • New Hire • Rehire • Vacancy - Union • Vacancy - Management / 30S • Title Change - Mgmt/30S • Equity Adjustment • Reclassification Mgmt/30S • Transfer All Positions • Change in Pay • LOA Paid • LOA Unpaid • Return from LOA • Termination • Rehire as Annuitant • Retirement • Deceased Retiree • Deceased Retiree • Other Employer • Company Instructions • Worker's Compensation • Grievances • Certifications and Endorsements • EEO Complaints and ADA Accommodations • Discipline • Benefits • Compensation Management • Employee Appraisals

SAP Module	Business Process	Scenario Description	Sub-Processes
MM/SRM	Demand Planning and Inventory Management (STO Processing)		<ul style="list-style-type: none"> • Stock Transport Order Processing/Manual Stock Transport Execution (This scenario covers the manual creation of a STR, creation of the STO from the STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery Note) • MRP Processing: Nightly MRP Run, Post GI, Receive (This scenario covers the MRP run for a District in batch, batch creation of the STOs from MRP generated STRs, batch creation of STO Delivery Notes, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) • MRP Processing: Ad hoc MRP Run, Manual Replenishment (This scenario covers the MRP run for a material, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) • MRP Processing: SRM - MRP Run (This scenario covers the MRP run for a Plant that plans storage locations separately, the processing of the transfer reservations, and receiving the stock in at the destination storage location) • MRP Processing: MRP Run, Plan Stor Loc Separately (This scenario covers the creation of a Work Order, the MRP run for a material, firming of the PR to go to SRM, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, receiving the Outbound Delivery for the STO using the Delivery Note, and doing the Goods Issue to a Work Order) • Physical Inventory: Planned Physical Inventory (This scenario covers the Creation of the Physical Inventory Docs, printing the Docs, entering the Count, displaying the Count, Analyze the Results, posting the Count, displaying the Stock Status for the Plant/Storage location) • Physical Inventory: Recount for Phy Inv Doc (This scenario covers the initiation of a recount, printing the new Inventory Docs, entering the Count, Analyze the results, posting the Count)

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Inventory Management: Goods Issue - Cost Center (This Scenario covers the Goods Issue of material(s) to a Cost Center. Movement Type 201) • Inventory Management: Goods Issue - Single Reservation (This Scenario covers the creation of a Reservation and the immediate Goods Issue to a Cost center (ad hoc reservation)) • Inventory Management: Goods Issue - Reservation Pick List (This Scenario covers the Creation of a Reservation and the Goods Issue of material(s) for the Reservation. The Movement Type depends on what cost object the reservation was charged to. Normally, Reservations are charged to a Cost Center) • Inventory Management: Transfer Posting (This Scenario covers the transfer of Material(s) from one Plane/Storage Location to another Plant/Storage Location. Movement Types 303 and 305) • Inventory Management: Receive material in stock w/o PO • Inventory Management: EIS Data Comparison
MM/SRM	Demand Planning and Inventory Management (MRP Processing)		<ul style="list-style-type: none"> • MRP Processing: Nightly MRP run, Post GI, Receive (This Scenario covers the MRP run for a District in batch, batch creation of the STOs from MRP generated STRs, batch creation of STO Delivery Notes, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) • MRP Processing: Ad hoc MRP run, manual replenishment (This Scenario covers the MRP run for a material, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, and receiving the Outbound Delivery for the STO using the Delivery Note) • MRP Processing: MRP run, plan stor loc separately (This Scenario covers the MRP run for a Plant that plans storage locations separately, the processing of the transfer reservations, and receiving the stock in at the destination storage location) • MRP Processing: SRM - MRP run (This Scenario covers the creation of a Work Order, the MRP run for a material, firming of the PR to go to SRM, creation of the STO from MRP generated STR, manual creation of STO Delivery Note, manually entering the Picked quantities/Post Goods Issue to STO, receiving the Outbound Delivery for the STO using the

SAP Module	Business Process	Scenario Description	Sub-Processes
			Delivery Note, and doing the Goods Issue to a Work Order)
MM/SRM	MRP Processing		<ul style="list-style-type: none"> • Plant MRP run to Move Materials Between Storage Locations: This business process describes the steps involved in the running MRP manually to move material between storage locations. It includes the creation of transfer reservations and the inventory movements necessary to fulfill the reservations. This is used on a daily basis by fare collection to move material from one fare collection inventory location to another. This results in a direct update of the fare collection receiving locations inventory. • Nightly MRP Run and Processing of Automatic Stock Transport Requisitions: This business process describes the steps involved in the MRP processing run that is run automatically each night, review of MRP run results, the subsequent processing of the stock transport requisitions into stock transport orders, and the inventory movements necessary to fulfill the stock transport orders.
MM/SRM	Demand Planning and Inventory Management (Physical Inventory)		<ul style="list-style-type: none"> • Physical Inventory: Planned Physical Inventory (This Scenario covers the Creation of the Physical Inventory Docs, printing the Docs, entering the Count, displaying the Count, Analyze the Results, posting the Count, displaying the Stock Status for the Plant/Storage location)
MM/SRM	Demand Planning and Inventory Management (Inventory Management)		<ul style="list-style-type: none"> • Inventory Management: Goods Issue - Cost Center (This Scenario covers the Goods Issue of material(s) to a Cost Center. Movement Type 201) • Inventory Management: Goods Issue - Single Reservation (This Scenario covers the creation of a Reservation and the immediate Goods Issue to a Cost center (ad hoc reservation)) • Inventory Management: Goods Issue - Reservation Pick List (This Scenario covers the Creation of a Reservation and the Goods Issue of material(s) for the Reservation. The Movement Type depends on what cost object the reservation was charged to. Normally, Reservations are charged to a Cost Center) • Inventory Management: Transfer Posting (This Scenario covers the transfer of Material(s) from one Plant/Storage Location to another Plant/Storage Location. Movement Types 303 and 305) • Inventory Management: EIS Data Comparison
MM/SRM	Inventory Management		<ul style="list-style-type: none"> • Over-the-Counter Goods Issue: This business process describes the steps to fulfill “over-the-counter” requests for materials. It includes the steps to

SAP Module	Business Process	Scenario Description	Sub-Processes
			<p>determine whether or not there is sufficient inventory to fulfill the request, the steps that can be taken if there is not sufficient inventory and the processing of the goods issue transaction in the SAP system.</p> <ul style="list-style-type: none"> • Manual Reservation Process - Individual Processing: This business process describes the steps involved in the creation and processing of manual material reservations. Manual material reservations are a request to the storeroom to reserve material available for issue out of inventory at a future date. At the PTC, this includes issuing out of inventory and expensing to a cost object (such as cost center or WBS element). The purpose of a reservation is to ensure that material will be available when it is needed. In this process, the inventory or storeroom clerk completes the goods issue for each reservation individually. This process is used by Fare Collection and Administration. • Manual Reservation Process - Collective Processing: This business process describes the steps involved in the creation and collective processing of manual material reservations. Manual material reservations are a request to the storeroom to reserve material available for issue out of inventory at a future date. The purpose of a reservation is to ensure that material will be available when it is needed. At the PTC, this includes issuing out of inventory and expensing to a cost object (such as cost center or WBS element.) In this process, the inventory or storeroom clerk generates the pick list and executes the goods issues for all of the reserved materials on the pick list in one step. This process is used by Fare Collection and Administration. • Transfer Posting Process: MRP Controller • Business Process Description: • This business process describes the steps involved in the manual movement of materials between storage locations. This “on-request” process is sometimes used when the material is inventory but not at the location where it is needed and there is an immediate need for the material. This process may also be used in Central Office to correct misplaced inventory. • In Maintenance, this process may be used to move materials within a District: <ul style="list-style-type: none"> • from a District storage location to a Section storage location • from one Section to another within a District • Or between storage locations in different Districts:

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • from one District storage location to another District storage location • from a one Section storage location in one District to a Section storage location in another District • This process may be completed in the SAP system “after the fact” in emergency situations.
MM/SRM	Generate, Approve and Evaluate Purchasing Requirements		<ul style="list-style-type: none"> • Generate and Evaluate Purchasing Requirements: This process describes the steps to create, review, approve and evaluate purchasing requirements. Requirements are generated as a result of direct requests from employees entered as Shopping Carts in SRM; as a result of the MRP process to replenish stock or procure material for executing an order; or are generated as a result of a project need. • Approve Shopping Cart for Cost Center: This process illustrates the steps in the approval process workflow for a Shopping Cart that is has a cost assignment to a cost center. • Approve Shopping Cart for Order: This process illustrates the steps in the approval process workflow for a Shopping Cart that is has a cost assignment to a work order. • Approve Shopping Cart for WBS Element/Network: This process illustrates the steps in the approval process workflow for a Shopping Cart that is has a cost assignment to a work order.
MM/SRM	Fulfill Purchasing Requirements		<ul style="list-style-type: none"> • Satisfy Purchasing Requirements via Release from an Existing Contract: This process illustrates the steps involved in creating a release (purchase order) from a contract to fulfill one or more purchasing requirements. A prerequisite to this process is that a valid, released contract for the item(s) already exists in the system. • Satisfy Purchasing Requirements via Piggy Back Purchase Order: This process illustrates the steps to be followed to purchase materials or services by way of piggy-backing on a prior purchase. In order to qualify for piggy-backing, the PTC must have bid the item(s) or service(s) within one year and the value of the purchase order must be \$3000 or less. • Satisfy Purchasing Requirements via Phone/Email Quote Bid: This process illustrates the steps in the process of creating a purchase order via phone or email quote bid. Verbal quotations may be solicited for purchases of an estimated value not exceeding three thousand dollars. A Buyer may select for solicitation two or more qualified vendors. A

SAP Module	Business Process	Scenario Description	Sub-Processes
			<p>minimum of two quotations should be maintained before any purchase order is issued.</p> <ul style="list-style-type: none"> • Satisfy Purchasing Requirements via Bid: This process illustrates the steps in the process of creating a purchase order via formal bid. It details the steps to create a bid invitation, communicate the big opportunity to prospective vendors, receive and enter vendor bids into the SAP SRM system, compare and award the contract or purchase order and create the contract or purchase order in the SAP SRM system. • Satisfy Purchasing Requirements via P-Card: This process describes the steps involved in using a Procurement Card (P-Card) to purchase goods or services. P-Cards are used to purchase items that are needed immediately to meet PTC business needs. P-Card use must be pre-approved by the P-Card Holder’s supervisor prior to its use. • Approve Contracts and Purchase Orders: This process illustrates the steps in the approval process workflow for a contract or purchase order. • Finalize and Print Contracts and Purchase Orders Process: This process describes the steps that are completed after a contract or purchase order has been approved. • Emergency Purchase Order Process: This process describes the steps to confirm an emergency purchase order. In some cases, there is a need to purchase materials or services to meet an immediate need such as the result of an emergency situation. • After-the-Fact Purchase Order Process: This process details the steps to create a purchase order after the goods have been purchased. This process is used to purchase critical non-stock items such as fuels, bituminous, and items from the office supplies open order. A contract MUST exist in the system in order to use this process. • Satisfy Purchasing Requirements via Sole Source Process: This process illustrates the steps involved in creating a sole source purchase order.
MM/SRM	Receive Goods and Services		<ul style="list-style-type: none"> • Process and Confirm Goods Receipts: This process documents the steps in receiving externally purchased goods or services. • Return Goods to Vendor: This process describes the steps to return damaged, incorrect or surplus goods to a vendor.
MM/SRM	Change Contracts and		<ul style="list-style-type: none"> • Change Contracts and Purchase Orders: This process illustrates the steps necessary to make changes to a

SAP Module	Business Process	Scenario Description	Sub-Processes
	Purchase Orders		<p>contract or to a purchase order after it has been approved and released. This process applies only to changes that impact the value or terms of the contract or purchase order.</p> <ul style="list-style-type: none"> • RFP and CON Purchasing Organization Approve Changes to Contracts and Purchase Orders: This process illustrates the steps in the RFP and CON Purchasing Organization approval process workflow for a contract or purchase order that has been changed. This process applies only to changes that impact the value or terms of the contract or purchase order. • PUR Purchasing Organization Approve Changes to Contracts and Purchase Orders: This process illustrates the steps in the PUR Purchasing Organization approval process workflow for a contract or purchase order that has been changed. This process applies only to changes that impact the value or terms of the contract or purchase order.
MM/SRM	Process Invoices		<ul style="list-style-type: none"> • Receive and Enter Invoices: This process defines the steps in receiving, reviewing, scanning and entering vendor invoices into SAP. • Invoice Verification and Payment Process: This process documents the steps to match vendor invoices to purchase orders (2 Way Match) and goods receipts (3 Way Match) and to generate payments to vendors. • Research Invoice Issues Process: ensuring that the goods receipt (confirmation) information has been correctly entered into SRM. • Resolve Invoice Matching Error Process: This process details the steps to resolve invoice matching errors. Once we have determined that we have received the goods and entered the goods receipt (if required) through the Research Invoice Issues Process (8.5.3), the Buyer needs to address the remaining reasons why an invoice may be blocked for payment. • Invoice Quantity is Greater than Purchase Order Quantity Issue Resolution Process: In this issue resolution scenario the Invoice Quantity is greater than Purchase Order Quantity. Purchase Order Quantity and Goods Receipt Quantity Match. • Invoice Quantity Greater than Goods Receipt Quantity Issue Resolution Process: In this issue resolution scenario the Invoice Quantity is greater than Goods Receipt Quantity. Purchase Order Quantity and Invoice Quantity Match.

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> • Invoice Quantity Less Than Goods Receipt Quantity Issue Resolution Process: In this issue resolution scenario the Invoice Quantity is less than Goods Receipt Quantity. The Purchase Order Quantity and Goods Receipt Quantity match. • P-Card Invoice Processing: This process describes the steps in receiving, reconciling and paying for P-Card purchases. • Resolve P-Card Invoice Matching Errors Process: This process includes the steps to research P-Card invoice matching errors. It focuses on reviewing the information on the P-Card shopping cart and the corresponding P-Card Purchase Order and correcting any discrepancies.
MM/SRM	Construction and RFP Purchasing Processes		<ul style="list-style-type: none"> • Initiate Engineering RFP Contracts and Contract Changes Process: This process illustrates the steps in the process of creating or changing an Engineering contract. • Engineering contract requirements come from the Capital Plan. Engineering contract requirements that are not on the Capital Plan may also arise. It details the steps necessary to solicit the necessary approvals to initiate the process, develop the RFP, evaluate vendor • submissions, facilitate review by the Technical Review Committee, generate recommendations, solicit technical proposal if required and secure the necessary approvals. • Initiate Non-Engineering RFP Contracts and Contract Changes: This process illustrates the steps in the process of creating or changing an RFP (Request for Proposal) based contract. It details the steps necessary to solicit the necessary approvals to initiate the process, form the evaluation committee, develop the RFP, evaluate vendor submissions, generate recommendations and secure the necessary approvals. • Create and Change RFP Based Contracts: This process illustrates the steps necessary to change contracts that originated with an RFP • once the change has been approved. It details the steps to prepare the legal contract documents, facilitate the execution of the legal contract documents, make the contract changes in the SAP SRM system and post the updated contract documents to comply with applicable Right-to-Know laws.

SAP Module	Business Process	Scenario Description	Sub-Processes
			<ul style="list-style-type: none"> Construction Procurement Process: This process illustrates the steps in the process of creating or changing a Construction contract. Construction contract requirements come from the Capital Plan, from the Damage Claim process when damage repairs are expected to cost more than \$150K. Construction contract requirements that are not on the Capital Plan may also arise. It details the steps necessary to solicit the necessary approvals to initiate the process, form the evaluation committee, develop the RFP, evaluate vendor submissions, generate recommendations and secure the necessary approvals.
MM/SRM	Ship To Address creation	This process illustrates the steps in creating a new "Ship To" address	

Figure 33. SAP Business Processes and Sub-Processes.

2.4.9. SAP Reports

2.4.9.1. SAP Reports: 348

Sub-Area	Report Name	Dev Type	Transaction Code
Legacy: ASI AP	AP Voucher Summary/Detail Report	BI	N/A
Legacy: ASI AP	Voucher Inquiry by Vendor Report	BI	N/A
Legacy: ASI AR	AR Closed Item Detail	BI	N/A
Legacy: ASI AR	AR Customer Master Basic	BI	N/A
Legacy: ASI AR	AR Open Item Detail	BI	N/A
Legacy: ASI FA	FA - Asset Level Inquiry	BI	N/A
Legacy: ASI FA	FA - Misc and Location Info Inquiry	BI	N/A
Legacy: ASI GL	General Ledger Detailed History	BI	N/A
Accounts Payable Reporting	Accounts Payable Overview	BI	N/A
Accounts Payable Reporting	Preliminary Funding Projection	BI	N/A
Accounts Payable Reporting	Retainage by Fund	BI	N/A
Accounts Payable Reporting	Retainage by Vendor	BI	N/A
Accounts Payable Reporting	Vendor Balances by Period	BI	N/A
Accounts Payable Reporting	Vendor Listing with Activity	BI	N/A
Accounts Receivable Reporting	Accounts Receivable Overview	BI	N/A
Accounts Receivable Reporting	Customer Listing With Activity	BI	N/A
Accounts Receivable Reporting	Property Damage Invoices	BI	N/A
Funds Management Reporting	Budget vs. Actual	BI	N/A
Funds Management Reporting	Commitment Item Overview	BI	N/A
Funds Management Reporting	Funds Center Overview	BI	N/A
Funds Management Reporting	Period Comparison	BI	N/A
General Ledger Reporting	GL Account Balances	BI	N/A
General Ledger Reporting	GL Account Overview	BI	N/A

Sub-Area	Report Name	Dev Type	Transaction Code
General Ledger Reporting	Profit Center Overview	BI	N/A
General Ledger Reporting	Trial Balance Comparison	BI	N/A
General Ledger Reporting	Trial Balance Summary	BI	N/A
General Ledger Reporting	Trial Balance Summary by Fund	BI	N/A
Leave Liability Reporting	Current Leave Liability	BI	N/A
Leave Liability Reporting	Leave Liability History Rolling 12 Months	BI	N/A
Leave Liability Reporting	Leave Liability Quota Overview	BI	N/A
Leave Liability Reporting	Leave Usage Overview	BI	N/A
Management Reporting	Balance Sheet by Funds	BI	N/A
Management Reporting	Budget vs. Actual	BI	N/A
Management Reporting	Executive Summary	BI	N/A
Management Reporting	Financial Comparison CY vs. PY	BI	N/A
Management Reporting	Monthly Operating Flash	BI	N/A
Management Reporting	Net Asset Change for Month	BI	N/A
Management Reporting	Net Asset Change YTD	BI	N/A
PO Details for GR IR Clearing	PO Details for GR/IR Clearing	BI	NA
Supporting Accounting Reports	Budget vs Actual by GL Account	BI	N/A
Supporting Accounting Reports	Cash Flow by Fund Grouping	BI	N/A
Supporting Accounting Reports	Financial Comparison CY vs PY using GL Data	BI	N/A
Supporting Accounting Reports	FM vs FI Actual Detail Comparison	BI	N/A
Supporting Accounting Reports	FM vs FI Actual Summary Comparison	BI	N/A
Supporting Accounting Reports	Net Asset Change for Month using GL Data	BI	N/A
Supporting Accounting Reports	Net Asset Change YTD Using FM Data	BI	N/A
Supporting Accounting Reports	Net Asset Change YTD using GL Data	BI	N/A
Supporting Accounting Reports	Payment Docs and Funding Overview	BI	NA
Supporting Accounting Reports	FM Commitments Year to Year Comparison for FI	BI	NA
Supporting Accounting Reports	FM Commitments Year to Year Monthly Comparison for FI	BI	NA
Surety Reports	E-ZPass Toll Amounts - Last 12 Months	BI	NA
Surety Reports	Special Revenue Toll Amounts	BI	NA
Surety Reports	Surety Report	BI	N/A
Toll Host Revenue & Volume	Reported Revenue - Projected vs. Actual	BI	N/A
Toll Host Revenue & Volume	Revenue and Volume Overview	BI	N/A
Treasury	Interest Received Report	ABAP	ZINTR
Treasury	Scheduled Interest Rates Report	ABAP	ZVARSCH
Treasury	Treasury Department Investment Portfolio Report	ABAP	ZTR_R450 D_PORTFO LIO_DETAI L
Not specified	BLNCE-01 (New GL)	Report Painter	Z_BLNCE_01
Not specified	BSPL_01 (New GL)	Report Painter	Z_BSPL_01
Not specified	Budget Report	Report Painter	ZGRANT_P ROJECT
Not specified	Costs by Maintenance Program	BI	N/A

Sub-Area	Report Name	Dev Type	Transaction Code
Not specified	Costs by Object Type	BI	N/A
Not specified	Costs by Titles Summary	BI	N/A
Not specified	FS10_01 (New GL)	Report Painter	Z_FS10_01
AR	F-28 BDC Load	ABAP (BDC)	ZARCUSTP OSTING
AP	FK02 BDC Email Update Control Report	ABAP (BDC)	n/a
AP	FK05 BDC Block Vendor Update Control Report	ABAP (BDC)	n/a
AP	FK02 BDC Search Term Update Control Report	ABAP (BDC)	n/a
AP	FK06 BDC Flag for Deletion Update Control Report	ABAP (BDC)	n/a
Treasury	Accrued Interest	ABAP	ACCRUEDI NTEREST
Benefits	Health Benefits Overview	BI	N/A
Benefits	Health Benefits Participation History	BI	N/A
Personnel Admin	Discipline	BI	N/A
Personnel Admin	Leave of Absence	BI	N/A
Org Mgmt	Complement	BI	N/A
Org Mgmt	Employee History	BI	N/A
Org Mgmt	Pay Scale History	BI	N/A
Org Mgmt	Personnel Movements	BI	N/A
Org Mgmt	Position History	BI	N/A
Org Mgmt	Structure	BI	N/A
Org Mgmt	Succession Planning Report	BI	N/A
Personnel Time Management	Time	BI	N/A
Legacy: Vista Reports	CheckView	BI	N/A
Vista Reports	Employee Deductions	BI	N/A
Vista Reports	Employee Earnings	BI	N/A
Vista Reports	Employee Fringes	BI	N/A
Vista Reports	Employee Pay Increase	BI	N/A
Vista Reports	Employee Service Break History	BI	N/A
Vista Reports	Employee Taxes	BI	N/A
Vista Reports	Payroll Charges	BI	N/A
Vista Reports	Pre-Vista Employee Position History	BI	N/A
Vista Reports	Time in Position	BI	N/A
Payroll	Wage & Earning	BI	N/A
Training	Qualifications	BI	N/A
Payroll	Absence quotas	AQ	ZABSENCE _QUOTAS
CM - Compensation	Actions (Infotype 0000) Load	ABAP	ZPERS_AC TIONS_LO AD
Personnel Administration	Active Employee Totals	AQ	ZQUE_EMP TOTALS

Sub-Area	Report Name	Dev Type	Transaction Code
Benefits	Active Employees Currently on FMLA	AQ	Z_FMLA_ACTIVE
Compensation	Annual Report of Terminated Employees for Legal	ABAP	Z_TERMED_EMPS
Payroll	Basic Pay Audit Report for Operations Review	ABAP	ZBASICPAY_AUDIT
Benefits	Benefit Dependents with Address	AQ	ZBENEFIT_DEP
Benefits	Benefit Dependents with Grandchildren & Legal Wards	AQ	ZBEN_DEP_GRANDCHILD
Personnel Administration	Benefit Plan changes	ABAP	ZBENEFIT_CHANGES
Benefits	Benefits Mailing	ABAP / Smart Form	ZBEN_MASS_MAILS
Payroll	Calculation of Excess Sick Payout	AQ	ZEXCESS_SICK
Benefits	Dependents with Address Expected Grad	AQ	ZBEN_DEP_GRADUATION
Benefits	Dependents with Address Student	AQ	ZBEN_DEP_STUDENT
Benefits	Dependents with Address Turning 19	AQ	ZBEN_DEP_TURNING_19
Benefits	Employee Addresses For Benefit Plan & Coverage	AQ	ZBENADDRESS
Benefits	Employee Addresses for Benefits	AQ	ZADDRESS
Personnel Administration	Employee Addresses for Mass Mailings	ABAP	ZHPA_MASS_MAILS
Benefits	Employee Benefit Exception Report	ABAP	ZBENECEPTION
Personnel Administration	Employee Education	AQ	Z_EEEDUCATION
Payroll	Employee Taxable Fringe Report	ABAP	Z_TAX_FRINGE
Payroll	Employee Totals by Location	ABAP	ZEMPCOUNTS
Payroll	Employee Work Schedule and Pay Details	AQ	ZPR_IT_VAL
Payroll	Employees by Cost Center	AQ	ZEEBYCC
Payroll	Employees Complete Starting Rate Period	AQ	ZPMCORTE
Benefits	Employees on LOA with Health Benefits	AQ	ZLOA_BENEFITS

Sub-Area	Report Name	Dev Type	Transaction Code
Benefits	Employees with Number of Dependents	AQ	ZMARITAL_DEP_CT
Organizational Management	Headcount Query	AQ	Z_HEADC OUNT
Benefits	HIPAA Subscribers Report	ABAP	ZHIPAASU BS
Payroll	Hire dates - New Employees	AQ	ZHIRE_DA TES
Payroll	Job Code Listing	AQ	ZJOB_COD E_REPT
Personnel Administration	Job EEO Categories	AQ	ZJOB_EEO _CAT
Personnel Administration	Jobs with EEO	AQ	ZJOBS
Time Management	Labor Details Report	ABAP	ZLABOR
CM - Compensation	Management Employee Salary Report	ABAP	ZMGMT_30 S_SAL
Payroll	Management Salary Ranges	AQ	ZMGMTSA L
Benefits	Marital Status and Dependents	AQ	ZMARITAL _DEP
Benefits	Medicare Carve-Out Report	ABAP	ZMEDCAR VEOUT
Organizational Management	Monthly Cost - Retiree Health	AQ	ZRETIREE_ HEALTH
Benefits	Monthly Leave Liability	AQ	ZLEAVELI AB
Personnel Administration	New Hires	AQ	ZFINACST MTS_NEW HIRES
Benefits	Normal Retirement	AQ	ZNORMAL _RETIRE
Payroll	Pay Grade Pay Step	AQ	ZPAY_GRA DE_STEP
Personnel Development	Performance Appraisal Status Report	ABAP	ZAPPRAI SAL_STATU S
Organizational Management	Position Status	AQ	ZPTC_COM PLEMENT
Organizational Management	Positions by Title with Pay Grade	AQ	ZPOS_BY_ TITLE
Organizational Management	Positions with Pay Scales	AQ	ZPOS_PAY _SCALE_R ATE
Personnel Administration	Promotions Listing	AQ	ZFINACST MTS_PRO MO

Sub-Area	Report Name	Dev Type	Transaction Code
Organizational Management	PTC Reporting Structure	AQ	ZPTCSTRUC T
Payroll	Quota Corrections	AQ	ZQUOTA_ CORRECT
Benefits	Residence Tax Area for Active Employees	AQ	ZRES_TAX
Payroll	SAP Query Employee Addresses	AQ	ZADDRES SES
Security	SAP Security Report for Operations Review	ABAP	ZSECURIT Y_RPT
Organizational Management	Seniority Within A Given Month	AQ	ZSENDATE
Benefits	Stop Loss Totals	ABAP	ZSTOPLOS S
Benefits	Student Certification Report	AQ	ZSTUDENT CERTRPT
Payroll	Supplemental Employee Addresses	AQ	ZSUPPADD RESS
Personnel Administration	Supplemental to Regular Actions	AQ	ZSUPP_TO _REG
Payroll	Tax Authorities For Validation	AQ	ZTAX_AUT HORITY
Benefits	Teamsters Enrollments for a Month	ABAP	ZTEAMSTE RS
Personnel Administration	Terminations Listing	AQ	ZFINACST MTS_TER M
Payroll	Time Quota Compensation	AQ	ZQUOTA_ COMP
Benefits	Unassigned Dependents Report	ABAP	Z_UNASSG N_DEP
Payroll	Overtime Percent Report	ABAP	ZOTR
Personnel Administration	PTC Complement Report	ABAP	ZCOMPLE MENT
Personnel Administration	Seniority Report	ABAP	ZHR_SENI ORITY
Personnel Administration	Vacancy Report	ABAP	ZVACANC Y
Payroll	Excess Sick Payout	ABAP	Not specified
MSS	Direct Reports	BI	N/A
MSS	Enterprise Succession Planning	BI	N/A
Legacy: ASI CP	Capital Projects - Area Record	BI	N/A
Legacy: ASI CP	Capital Projects - Charge Record	BI	N/A
Legacy: ASI CP	Capital Projects - Commitment Record	BI	N/A
Legacy: ASI CP	Capital Projects - Fixed Asset Record	BI	N/A
Legacy: ASI CP	Capital Projects - Project Record	BI	N/A
Legacy: ASI CP	Capital Projects - SubProject Record	BI	N/A
Legacy: ASI PMM	Blanket PO Detailed Extended Description	BI	N/A

Sub-Area	Report Name	Dev Type	Transaction Code
Legacy: ASI PMM	Blanket PO Summary Extended Description	BI	N/A
Legacy: ASI PMM	Detailed Blanket Purchase Order Display	BI	N/A
Legacy: ASI PMM	Detailed PO Extended Description	BI	N/A
Legacy: ASI PMM	Detailed Purchase Order Display	BI	N/A
Legacy: ASI PMM	Inventory Data Usage Analysis	BI	N/A
Legacy: ASI PMM	PMM Item Master Display	BI	N/A
Legacy: ASI PMM	PMM Item Master Extended Description	BI	N/A
Legacy: ASI PMM	PMM Part Number Cross Reference Display	BI	N/A
Legacy: ASI PMM	PMM Vendor Browse Display	BI	N/A
Legacy: ASI PMM	PMM Vendor Master Display	BI	N/A
Legacy: ASI PMM	Summary Blanket Purchase Order Display	BI	N/A
Legacy: ASI PMM	Summary PO Extended Description	BI	N/A
Legacy: ASI PMM	Summary Purchase Order Display	BI	N/A
Legacy: ASI PMM	Vendor History Browse Display	BI	N/A
Legacy: ASI PMM	Vendor History Display	BI	N/A
Legacy: CP&PRS	10 Year Capital Planning Process	BI	NA
Legacy: CP&PRS	Capital Plan Monthly Budget and Planning	BI	NA
Legacy: CP&PRS	Capital Plan Yearly Status	BI	NA
Legacy: CP&PRS	Charge Ad-Hoc	BI	NA
Construction Contracts	CDS Construction Contract Balance	BI	N/A
Construction Contracts	CDS Construction Contract Change Orders	BI	N/A
Construction Contracts	CDS Construction Contract Retainage	BI	N/A
Construction Contracts	Construction Contract Balance	BI	N/A
Construction Contracts	Construction Contract Overview	BI	N/A
Construction Contracts	Construction Contract Retainage	BI	N/A
Contracts Management	Contracts Management Overview	BI	N/A
Plant Maintenance	Fleet Tracking Assignment Lists	BI	Not specified
Plant Maintenance	Fleet Tracking Usage Report	BI	Not specified
Plant Maintenance	Blocked Materials	BI	N/A
Plant Maintenance	In Transit Analysis	BI	N/A
Plant Maintenance	Inventory Analysis	BI	N/A
Plant Maintenance	Material Document Analysis	BI	N/A
Plant Maintenance	On Hand Inventory	BI	N/A
Plant Maintenance	Confirmation Listings	BI	N/A
Plant Maintenance	Cost by Milepost	BI	N/A
Plant Maintenance	Cost by Milepost Graph	BI	N/A
Plant Maintenance	Equipment Count	BI	N/A
Plant Maintenance	Equipment List - Basic Data	BI	N/A
Plant Maintenance	Equipment List - Fleet	BI	N/A
Plant Maintenance	Measurement Document Analysis	BI	N/A
Plant Maintenance	Miles Plan vs Actual	BI	N/A
Plant Maintenance	Miles Plan vs Actual (Graph)	BI	N/A
Plant Maintenance	Number of Occurrences	BI	N/A
Plant Maintenance	Number of Occurrences (Graph)	BI	N/A

Sub-Area	Report Name	Dev Type	Transaction Code
Plant Maintenance	Production Plan vs Actual	BI	N/A
Plant Maintenance	Small Equipment Inventory	BI	N/A
Plant Maintenance	Work Order Cost Summary	BI	N/A
Plant Maintenance	Work Order Equipment	BI	N/A
Plant Maintenance	Work Order Labor	BI	N/A
Plant Maintenance	Work Order Materials	BI	N/A
Project Systems	Project Status Report	BI	N/A
Project Systems	Project Systems 10 Year Capital Plan Report	BI	N/A
Project Systems	Project Systems Current Year	BI	N/A
Project Systems	Project Systems Detail Report	BI	N/A
Project Systems	Project Systems Expenditure Forecast Report	BI	N/A
Project Systems	Project Systems Plan/Budget/Actual	BI	N/A
Purchasing Approvals	Substitute Approvals History	BI	N/A
Purchasing Approvals	Substitute Approvals List	BI	N/A
Purchasing Reports	Confirmation Overview	BI	N/A
Purchasing Reports	Contract Overview	BI	N/A
Purchasing Reports	MRP Controller Requisition Status	BI	N/A
Purchasing Reports	PCard Monitor	BI	N/A
Purchasing Reports	Purchase Order Expedite	BI Web Templ ate	N/A
Purchasing Reports	Purchase Order Overview	BI	N/A
Purchasing Reports	Shopping Cart Overview	BI	N/A
Purchasing Reports	Spend Overview	BI	N/A
Purchasing Reports	Vendor Product Category	BI	N/A
Purchasing Supervisor	Acquisition Cycle Time	BI	N/A
Purchasing Supervisor	Bidders Per Product Category	BI	N/A
Materials Management / Procurement	Change Version Detail	BI	N/A
Materials Management / Procurement	Contract Change Detail	BI	N/A
Materials Management / Procurement	Contract Charge Detail	BI	N/A
Purchasing Supervisor	Contract Details	BI	N/A
Purchasing Supervisor	Overview of Bid Invitations	BI	N/A
Materials Management / Procurement	PO Cancel Detail	BI	N/A
Materials Management / Procurement	PO Change Order Detail	BI	N/A
Materials Management / Procurement	PO Charge Detail	BI	N/A
Materials Management / Procurement	PO Commission Report	BI	N/A
Logistics/PM	Custom Confirmations Screen	ABAP	ZIW42
Logistics/PM	Damage Code Updates - Batch	ABAP	n/a

Sub-Area	Report Name	Dev Type	Transaction Code
Logistics/PM	Logistics/PM	ABAP	ZLRPUPDATE
Materials Management / Inventory Management	Material Detail Report	ABAP	ZMATLONGDESC
Plant Maintenance	Vehicle Utilization Report	ABAP	ZVEHIC
Materials Management / Procurement	In Transfer Analysis	ABAP	ZIN_TRANSFER
Materials Management	Sourcing Indicator Maintenance	ABAP	zsource_maint
Plant Maintenance	2 programs to create material masters (Plant & MRP area)	ABAP	ZMM01 ZMM02
Plant Maintenance	Logistics Vehicle Data to CSC and VPC	None	ABAP
Materials Management	Control Report	ABAP	N/A
Materials Management	Upload contract program from SRM50 to SRM703	ABAP	N/A
Materials Management	Upload PO program from SRM50 to SRM703	ABAP	N/A
Materials Management	Converted PO Report	ABAP	N/A
Materials Management	Create contact person for Vendor	ABAP	ZVEND_CNCTPERSON
Materials Management	Contract Hierarchy	ABAP	ZCHIER
Materials Management / Procurement	Populate SRM Vendor Contact Information	ABAP	N/A
CSC: E-ZPass Transactions	E-ZPass Overview	BI	N/A
CSC: E-ZPass Transactions	E-ZPass Percentage Usage	BI	N/A
CSC: E-ZPass Transactions	E-ZPass Summary	BI	N/A
BI Statistics: Drilldown Reports	Detailed Query Runtime Statistics	BI	N/A
BI Statistics: Drilldown Reports	Process Chains Overview	BI	N/A
BI Statistics: Drilldown Reports	Runtime Overview - Web Reports/Queries	BI	N/A
BI Statistics: Drilldown Reports	Usage Overview - Queries (Bottom N)	BI	N/A
BI Statistics: Drilldown Reports	Usage Overview - Queries (Top N)	BI	N/A
BI Statistics: Drilldown Reports	Usage Overview - Web Reports (Bottom N)	BI	N/A
BI Statistics: Drilldown Reports	Usage Overview - Web Reports (Top N)	BI	N/A
BI Statistics: Flash Reports	All Reports Tab - Usage Overview	BI	N/A
BI Statistics: Flash Reports	Top 10 Web Reports - Usage Overview	BI	N/A
Revenue Systems	Detailed Transaction Search	BI	N/A
Revenue Systems	Employee's With Badge IDs	BI	N/A
Revenue Systems	Non-Revenue Card Holder Status	BI	N/A
Revenue Systems	Transaction Activity Comparisons	BI	N/A
Revenue Systems	Vehicle Utilization Report	BI	N/A
Balanced Scorecard: Customer Satisfaction	Building the Roadway	BI	N/A
Not specified	DrillDown	BI	N/A
Balanced Scorecard: Operational Efficiency	Human Resources	BI	N/A
Balanced Scorecard: Operational Efficiency	Operating Costs	BI	N/A

Sub-Area	Report Name	Dev Type	Transaction Code
Operational Model - Core Services: Operating the Roadway	Operational Efficiency	BI	N/A
Operational Model - Core Services: Maintaining the Roadway	Operational Efficiency	BI	N/A
Operational Model - Core Services: Building the Roadway	Road Conditions	BI	N/A
Balanced Scorecard: Customer Satisfaction	Safety	BI	N/A
Balanced Scorecard: Operational Efficiency	Tech Infrastructure	BI	N/A
Operational Model - Core Services: Operating the Roadway	Traffic	BI	N/A
Balanced Scorecard: Revenue	Traffic	BI	N/A
Finance	FM Commitments Budget vs. Actual	BI	N/A
Finance	FM Commitments Year to Year Comparison	BI	N/A
Finance	FM Commitments Year to Year Monthly Comparison	BI	N/A
Finance	Monthly FM Commitments Budget vs. Actual	BI	N/A
District	Collector Time Sheet Hours (Last 15 Months)	BI	N/A
Enterprise	Collector Time Sheet Hours (Last 15 Months)	BI	N/A
Enterprise	Entry and Exit Lane Operation (Last 15 Months)	BI	N/A
Enterprise	Entry Traffic Count by Payment Type (ETC/Non-ETC)	BI	N/A
Enterprise	Exit Traffic Count by Payment Type (ETC/Non-ETC)	BI	N/A
Enterprise	Exit YTD ETC Percent of Total Traffic	BI	N/A
Enterprise	Traffic Volume and Lane Operation (Prior Year Same Period)	BI	N/A
Enterprise	Traffic Volume and Lane Operation (Rolling 30 Days)	BI	N/A
Enterprise	YTD Operational Exceptions	BI	N/A
Enterprise	YTD Variance	BI	N/A
PSP TraCS Reports	Hot Spot Report	BI	N/A
PSP TraCS Reports	Overview Report	BI	N/A
Security	Delete Table: DEVACCESS record Control Report	ABAP	ZDELETED EVELOPER KEY
Not specified	Archive Link Table Extract	ABAP /SQVI Quick Viewe r	SQVI

Figure 34. SAP Reports.

2.4.10. SAP Forms

2.4.10.1. FI Forms (8):

Sub-Area	Form Name	Count	Dev Type	Transaction Code
Accounts Payable	Account Statement (Customer and Vendor)	1	SAP Script	F.27

Sub-Area	Form Name	Count	Dev Type	Transaction Code
Accounts Receivable	Customer Invoice: Property Damage	1	SAP Script	F.62
Accounts Receivable	Customer Invoice: Retiree Benefit	1	SAP Script	F.62
Accounts Receivable	Customer Invoice: Detail	1	SAP Script	F.62
Accounts Receivable	Dunning Letters: Accounts Receivable	1	SAP Script	F150
Treasury	Outgoing Check	1	SAP Script	ZFTR_AMT
Treasury	Outgoing Check for 3rd Party checks	1	SAP Script	ZFTR_AMT
Treasury	Vendor Advice	1	SAP Script	ZADRES_SENDER_ADRS

Figure 35. SAP FI Forms.

2.4.10.2. **HCM Forms (6):**

Sub-Area	Form Name	Dev Type	Transaction Code
Personnel Administration	Performance Appraisal	SFP SE19	ZHAP_PDF_OFFLINE_FORM ZHRHAP00_SMARTFORMS1 ZHRHAP00_ADD_HEADER1 ZHAP_PDF_OFFLINE_FORM_NEW ZHAP_APPR_PDF_FORM_2016, ZHAP_APPR_INTERIM_INTRODUCTORY
Payroll	Remuneration Statement in ESS	HRFORMS, PC00_M10_HRF	ZPYXXFO_ZPTC_REM_STATEME ZHPY_I014_ADP200
Benefits	Benefits Statement: Part 1 & 2	ZBENEFIT STMT	ZHBN_R005_BEN_STMT ZHR_CMPTCS ZHBN_R005_EMP_STMT
Benefits	Form for Employee Health Insurance and Coverage	HRBENUS_ACA_PERSON, HRBENUS_ACA_PERSON_P	ZHBN_HRBENUS_1095C_2015_F, ZHBN_HRBENUS_1095C_2015_I
Accounts Payable	IRS 1099-S Proceeds From Real Estate Transactions	S_P00_0700 0134	Form: ZFAP_1099_S
Benefits	Form for Employee Health Insurance and Coverage	HRBENUS_ACA_PERSON, HRBENUS_ACA_PERSON_P	ZHBN_HRBENUS_1095C_2016_F

Figure 36. SAP HCM Forms.

2.4.10.3. **PS/PM (15):**

Sub-Area	Form Name	Dev Type	Transaction Code
Materials Management/ Inventory Management	Stock Transfer Receipt / Goods Receipt	<i>MIGO</i>	Form: ZWESCHEINVERS3
Materials Management/ Inventory Management	Receipt: Goods Issue	<i>MIGO</i>	Form: ZGOODS_ISSUE
Materials Management/ Inventory Management	Receipt: Stock Transfer Order / PO Receipt	<i>MIGO</i>	Form: ZGOODS_ISSUE
Materials Management/ Inventory Management	Cycle Count		ZINVENT
Materials Management/ Inventory Management	Pick List	VL10b	Form: ZLVSKOMMIL1 Print Program: SAPLLTOP
Materials Management/ Inventory Management	Cycle Count	<i>MI21</i>	Form: ZINVENT Print Program: ZLMM_R586_INVENT, ZLMM_R002_POTEXT
Materials Management/ Inventory Management	Delivery Note	<i>VL060</i>	Form: ZRVDELNOTE Print Program: RVADDN01
Materials Management/ Procurement	Purchase Order	<i>N/A- Portal</i>	Z2_LMM_PR_F001_FDS_V01
Materials Management/ Procurement	Purchase Order: Change	<i>N/A- Portal</i>	Z2_LMM_PR_F002_FDS_V01
Materials Management/ Procurement	Purchase Order: Contract	<i>N/A- Portal</i>	Z2_LMM_PR_F003_FDS_V01
Materials Management/ Procurement	Purchase Order: Contract Change	<i>N/A- Portal</i>	Z2_LMM_PR_F004_FDS_V01
Materials Management/ Procurement	Bid Invitation: RFQ & RFP	<i>N/A- Portal</i>	ZBBP_BID_INVITATION
Materials Management/ Procurement	Bid Invitation: RFQ & RFP Change	<i>N/A- Portal</i>	ZBBP_BID_INVITATION_CHG

Sub-Area	Form Name	Dev Type	Transaction Code
Plant Maintenance	Job Ticket	IW32	Form: ZPM_COMMON Print Program: RIPRJT00
Materials Management/ Procurement	Bid Invitation: RFQ & RFP	N/A- Portal	ZZOFFLINE_BID

Figure 37. SAP PS/PM Forms.

2.4.11. SAP Enhancements by Module

2.4.11.1. FI – Enhancements (12):

Sub-Area	Enhancements	Transaction Type	Technical Object Name
Not specified	Validate Customers Number for COP - Account Type: PT22	FD01 (XD01)	10Q4_FAR_E468
Not specified	Carry Forward Selection Screen User Exit	FMN4N	ZXFMDTF01 ZXFMDTF02 ZXFMDTU01 ZXFMDTU02 ZXFMDTZZZ ZXFMYU37
Not specified	Fill CO data in FM tables	Run SAP Standard SAP Posting trans-action	ZSMOD_SAPLFMRI ZXFMYU20 ZXFMYU33
Not specified	Link Fund Number to G/L account for FSCM	TBB1	ZTPM_ACCIF_TRAC
Accounts Receivable	Wells Fargo ACH via RFFOUS_T	RFFOUS_T	CMOD Project: ZFI_PAY User Exit: EXIT_RFFOEXIT_100 Include: ZXFORU23 User Exit: EXIT_RFFOEXIT_101 Include: ZXFORU24 User Exit: EXIT_RFFOEXIT_104 Include: ZXFORU27 User Exit: EXIT_RFFOEXIT_105 Include: ZXFORU28
Not specified	User Exit: Change Aetna Retiree Benefits Plan	PA20	MCOD Project: ZHRBEN, the enhancement: PBEN0008, user exit: EXIT_SAPLHRBEN00GENERAL_008 for function: HR_BEN_CALC_BENEFIT_COST,), include: ZXPBEU08.
Accounts Payable (AP)	Wells Fargo ACH via Payment Medium Workbench	Payment Medium Workbench and F110	Function Group: ZFI001 Include: LZFI001TOP Include: LZFI001UXX Function Module: Z_FI_PAYMEDIUM_ACH_00 Function Module: Z_FI_PAYMEDIUM_ACH_05

Sub-Area	Enhancements	Transaction Type	Technical Object Name
			Function Module: Z_FI_PAYMEDIUM_ACH_40 no enhancement coding changes in above Z-items modules
Accounts Payable (AP)	Wells Fargo ACH via Payment Medium Workbench	Payment Medium Workbench and F110	Function Group: ZFI001 Function Module: Z_FI_PAYMEDIUM_ACH_20 enhancement code to determine if ACH file is direct deposit or Philly Tax Function Module: Z_FI_PAYMEDIUM_ACH_30 enhancement code in perform routines called by this FM Function Module: Z_FI_PAYMEDIUM_ACH_DETAILS_CCD enhancement code to determine if it is a direct deposit or Philly Tax file
Accounts Payable (AP)	Duplicate Invoice Check	FB60, FB65, FV60, FV65, MIRO, MIR4, and MIR7	"Enhancement Implementations: Z_ENH_FI_DUP_INV_CHK Z_ENH_MM_DUP_INV_CHK Includes: ZFAP_E25557_FI_DUP_INV_CHK ZFAP_E25557_MM_DUP_INV_CHK "
Plant Maint.	Enhancement for Settlement rule creation (user exit)	IW31	Project: ZPMSETTL Enhancement: Enhancement for Settlement rule creation Function Module: EXIT_SAPLCOI1_027 Include: ZXWOCU24
Accounts Payable (AP)	Implicit Enhancement Name: Z_ENH_DMEE_TREE	Program - RFIDYYWT	Implicit Enhancement: Z_ENH_DMEE_TRE BADI DMEE_BADI_01 Implementation name: DMEE_US_WTRE_01 Method: IF_EX_DMEE_BADI_01~MODIFY_OUTPUT_FILE
Finance	CCD+ and CTX Vendor ACH file	F110	Z_FI_PAYMEDIUM_ACH_DETAILS_CTX ZMAIL_BODY_TEXT ZCCDPLUS Z_FI_PAYMEDIUM_ACH_DETAILS_CCD Z_FI_PAYMEDIUM_ACH_20 ZFI_REVENUE_ADD7 ZFI002

Figure 38. SAP FI Enhancements.

2.4.11.2. **HCM – Enhancements (15):**

Sub-Area	Enhancements	Transaction Type	Technical Object Name
Not specified	Benefit Plan Cost User Exit	HRBEN000 1	ZXPBEU08
Not specified	Retiree Benefit Eligibility User Exit	HRBEN000 1	ZXPBEU02
Not specified	HR Benefit2 iDoc User Exit	HRBEN005 2	CMOD Project: ZHBNIDOC User Exit: EXIT_SAPFKCIM_001 Include: ZXKKCU01 User Exit: EXIT_SAPFKCIM_002 Include: ZXKKCU02
Time Entry	Out of Class Pay CAT2	CAT2	ZXCATU03, ZXCATU02
Time Management	Update PDC Recalculation date in Infotype 0003 when LOA unpaid action for Infotype 0000 is created.	PA40	Program ZHTM_E577_DYN_ACTIONS_PA0000
SRM	SRM Alert for Buyers if Material attachment exists in ECC	SRM Portal	ZBPP_DOC_CHECK_BADI
CATS	CAT2 validation for AA Type 1610 Late	CAT2	Project: Z_CAT Function Module: EXIT_SAPLCATS_003
Benefits	Spouse / Domestic Partner Check	PA30	Program/Module Pool: MP010600 Include: MP010630 Enhancement Point: z_en_mod_spouse_val Enhancement Spot: z_en_mod_spouse Enhancement 1: z_enhance_mod_spouse
Payroll	Z_ENH_IMP_ADJUST_MESSAGES	PC00_M10_CALC_SIMU (Payroll Driver)	Class: CL_HRPAYUS_CLD_BSI_CALC_TF10 Method: IF_HRPAYUS_REG_BUL_LEVEL~ADJUST_MESSAGES Implicit enhancement: Z_ENH_IMP_ADJUST_MESSAGES Include: ZHPY_E15743_ADJ_MSG
Benefits	Z_ENH_HRBENUS_B_ACA_COVIND	HRBENUS_ACA_PERSON	Enhancement Spot: HRBENUS_ACA_DATA BADI Definition Name: HRBENUS_B_ACA_COVIND. Implementing Class: ZCL_IM_HRBENUS_B_ACA_COVIND Method: IF_HRBENUS_ACA_COVIND~INPUT_PERSON_COVIN
Benefits	Z_ENH_HRBENUS_B_ACA_OFFER	HRBENUS_ACA_PERSON	Enhancement Spot: HRBENUS_ACA_DATA BADI Definition Name: HRBENUS_B_ACA_OFFER Implementing Class: ZCL_IM_HRBENUS_B_ACA_OFFER Method: IF_HRBENUS_ACA_OFFER~INPUT_PERSON_OFFER

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
Benefits	Z_ENH_EXCLUDE_EMP_FORM	HRBENUS_ACA_PERS ON	Class: CL_HRBENUS_ACA_PERSON Method: SET_PERSON_DATA Include: ZHBN_ACA_EXCLUDE_EMP_FORM_ACA
Benefits	Z_ENH_HRBEN_UNDECGENDE R Z_ENH_HRBEN_IDOCCHK	Not specified	Report: RPUBEN52
Payroll	ZBADI_REJECT_EE_W2DD	PU19	Implementation Name: ZBADI_REJECT_EE_W2DD
Benefits	Z_ENH_HRBEN_READIT_DEP	Not specified	Enhancement Implementation Z_ENH_HRBEN_READIT_DEP, Include: ZHBN_REMOVE_OLD_ITDATA

Figure 39. SAP HCM Enhancements.

2.4.11.3. PS/PM – Enhancements (3):

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
Not specified	Hide the 'Order as Direct' button non-stock materials.	SRM Portal Shopping Cart	ZBBP_DP_PROD_CHK_BAD ZCL_IM_BBP_DP_PROD_CHK_BAD
Not specified	Make Inco terms & Payment Terms required.	N/A	ZBPP_Doc_Check_Badi
Not specified	Fleet Tracking: Update Objects on Loan	n/a This is a job in SM37, ZUPD_OBJ_O N_LOAN	Z_LPM_R368_UPD_OBJ_ON_LOAN
Not specified	Sourcing Cockpit Column Addition	N/A	BADI 1 – SHOW FIELD On DOCUMENT Screen– ZBBP_CUF_BADI_2 Badi Definition: BBP_CUF_BADI_2 Badi Implementation : ZBBP_CUF_BADI_2 Badi Implementation class :ZCL_IM_BBP_CUF_BADI_2 Badi Interface name : IF_EX_BBP_CUF_BADI_2 Method: MODIFY_SCREEN Badi Definition: BBP_DOC_CHANGE_BADI Badi Implementation : ZBBP_PO_CHANGE_BADI Badi Implementation class : ZCL_IM_BBP_PO_CHANGE_BADI Badi Interface name : IF_EX_BBP_DOC_CHANGE_BADI Method: BBP_SC_CHANGE BBP_PO_CHANGE BBP_BID_CHANGE BBP_CTR_CHANGE
Not specified	Add MPN to SRM Confirmations	SRM	BADI 1

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
			<p>BADI Definition: BBP_CUF_BADI_2 BADI Implementation : ZBBP_CUF_BADI_2 BADI Implementation class : ZCL_IM_BBP_CUF_BADI_2 BADI Interface name : IF_EX_BBP_CUF_BADI_2 Method: MODIFY_SCREEN (UPDATE EXISTING CODE) BADI 2</p> <p>BADI Definition: BBP_DOC_CHANGE_BADI BADI Implementation : ZBBP_CON_CHANGE_BADI (NEW) BADI Implementation class : ZCL_IM_BBP_CON_CHANGE_BADI (NEW) BADI Interface name : IF_EX_BBP_DOC_CHANGE_BADI Method: IF_EX_BBP_DOC_CHANGE_BADI~BBP_CONF_CHANGE Append Structure: ZAINCL_EEW_PD_ITEM_CSF_CONF for Structure: BBP_PDS_CONF_ITEM_ICU Append Structure: ZINCL_EEW_PD_ITEM_CSF_CONF for Structure: BBPS_CONF_ITEM_BADI</p>
Not specified	Materials Extensions	ZMM01 ZMM02	MRPAREA
SRM	Follow-on Document and Master Data Creation		Z2_LMM_PR_E002_FDS_V
SRM	Smart Forms Determination	Online in SRM	ZBBP_OUTPUT_CHANGE_S
SRM	Send Bid Invitation Output via Email	Online in SRM	ZBBP_OUTPUT_COVER
SRM	Send PO and Contract Output via Email	Online in SRM	ZBBP_OUTPUT_COVER
SRM	Sourcing Cockpit Column Revision	N/A	ZBBP_DOC_CHECK_BADI ZBBP_SCREENVARIANT
SRM	Storage Location Field for Contracts		ZBBP_PO_CHANGE_BADI
ECC	User Exit: Condition Based Maintenance	IK11	ZPM_E351
ECC	Wells Fargo ACH via Payment Medium Workbench	Payment Medium Workbench and F110	Function Group: ZFI001 Include: LZFI001TOP Include: LZFI001UXX

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
			Function Module: Z_FI_PAYMEDIUM_ACH_00 Function Module: Z_FI_PAYMEDIUM_ACH_05 Function Module: Z_FI_PAYMEDIUM_ACH_40 no enhancement coding changes in above Z-items modules
ECC	Length Recalculate BADI	BADI - EAML_CHEC K_LFE_DATA BADI Implementation Name : ZLPM LENGT H_CALCULAT ION Interface Name: IF_EX_EAML_ CHECK_LFE_ DATA BADI Method Implemented : IF_EX_EAML_ CHECK_LFE_ DATA~CHEC K_LFE_DATA	used in IW31, IW32, IW41, IW48
ECC	Damage Code Online BADI	BADI - NOTIF_EVEN T_SAVE BADI Implementation Name : ZLAM_DAMA GE_CODE_GR P BADI Method Implemented : CHANGE_DA TA_AT_SAVE User Exit Change: ZIW31 User Exit Component : IWO10009	While saving the Order using IW31 and IW32

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
		User Exit Include: ZXWOCU07	
Materials Mgt.	Z_ENH_SC_PRICE_CLEAR Z_ENH_SC_SOS_EXTREQ Z_ENH_POINT_STGE_LOCATIO N2 ZBBP_SOS_BADI ZBBP_PO_CHANGE_BADI	Implicit Enhancement BADI	Portal shopping cart process
Purchasing	Z_ENH_MM_INV_HELD		BADI Implementation BAD Name: BBP_DOC_CHECK_BADI Implementation Name: ZBBP_DOC_CHECK_BADI Method Name: BBP_DOC_CHECK Enhancement Implementation: (Implicit) Class Name: /SAPSRM/CL_CH_WD_IDEN_MAP_PO Method Name: DELETE_CHECK Implicit Enhancement Name: Z_ENH_MM_INV_HELD Include Name: ZLMM_E18047_INV_HELD Function Module: ZLMM_R18047_INVOICE_HELD Function Module: Z_SRM_ACCASSIGNMENT_CHECK
Purchasing	Z_ENH_MM_DELETE_ITEM		Implementation Name: Z_ENH_MM_DELETE_ITEM
Purchasing	Z_ENH_LPR_E17509_SORT_CO NDS		Implementation Name: Z_ENH_LPR_E17509_SORT_CONDS
Purchasing	Z_ENH_LPR_CH_EXP_FLDS Z_ENH_LPR_CI_EXP_FLDS Z_ENH_LPR_PH_EXP_FLDS Z_ENH_LPR_PI_EXP_FLDS		ENH: Z_ENH_LPR_CH_EXP_FLDS Z_ENH_LPR_CI_EXP_FLDS Z_ENH_LPR_PH_EXP_FLDS Z_ENH_LPR_PI_EXP_FLDS Web Dynpro Component Configuration: ZWDCC_PARTNER_CTR_HDR ZWDCC_PARTNER_CTR_ITM ZWDCC_PARTNER_PO_HDR ZWDCC_PARTNER_PO_ITEM
SRM	Z_ENH_ADD_FIELDS_SOURCIN G	Portal Sourcing Cockpit	Enhancement Implementation: Z_ENH_ADD_FIELDS_SOURCING
SRM	Z_ENH_FILL_VALUES_SOCO_R SLT	Portal Sourcing Cockpit	Enhancement Implementation: Z_ENH_FILL_VALUES_SOCO_RSLT
SRM	Z_ENH_GR_HEADER_TEXT	Portal	Enhancement Implementation:

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
			Z_ENH_GR_HEADER_TEXT
SRM	BAdI Implementation: ZBBP_PO_INBOUND_BADI	Portal	BAdI Implementation: ZBBP_PO_INBOUND_BADI BADI_FEEDER_PO BADI_FEEDER_MATDOC ZIMP_BADI_FEEDER_MATDOC
SRM	BAdI Implementation: ZBP_CATALOG_TRANSFER	Portal	BAdI Implementation: ZBP_CATALOG_TRANSFER
SRM	BAdI Implementation: ZIMP_BADI_FEEDER_PO	Portal	BAdI Implementation: ZIMP_BADI_FEEDER_PO
SRM	BAdI Implementation: Z_ENH_RFX_PROD_CAT_SEAR CH Implicit enhancement: Z_ENH_RFX_SEARCH_PROD_C AT Webdynpro enhancement: Z_ENH_HIDE_FIELDS_RFX_HE ADER	Portal	BAdI Implementation: Z_ENH_RFX_PROD_CAT_SEARCH Implicit enhancement: Z_ENH_RFX_SEARCH_PROD_CAT Webdynpro enhancement: Z_ENH_HIDE_FIELDS_RFX_HEADER
SRM	Webdynpro enhancement: ZLMM_PR_E_HIDE_PO_TOL ZLMM_PR_E_HIDE_SC_ITEMT YP ZLMM_PR_E_HIDE_SC_ITEMT YP_TAB ZLMM_PR_E_HIDE_PO_ITEMT YP	Portal	Webdynpro enhancement: ZLMM_PR_E_HIDE_PO_TOL ZLMM_PR_E_HIDE_SC_ITEMTYP ZLMM_PR_E_HIDE_SC_ITEMTYP_TAB ZLMM_PR_E_HIDE_PO_ITEMTYP
SRM	BADI: BBP_CHANGE_DEFAULT Enhancement Spot: BBP_BD_CHANGE_DEFAULT Implementation: ZCHANGE_DEFAULT_DELIV_D ATE	Portal	BADI: BBP_CHANGE_DEFAULT Enhancement Spot: BBP_BD_CHANGE_DEFAULT Implementation: ZCHANGE_DEFAULT_DELIV_DATE
SRM	Web Dynpro Comp./ Interface Name: /SAPSRM/WDC_UI_DO_ACC Method Name: GET_NETWORK_WBS Implicit Enhancement Name: Z_ENH_ACC_ASSIGNMMNT_W BS View Name: V_DO_ACCOUNT_DETAIL	Portal	Web Dynpro Comp./ Interface Name: /SAPSRM/WDC_UI_DO_ACC Method Name: GET_NETWORK_WBS Implicit Enhancement Name: Z_ENH_ACC_ASSIGNMMNT_WBS View Name: V_DO_ACCOUNT_DETAIL
SRM	Web Dynpro Comp./ Interface Name: FPM_OIF_COMPONENT	Portal	Web Dynpro Comp./ Interface Name: FPM_OIF_COMPONENT

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
	Method Name: ONACTIONBUTTON_PRESSED Implicit Enhancement Name: Z_ENH_CTR_ALERT_COMPLET E View Name: CNR_VIEW		Method Name: ONACTIONBUTTON_PRESSED Implicit Enhancement Name: Z_ENH_CTR_ALERT_COMPLETE View Name: CNR_VIEW Class: ZCL_CTR_PDO_DYN_MDA_HD Method: CTRL_DO_ADD_NA
SRM	ZLMM_EI_ATTACHMENT, ZENH_ATTACHMENT_BUTTON S	MIGO	ZLMM_EI_ATTACHMENT, ZENH_ATTACHMENT_BUTTONS, include: LMIGOST2
SRM	Web Dynpro Comp./ Interface Name: /SAPSRM/WDC_UI_DO_BIDDER Method Name: WDDOMODIFYVIEW Implicit Enhancement Name: Z_ENH_WD_SRM_BID_EMAIL View Name: V_DO_BIDDER_OVERVIEW	Portal	"Web Dynpro Comp./ Interface Name: /SAPSRM/WDC_UI_DO_BIDDER Method Name: WDDOMODIFYVIEW Implicit Enhancement Name: Z_ENH_WD_SRM_BID_EMAIL View Name: V_DO_BIDDER_OVERVIEW"
SRM	Implicit Enhancement Name: Z_ENH_CONTHIER_HEAD	Portal	Web Dynpro Comp./ Interface Name: /SAPSRM/WDC_CTR_DOTC_HIER Method Name: WDDOMODIFYVIEW Implicit Enhancement Name: Z_ENH_CONTHIER_HEAD View Name: V_CTR_DOTC_HIER
SRM	Implicit Enhancement Name: Z_ENH_VIEW_MODIFICATION	Portal	Web Dynpro Comp./ Interface Name: /SAPSRM/WDC_CTR_DOFC_OV_H Method Name: WDDOMODIFYVIEW Implicit Enhancement Name: Z_ENH_VIEW_MODIFICATION View Name: V_CTR_O_BD
SRM	Implicit Enhancement Name: Z_ENH_HISTORY_DETAILS	Portal	Class- /SAPSRM/CL_PDO_BO_PO Method - /SAPSRM/IF_PDO_DO_HISTORY~GET_IT EM_HISTORY
SRM	Implicit Enhancement Name: Z_ENH_BBPH_CTR_HIER	Portal	Standard F4 - BBPH_CONTRACTS_HIER Append search help : ZBBPH_CONTRACTS_HIER Enhanced F4 help - Z_ENH_BBPH_CTR_HIER
Project Systems	Positive Validation of WBS Assignment during Time Entry	EXIT_SAPLC ATS_003	ZXCATU03
Project Systems	FMDeriver Updates	FMDERIVER	ZLPS_R34664_FMDERIVER Z_FMDERIVER_IMPLEMENT

Sub-Area	Enhancements	Trans-action Type	Technical Object Name
			ZEVENT_R34664_FMDRIVER_01 job Z_LPS_R34664_FMDRIVER_UPDATES

Figure 40. SAP PS/PM Enhancements.

2.4.12. SAP Function Counts

BI & FRICE Supported SAP Functionality								BI Breakdown							
Reports	Totals	HCM	FI	Log	EIS	GIS	Other	Reports	Totals	HCM	FI	Log	EIS	GIS	Other
Forms	23	3	7	13				BI	234						
Non-BI	71	62	3	3			3	BI Logistics	48			48			
BI	234	14	57	68	80		15	BI Finance	43		43				
Total Reports	328	79	67	84	80	-	18	BI ASI	30		14	16			
								PSP TraCS	2						2
Interfaces	Totals	HCM	FI	Log	EIS	GIS	Other	BI Stats	10						10
Inbound	21	3	14	4				BI HCM	14	14					
Outbound	20	16	1	3			0	BI CSC	3						3
Internal	4	3		1				BI CP&PRS	4			4			
Total Interfaces	45	22	15	8	0	0	0	BI EIS	80				80		
								Total Reports	234	14	57	68	80	-	15
Other	Totals	HCM	FI	Log	EIS	GIS	Other								
Conversions	64	22	16	26											
Enhancements	24	6	6	12											
WorkFlow Processes	9	5		4											

Figure 41. SAP Function Counts.

3. SAP Service Overview

The majority of requests for ES / GIS services associated with the SAP system are reported through the I.T. Service Desk group who record each service request in our Microsoft Service Manager system as a ticket. Requests for services from the business can come into the I.T. Service Desk either directly through the phone, through email or through an intranet-based, self-service web portal. Service requests generally fall into two main categories; an incident request or a change request.

3.1. Current Incident Requests

These are requests for service from the business that are generally associated with a piece or pieces of functionality in one of the systems not working properly as designed. They also include service requests for SAP security access and/or security profile adjustments. The I.T. Service Desk either resolves and closes the ticket at Tier 1 or assigns the ticket to the appropriate ES / GIS Tier 2 support team. The ES / GIS Tier 2 team then validates the incident/service request with the business and proceeds to take the necessary steps to analyze/solve/resolve the incident and close the ticket to the business's satisfaction. The ES / GIS Tier 2 team, assigned the incident, involves other ES / GIS teams or the Technology Infrastructure group as needed and escalates assistance with resolution of the incident to Tier 3 (SAP and other outside vendors) when required.

3.2. Current Change Requests

These are requests for service from the business that are generally associated with enterprise business needs and requirements for either new or modified functionality to the system. Change requests are documented, categorized and tracked in an ES / GIS Change Request log. The ES / GIS follows a multi-stage process for managing the log of change requests and prioritization is negotiated with the business on a regular basis. Many of the change requests, especially those associated with the HCM software, are mandatory in nature due to Federal, State or Local law changes.

Change requests take varying degrees of time to complete depending upon the degree of complexity and availability of required resources with specific skills. The total team effort (Functional, FRICE, BI, Basis, Security, QA and infrastructure resources) to successfully complete any given change request can range anywhere from several hours (i.e.. for a report change, etc.) to several thousand hours (i.e., for an enhancement pack upgrade). In addition to the actual solution design and development time, the team effort includes significant unit, system integration, user acceptance and quality assurance testing. Due to the integrated nature of the SAP software and the number of modules the Commission has implemented, testing times for implementing change requests vary significantly.

3.3. Completed Change Requests by Year

Change Activity 2018	Date
CHG0031930 - UPD ZSR_HBN_BENEFITS_ADMIN_PTC w/ ZEMPCOUNTS	1/3/2018
CHG0031934 - RITM0024283 Table Upd 11670 - Nate Hoffman	1/3/2018
CHG0031921 - RITM0024205 UPD ZSR_CAD_NON-HR_DISPLAY - SM37	1/3/2018
CHG0031928 - UPD ZSR_FTR_PERIOD_END_PROCESSOR w/ _T_TRANS	1/3/2018
CHG0031948 - Add a "PDClam Barrier" Material Group	1/9/2018
CHG0031946 - Philly tax schedule for2018	1/9/2018
CHG003189 - USBCT CORRECTION BANK ACCOUNTS	1/16/2018
CHG0031973 - LPR Bid Comparison Excel Issue I-26317	1/16/2018
CHG0031983 - RITM0024464 Update SC Approver Role	1/16/2018
CHG0031835 - 1099MISC _Adobe Confi	1/16/2018
CHG0031925 - PRJ0016039 HBN ACA	1/16/2018
CHG0031971 - HPA Performance Appraisals_Form	1/16/2018
CHG0031974 - SAP Garnishments-IRS 1494 for 2018	1/23/2018
CHG0031638 - Activate contract Hierarchy	1/31/2018
CHG0031988 - FTR notes - Treasury FSWO Issue	1/31/2018
CHG0031976 - TUBs 124 to 129 Cross Client	2/7/2018
CHG0032052 - RITM0024757 Update ZSR_CAS_NON-IT_DISPLAY role	2/7/2018
CHG0032050 - RITM0024764 Update ZPFF_IT_SRM_ADMIN_SUPPORT	2/7/2018
CHG0032051 - RITM0024756 Update ZSR_CAS_IT_DISPLAY role	2/7/2018
CHG0032049 - RITM0024530 Update ZSR_HQU_HRQUERY_PTC role	2/7/2018
CHG0032031 - new USBCT Accts due to Trustee bank ch	2/7/2018
CHG0032072 - LPR Bid Comparison Excel Issue I-27277	2/13/2018

Change Activity 2018	Date
CHG0032086 - RITM0024758 & RITM0024759 - Update the ZSR_IT_FRICE_ADMIN_DSP role	2/20/2018
CHG0032088 - RITM0024883 - Create New role: ZSR_HTM_TIME_ADMN_APR_IT_BI & Struct Auth Z_IT_BUSINT	2/20/2018
CHG0032008 - Provide Contract Hierarchy BI Reporting	2/20/2018
CHG0032105 - US Bank 2018 EB5 Accts 02.20.2018 Revised.xlsx Bond Issue Closed 2/21/18 - Add new bank accounts for House bank USBCT	2/21/2018
CHG0032108 - Storage location phone number does not display in PO delivery address when request initiated from external requirement (MRP).	2/27/2018
CHG0032098 - PO# P100062457 is in "Transaction Completed" status	2/27/2018
CHG0032121 - Phase 1 of BI Changes for AVC 11 Classes	2/27/2018

Figure 42. Change Requests by Year - 2018.

Change Activity 2017	Date
RITM0018792 - Mod Role: ZSR_IT_HCM_ADMIN_DSP	1/11/2017
RITM0018719 Update Time Quota Admin Role	1/11/2017
REQ0017601 Pay Scale Group PR53 Rate Increase	1/11/2017
RITM0018717 HCM update Philly tax table for 2017	1/11/2017
RITM0017629 FAP SAP Note 2398337	1/13/2017
RITM0017725 HCM ACA Revise 1094C & 1095C forms Note	1/13/2017
RITM0018709 - Create Auth Pro - Z_IT_TECHINFRA	1/13/2017
RITM0014730 - Update Ethnic Origin drop down in IT0077	1/17/2017
RITM0018879 - Update role: ZSR_FAP_AP_VIEWER with T-code FB03	1/17/2017
REQ0017147_1099-S IRS Reporting/RITM0017629 FAP 1099 S form	1/17/2017
RITM0018944 UPD ZSR_CAD_NON-HR_DISPLAY -SCU3	1/24/2017
RITM0019045 - UPD ZSR_IT_BASIS_ADMIN_DSP ST03N	1/24/2017
REQ0018507_New Bank Accounts Creation for WFCT	1/25/2017
RITM0019166 - New Auth Profile - Z_POLEXTAFF/CRT - ZSR_HTM_TIME_ADMN_APR_POLEXAF	1/31/2017
RITM0019166 - New Auth Profile - Z_LEGFAFFAIR/Cr - ZSR_HTM_TIME_ADMN_APR_LEG_AFF	1/31/2017
REQ0018345 HCM SAP Garnishments-IRS 1494 for 2017	1/31/2017
PRJ0015860 SRM 7 Release 2	2/3/2017
RITM0018549 - Update the ZSR_IT_HCM_ADMIN_DSP role	2/7/2017
RITM0019294 is replacing RITM0017515 - Update ZPFF_IT_HCM_ADMIN role	2/7/2017
RITM0018047 - Provide functionality that stops A buyer from deleting a PO that has an Invoice in "Held" status	2/7/2017
RITM0017509 - Sort Contract item pricing conditions chronologically (calendar/date order)	2/7/2017
RITM0018646 - Expand Field lengths for display on partner/supplier popups in Purchase Orders and Contracts so all data can be seen.	2/7/2017
PRB0040072 LMM fix attachments logic	2/14/2017
RITM0018466 New Tech Obj Types for Fleet Mgt	2/14/2017
RITM0015133 Close union 30 health plans	2/14/2017
RITM0015133 Add Wellness Rates	2/14/2017
RITM0019366 - UPD ZSR_IT_BASIS_ADMIN_DSP SNOTE	2/14/2017
RITM0019413 - ZSR_HTM_TIME_ADMN_APR_TC_ETCOP	2/14/2017
RITM0019383 - OPCTR - Auth Profile/ZSR_HTM_TIME_ADMN_APR_OPCTR	2/14/2017
PRJ0015896 panaya extract for Q	2/14/2017

Change Activity 2017	Date
PRB0040063 FAR update table ZFI_REVENUE_ADD7	2/14/2017
RITM0019355 - New Role ZSR_CAS_IT_DISPLAY	2/17/2017
RITM0019502 - New ZSR_HTM_TIME_ADMN_APR_IT	2/21/2017
RITM0019523 - UPD ZAFF_IT_PM_ADMIN SE38	2/28/2017
RITM0019486 Update ZSR_IT_SRM_ADMIN_DSP Role	2/28/2017
RITM0019520 - RCrippen Pers Resp Tble	2/28/2017
RITM0019520 - New PR role for Robert Crippen	2/28/2017
RITM0017914 LMM ENH PO Hdr delete, set item del ind	2/28/2017
RITM0017400 Add Reported By & Priority in Notifctn	3/3/2017
RITM0017400 LPM add priority for Mobile Work Order	3/3/2017
PRJ0015860-SRM-R3-Double spacing print from	3/7/2017
RITM0019686 ZSR_HRP_HR_REPORT_S_AHR_61016	3/10/2017
RITM0019625 - ZSR_FAR_AR_POST_PARKED_DOC/RITM0019625 - UPD - ZSR_FAR_AR_POST_PARKED	3/10/2017
REQ0017943 HCM BSI Cyclic 0 TUBs88-100 Cross Client	3/20/2017
REQ00179 HCM BSI TUB 88-100 Cycle O Client Specific	3/20/2017
RITM0019287 HBN ACA Electronic file to IRS-Notes/XML upd	3/22/2017
RITM0019651 - Update ZPFF_IT_SRM_ADMIN_SUPPORT	3/22/2017
RITM0019720_Limit Extended_User_Kerin	3/24/2017
RITM0019860 - UPD ZSR_IT_SECURITY_ADMIN_UPD	3/28/2017
PRJ0015860 SRM 7 Release 2	3/31/2017
RITM0019649 SRM replace lost prog auth grp	4/4/2017
RITM0019513 - Complement Report Data Objects/BEx Objects	4/4/2017
CHG0030755 Syclo Work Manager - Defect resolution from go-live	4/4/2017
PRJ0015860 SRM 7 Release 2 BI Requirements	4/7/2017
RITM0020108 NEW ROLE ZSR_LPS_PR_11613	4/11/2017
RITM0020106 NEW ROLE ZSR_LPS_PR_10389	4/11/2017
RITM0020110 NEW ROLE ZSR_LPS_PR_11797	4/11/2017
RITM0020109 NEW ROLE ZSR_LPS_PR_11780	4/11/2017
RITM0020107 NEW ROLE ZSR_LPS_PR_11414	4/11/2017
RITM0019836 Add tab Veh ID-Meas and Technology	4/11/2017
RITM0020012 three mth periodic panaya extract	4/11/2017
RITM0015620 - Health Benefits Overview Report	4/11/2017
RITM0020060 Add Tech Obj Type 093001	4/11/2017
CHG0031165 Implement RITM0013811	4/18/2017
RITM0020060 - New technical object type 093001 for customer gas cans	4/18/2017
CHG0031169 Request changes/enhancements to SAP	4/18/2017
CHG0031182 Create ZSR_LMM_VENDOR_DISPLAY	4/25/2017
CHG0031178 New ZSR_FAR_CUST_GRP_PT02 UPD - ZSR_FAR_CUST_GRP_PT02 PT01	4/25/2017
CHG0031172 missing table auth grp	4/25/2017
CHG0031214_New Bank Acct_WFCT_05012017	5/2/2017
CHG0031166 RITM0020093 Update ZSR_FAR_AR_POST_PARKED_DOC	5/2/2017
CHG0031204 - Note 2085377-URL is to long	5/2/2017
CHG0031222 RITM0019649 ECC missing program auth group	5/10/2017
CHG0031241 - Update PTC Org Charts link under MSS on the PTC Portal	5/10/2017

Change Activity 2017	Date
CHG0031250 - UPD ZSR_FTR_FEBA_BANK_STATE_DISP, ZSR_FTR_FEBA_BANK_STATE_DISPI	5/16/2017
CHG0031230 ZSR_HTM_TIME_ADMIN_DIVERSITY	5/16/2017
CHG0031228 ZSR_HTM_TIME_ADMIN_POLEXAF	5/16/2017
CHG0031229 ZSR_HTM_TIME_ADMIN_LEGIS_AFF	5/16/2017
CHG0031002 PRJ0015913 Enterprise Structure Items EG ESG PYArea	5/16/2017
CHG0031265 Objects on loan-Infotype PA0040 Update	5/16/2017
CHG0031273 - New Wage Type 5060(Vehicle Allowance)	5/23/2017
CHG0031274 - Add ability to export using excel - button does not exist in toolbar	5/23/2017
CHG0031272 - to add Tech Object Type 049005, with description "Speed Display Sign"	5/23/2017
CHG0031282 - Bid tabulation download to excel capability is not working as expected	5/23/2017
CHG0031268 - Default "USD" as the currency on the Offline Bid Response interactive form.	5/23/2017
CHG0031269 - Unable to "Complete" Central Contract Alert work items	5/23/2017
CHG0031267 - phase 4, Missing SRM table authorization group assignment	5/23/2017
CHG0031285 - HR requesting new document type for OnBase & SAP	5/23/2017
CHG0031291 - Add Drill through report for Enterprise FM BVA report	5/30/2017
CHG0031292 - RITM0020667 - copy and rename role ZSR_PTC_TCODE_FMCD to ZSR_FIN_WORK_LIST_REASSIGNMENT	5/30/2017
CHG0031281 - RITM0020897 - Update Structural Authorization Z_COMM&PR	5/30/2017
CHG0031278 - RITM0019769 - Appraisal changes for 2017 before June 2017.	5/30/2017
CHG0031284 - Offline Bid Invitation email notification containing bid details, terms and condition is missing body content.	5/30/2017
CHG0031294 - Update role ZSR_GRAC_ADMIN_PRODUCTION in GP2 with t-code SWIA - WI Administration Report	6/7/2017
CHG0031011 - Holiday and Factory Calenders Z1 and Z2 extended till FY 2050 for REQ0019893/RITM0020537	6/7/2017
CHG0031295 - Create new role: ZSR_LPS_PR_11955 - Tyson Clouser	6/7/2017
CHG0031308 - RITM0021092 - Update Role: ZSR_BC_GENERAL_USER with T-code: RSRR_WEB	6/7/2017
CHG0031279 - RITM0019805 - Worker's Comp Dept started a program for employees to return to work with restrictions.	6/7/2017
CHG0031296 - For RITM0019649, phase 5 (final phase), Missing SRM program authorization group assignment	6/7/2017
CHG0031324 - INC0022245 FAP Retiree billing running very slow	6/13/2017
CHG0031323 - RITM0021301 Update ZSR_BC_GENERAL_USER Role	6/13/2017
CHG0031212 - Update to XP2 Integration Engine configuration to keep more than two days of SXMB_MONI process history	6/21/2017
CHG0031351 - RITM0021142 Add additional fields to the GL Activity Overview report	6/21/2017
CHG0031376 - RITM0021485 - Average Overall Score Scale text for the range of 2.50 to 3.49 scale text needs to be changed to "Proficient".	6/28/2017
CHG0031370 - RITM0020557 HCM SERS Employer FY 17-18 Contribution Rates.	6/28/2017
CHG0031369 - RITM0021548 - Update the ZSR_FFM_FUNDS_MGMT_VIEWER role	6/28/2017
CHG0031357 - Panaya SAP ABAP Extract program, three month periodic extract	6/28/2017
CHG0031378 - RITM0021522 Update IT program manager to Bob Taylor	7/5/2017
CHG0031406 - RITM0021730 - Several New Tech Obj Types	7/12/2017
CHG0031407 - RITM0021749 - Implement the SAP BW connector for Qlik	7/12/2017
CHG0031420 - RITM0021853 Unlock version 999 in project systems	7/13/2017

Change Activity 2017	Date
CHG0031423 - RITM0021830 - create time admin/approver role for Anna Marcella so she may input time for commissioners and chairman.	7/18/2017
CHG0031447 - RITM0021184 Apply Cyclic P & TUBs 101 to 112 in EP2.	7/26/2017
CHG0031467 - REQ0021256_WFCT New Bank Accounts_07282017	7/28/2017
CHG0031441 - 20170718 RITM0021938 FAP ESign secretary-treasurer Image	7/28/2017
CHG0031480 - RITM0022150_WFCT_BankAcc_Correction_07312017	8/1/2017
CHG0031453 - RITM0021831 - UPD- ZSR_FBP_OPER_BUDGET_PLANNER	8/1/2017
CHG0031476 - RITM0022154 Update ZSR_FTR_INVESTMENT_PROCESSOR	8/1/2017
CHG0031459 - RITM0022062 Update MARKET_DATA_MAINTAINER role	8/1/2017
CHG0031460 - RITM0022059 Update BANK_MASTER_DATA_MAINT role	8/1/2017
CHG0031475 - RITM0022140 Update ZSR_FTR_INVESTMENT_APPROVER	8/1/2017
CHG0031478 - RITM0022130 - add t-code IW69 to role ZSR_LPM_PM_DISPLAY_ALL	8/8/2017
CHG0031477 - RITM0022153 - Add transaction RSUSR003 to ZSR_CAD_IT_DISPLAY role in GP2.	8/8/2017
CHG0031479 - RITM0022099 - Remove transaction FTR_EDIT from role ZSR_FTR_INVESTMENT_EDIT	8/8/2017
CHG0031484 - RITM0022079 - Create a new role called ZSR_HTE_TRNG_EVNTS_COORD_FC for Elizabeth Gordon	8/15/2017
CHG0031508 - Setting Delivery Complete Indicator message after reducing PO quantity to match Goods Receipt quantity	8/15/2017
CHG0031522 - RITM0022307 - Update role: ZSR_GRAC_SUPER_USER_MGMT_CNTL	8/22/2017
CHG0031506 - RITM0022219 - New Role ZSR_IIT_BC_ADSCALLERS	8/22/2017
CHG0031523 - RITM0022307 - Update role: ZSR_GRAC_SUPER_USER_MGMT_USER	8/22/2017
CHG0031542 - RITM0022002 - Configuration in GRC to enable functionality in Fire fighter Workflow	8/29/2017
CHG0031541 - RITM0022387 - Create a copy of role ZSR_LMM_STOREROOM_SUPERVISOR role but remove transaction MI07.	8/29/2017
CHG0031540 - RITM0022385 - Update ZSR_FCO_SETTLEMENT_USER role.	8/29/2017
CHG0031550 - RITM0022557 Update Role Default for training	9/5/2017
CHG0031507 - RITM0022220 Create New ZSR_IIT_BC_TRUST_AUTHORI	9/5/2017
CHG0031379 - RITM0019973 SRM MIGO Attachments functionality-MB51 / SRM MIGO Attachments functionality	9/5/2017
CHG0031559 - RITM0022552 - UPD ZSR_CAD_IT_DISPLAY - RZ11	9/5/2017
CHG0031580 - RITM0022501_Validation_Cust_Refund_09062017	9/13/2017
CHG0031546 - RITM0020435 HPA Perf Appr-Appraisal Table Entries; HPA Perf Appr-Appraisal Interim NEW; HPA Perf Appr-Appraisal Interim Form; RITM0020435 Update Z_APPRAISAL Auth Profile	9/13/2017
CHG0031570 - RITM0022641 Update ZSR_CAS_IT_DISPLAY Role	9/13/2017
CHG0031569 - RITM0020975 SRM Account Assignment Category Portal	9/13/2017
CHG0031547 - PRJ0015821 LO Fuel GASBOY EKOS CMS Create Config; LPM Fuel Gasboy Program Auth. Grp; LPM Fuel Gasboy Creation	9/13/2017
CHG0031611 - RITM0022856 Update ZSR_FAA_ASSET_ACCT_SUPER_USE	9/20/2017
CHG0031577 - RITM0022646 ZSR_HPY_RUN_REMITTANCE_EVAL Role	9/20/2017
CHG0031578 - RITM0022642 Update ZAFF_IT_SECURITY_ADMIN Role	9/20/2017
CHG0031612 - RITM0022857 Update ZSR_FCO_SETTLEMENT_USER role	9/20/2017
CHG0031582 - RITM0022541 Add/Update Locations – FIXES	9/20/2017
CHG0031626 - RITM0022367 - LSMW IT0376 Load	10/4/2017
CHG0031681 - 20171011_CHG0031681_NEW BANK ACCOUNTS_USBCT	10/11/2017
CHG0031659 - CHG0031659_New bank Acc_USBCT_10042017	10/11/2017

Change Activity 2017	Date
CHG0031664 - RITM0023189 - Create Auth Prof - ZTRAFFOPS	10/11/2017
CHG0031600 - RITM0022271 HCM WT 4061 Taxable Fringe-Recognition	10/17/2017
CHG0031714 - RITM0023358 - Add transaction S_PH0_480000513 to role ZSR_HPA_PERSNL_ADMIN_PTC.	10/25/2017
CHG0031732 - RITM0023439 - Time admin and Approver role for Construction Engineering Central - ZSR_HTM_TIME_ADMN_APR_CENGCTRL	10/25/2017
CHG0031554 - RITM0020555 - Hourly Annuitants require additional updates in configuration.	10/25/2017
CHG0031722 - RITM0023370 - Create SAP ZS PM Seasonal Calendar 2019	10/25/2017
CHG0031731 - RITM0023399 - Create New time admin and Approver role:ZSR_HTM_TIME_ADMN_APR_DESN_DIS	10/25/2017
CHG0031723 - RITM0023375 - Update table ZLPM_PROD_STD for 2018	10/25/2017
CHG0031557 - AgileAssets - Sign Manager to SAP Interfaces launch	10/25/2017
CHG0031715 - RITM0023327 Renaming SAP Delivered Roles	10/31/2017
CHG0031738 - RITM0023466 - Create ZSR_LMM_PHYSICAL_INV_DOC	10/31/2017
CHG0031752 - PRJ0010210 Update Storage Category for Sign Docs	10/31/2017
CHG0031736 - PRJ0015949 - Implement Change to Prescription Plan Benefit Provider	11/16/2017
CHG0031773 - Apply Note 2408559 for Support packs	11/16/2017
CHG0031783 - RITM0023712 - NEW WFCT Bank Accounts	11/30/2017
CHG00318131 - RITM0023398 - Open Enrollment adjustment reason	12/13/2017
CHG0031843 - RITM0023438 - Deferred Comp Limits for 2018	12/13/2017
CHG0031907 - RITM0024147 - Update ZSR_FAP_AP_CHECK_RUN_PROPOSAL with Auth: P_ORGINCON	12/18/2017
CHG0031906 - RITM0024125 - UPD ZSR_IT_FINANCE_ELEVATED_ACCESS with XD02	12/19/2017
CHG0031895 - WFCT NEW BANK ACCOUNTS	12/19/2017
CHG0031830 - RITM0022624 - Configure 2018 health plan benefit rates	12/21/2017
CHG0031896 - USBCT NEW BANK ACCOUNTS	12/27/2017
CHG0031833 - Cyclic Q,R TUBS 113 to 123 Cross Client	12/27/2017
CHG0031837 - WT 5075 Tuition Reimbursement	12/27/2017
CHG0031836 - RITM0023614 ZFI_REVENUE_ADD7	12/27/2017

Figure 43. Change Requests by Year - 2017.

3.4. Yearly Upgrade Frequency

- End of Fiscal Year Upgrade: one (1)
- Enhancement Pack Upgrade: one (1)
- Syclo Upgrade: four (4)

3.5. Yearly Number of Releases

- Releases: six (6)

3.6. Service Levels

Currently there are no Service Level Agreements or Service Level Objectives in place for ES / GIS

customers. We strive to maintain 100.0 % availability to the business of the SAP ECC, SRM, Business Warehouse and Portal systems, outside of the agreed to weekly maintenance window or any other negotiated planned outages for system go-lives.

3.7. System Availability Constraints

The I.T. department has an established maintenance/support window with the business, for planned and recurring maintenance activities, each week between the hours of 6:00pm on Thursday through 6:00am on Friday. Major implementations (cutovers) are typically scheduled during holiday weekends so as to minimize the impact on user availability of the system during normal work hours.

Payroll processing, which occurs bi-weekly, does not significantly impact the overall system but does impact HR Department administrative functionality during the processing period. Payroll processing times typically are:

Wednesdays - 1:00pm to 4:30pm for payroll pre-checks/trial runs

Thursday – 9:00am – 1:00pm for live payroll processing

[Note: payroll processing can run later if there are any issues to contend with]

Transports into the production environment are typically scheduled twice weekly on Tuesday and Friday evenings after 5:00pm except for holiday weeks or for special business requirements.

3.8. User Application Security Management (user ID, passwords, profile)

As employees are hired into the SAP system by the HR Department, notification of the personnel action is communicated via SAP workflow notification to the various necessary administrators responsible for setting up the employee with the applicable security required for their job position. Overall access to SAP is through Single-Sign-On (SSO). The ES / GIS Security Team creates and manages SAP security roles based on role requirements received from the business units or the ES / GIS Functional teams. All changes to security roles are approved by the appropriate business process owners.

3.9. Documentation: User, System and Developers' documentation

The Technical Team, Functional Team, and System Release Teams are responsible for developing and maintaining many different types of documentation.

Technical documentation includes Functional Specs, Technical Specs, Schedules, Unit Test Plans, Quick Reference Sheets, Business Process Maps, Business Process Procedures, Landscape Diagrams, Transport Procedures, Configuration Documents, etc. These documents are stored in a shared directory on a network server.

User documentation such as SAP user help (business process procedures, cue cards and SAP uPerform simulations) can be accessed via the SAP component. SAP Quick Reference Cards, Frequently Asked Questions and self-guided training courses can be accessed via the Commissions Intranet.

Do to time constraints and other contributing factors, not all documentation is currently up to date.

3.10. Methodologies, Standards and Guidelines

The SAP ASAP methodology and SAP Best Practices are used consistently. We try to follow the ITIL set of practices for IT service management with a consistent goal of aligning our IT services with the needs of the business. We follow a standard System Development Life-Cycle (SDLC) process, similar to the ASAP methodology, for applications development that occurs outside of the SAP environment.

4. SAP Historical Timeline

- January 2005:** Released RFP (05-101-3119) for an Integrator for Enterprise Resource Management (ERP) System
- May 2005:** ERP System Integrator contract is awarded to CIBER
- June 2005:** Started Business Requirements and Software Selection Phase
- October 2005:** Released RFP (05-101-3279) for an Enterprise Resource Planning (ERP) system
- February 2006:** ERP Software Award to SAP for their MySAP 2005 ERP system
- April 2006:** Started Executive Decision Point and Design Phases
- May 2006:** Finalized contract with SAP for their MySAP 2005 ERP system
- June 2006:** Started SAP Implementation Phase (PRIDE Project)
- December 8, 2006:** Stage 1 Go-Live - SAP Time Entry & G/L Accounts (Quick Win)
- December 7, 2007:** Stage 2A Go-Live – Full SAP HCM/Payroll
- March 3, 2008:** Stage 2 Go-Live – Full SAP Finance and Full SAP Logistics (Central Office & District Level Only)
- March-May 2008:** 90-Day Overall System Shakeout and Support
- March 2008:** Released RFP for SAP Post-Implementation Support
- June 2008:** SAP Post-Implementation Support contract is awarded to CIBER with August start date
- June-August 2008:** 90-Day District rollout to Sections for Logistics
- October 2008:** Implemented significant backlog of SAP Support Packs to the ERP system
- October 2008:** ERP System Integrator contract with CIBER is closed out
- October 2008:** Enterprise Solutions and GeoAnalytics Departments (ES / GIS) is approved by the Commission as an organizational unit under I.T. to support the SAP ERP system and accompanying peripheral systems and software
- February 2009:** ES / GIS Go-Live of Winter Functional Release including Investment Management and Training & Events modules
- June 2009:** ES / GIS Go-Live of Spring Functional Release of functionality enhancements
- September 2009:** ES / GIS Implementation of SAP Support Packs to the ERP system
- October 2010:** ES / GIS implementation of SAP Enhancement Pack 4 (EHP4) including a significant number of SAP Support Packs to the ERP system
- November 2010:** ES / GIS implementation of SAP Treasury Investment Management module
- May 2011:** SAP Post-Implementation Support contract with CIBER is terminated

October 2012: ES / GIS implementation of SAP Enhancement Pack 5 (EHP5) including a significant number of SAP Support Packs to the ERP system

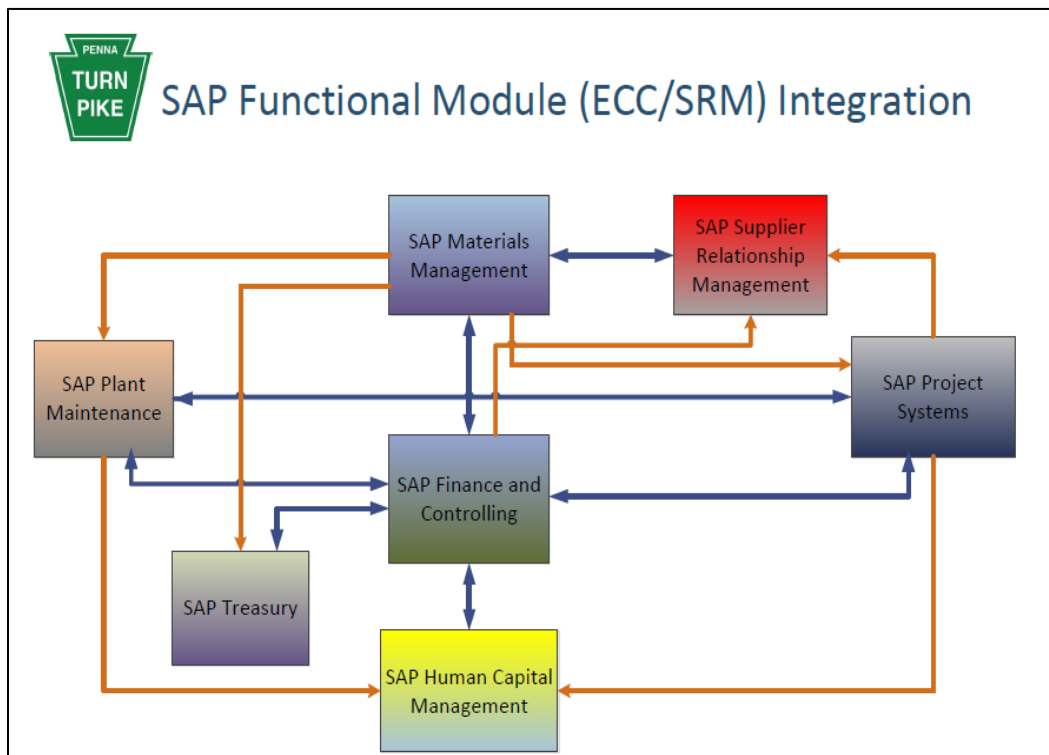
October 2013: ES / GIS implementation of Linear Asset Management (LAM)

February 2014: ES / GIS implementation of Hayes Gold Client to assist with data for test cases and problem identification. Data masking to occur at a later date.

May 2014: ES / GIS implementation of GRC access management for the compliance department

December 2014: Upgrade 1st three interfaces from XI 7.0 to PI 7.3 & ES / GIS implementation of server upgrades to 2012 and database to 2012

5. Additional Diagrams



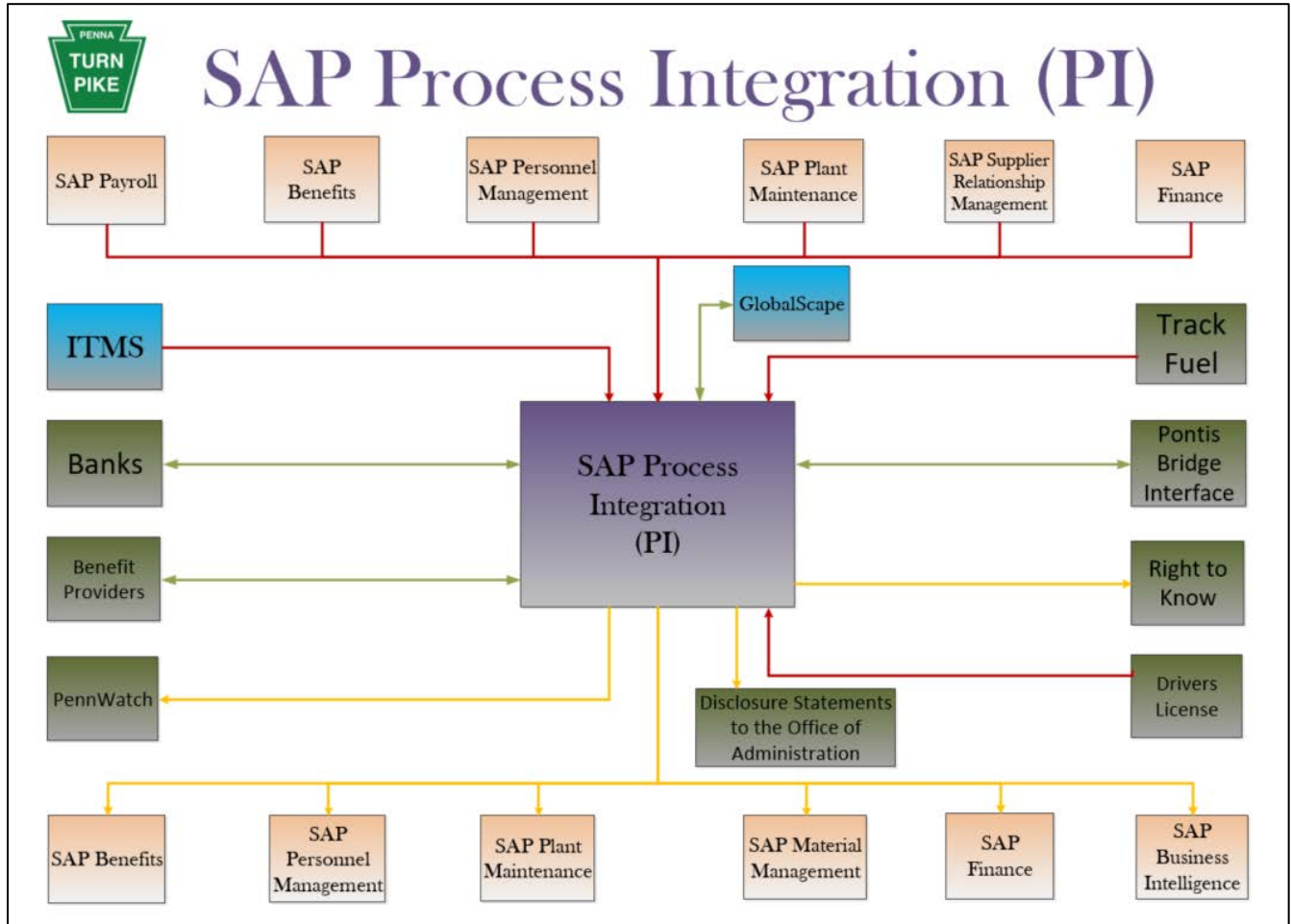


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1. Notice

The information contained within this document is a point in time snapshot of the ServiceNow systems and applications. This information is intended to provide knowledge on the Commission ServiceNow world but be aware that the ServiceNow systems are in a constant state of change as upgrades and projects occur. The Selected Proposer must support the ServiceNow systems for the duration of this agreement with the understanding that the configuration may not be completely documented in this Appendix L.

2. Overview

This document is a high-level source of reference for the ServiceNow system, which has been implemented at the Pennsylvania Turnpike Commission.

2.1. Production Architecture

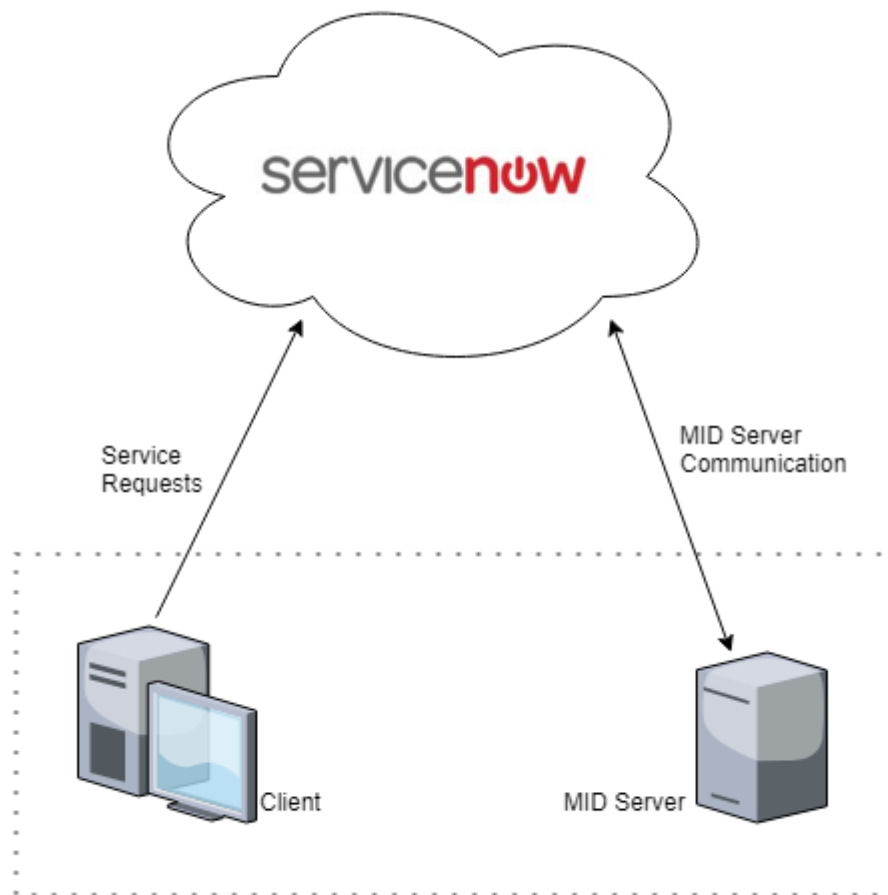


Figure 1. ServiceNow Production Architecture.

2.2. Version & OS platform where applicable

Application Name	Current Version Level	Operating System Platform & Version
ServiceNow	London	Cloud based

Figure 2. Version & OS Platform.

3. ServiceNow Environment

The Commission’s ServiceNow implementation is the London version maintained in the Cloud.

Although in the Cloud, one server, the so-called “MID Server” is maintained on-premise at the Commission to enable integration with the Commission’s LDAP; integration is accomplished via SAP updates to Active Directory.

All changes are made in ServiceNow’s Development instance, then are moved to the Stage instance for testing, and deployed to Production. In addition, a “Sandbox” environment is available.

A daily job is scheduled within ServiceNow to support asset discovery and management. ServiceNow’s Discovery tool scans the Commission’s network; a delta of the scanned data is directly mapped into the configuration management database (CMDB).

3.1. Environments

The following are the environment instances currently active for the Commission as of February 12, 2019.

- Sandbox
- Development
- Staging
- Production

3.2. ServiceNow Functional Areas Implemented

Functionality Supported

- (Self-)Service Portal
- Service Catalog
- CMDB
- Incident Management
- Problem Management
- Change Management
- Idea and Demand management (Currently not used; will change in foreseeable future)
- Project Management (Currently limited usage)

3.3. ServiceNow Application Version

London, Release - Upgrade occurred in February 2019.

3.4. ServiceNow Technical Components

3.4.1. ServiceNow Interfaces

Direction	Interfaces	#
Inbound	LDAP	1
Inbound	SCCM (System Center Configuration Manager)	1
Inbound	MS Outlook Distribution Groups	1
Inbound	SAP HCM to ServiceNow (provides ServiceNow Users with the ability to manage department lookups)	1
Inbound	ServiceNow Discovery Tool (network scanning to update CMDB)	1

Figure 3. ServiceNow Interfaces.

3.4.2. LDAP Integration

3.4.2.1. Aspects and Features of LDAP Integration

Administrators integrate with a Lightweight Directory Access Protocol (LDAP) directory to streamline the user login process and to automate administrative tasks such as creating users and assigning them roles. An LDAP integration allows the system to use the existing LDAP server as the master source of user data. Typically, an LDAP integration is also part of a single sign-on implementation. The integration uses the LDAP service account credentials to retrieve the user distinguished name (DN) from the LDAP server. Given the DN value for the user, the integration then rebinds with LDAP with the user's DN and password. The password that the user enters is contained entirely in the HTTPS session. The integration never stores LDAP passwords. The integration uses a read-only connection that never writes to the LDAP directory. The integration only queries for information, and then updates its internal database accordingly.

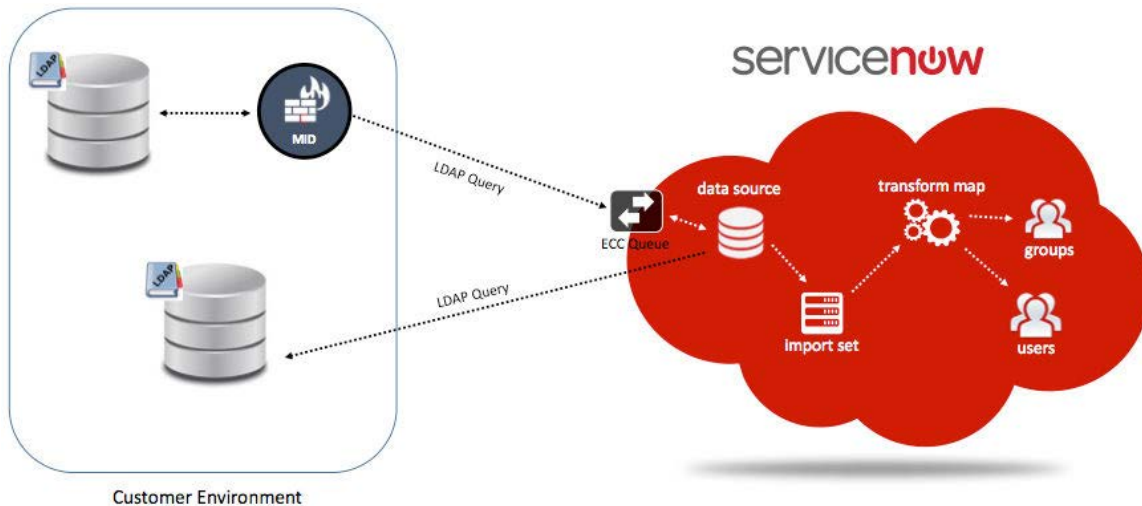


Figure 4. ServiceNow LDAP Integration.

3.4.2.2. Authentication

When PTC users enter their domain credentials in the login page, the application passes those credentials to the defined LDAP server(s). The LDAP server responds with an authorized or unauthorized message which the application uses to determine if access should be granted. By authenticating against PTC's LDAP server, users use the same credentials for the application that they use for other internal resources on the PTC domain. This allows PTC to leverage any existing password and security policies that are already in place (for example: account lockout after a number of failed logins and password expiration dates). Because the application is receiving a "yes" or "no" from the LDAP server, these policies are enforced.

3.4.2.3. MID Server Functionality

A Management, Instrumentation, and Discovery (MID) Server is a Java application that runs as a Windows service or UNIX daemon. The MID Server facilitates communication and movement of data between the ServiceNow platform and external applications, data sources, and services.

The MID server connects to the Instance and the MID server connects to the LDAP server. In both cases, the MID server initiates the connection. The MID server connects to the LDAP server via LDAP (port 389) and then initiates an HTTPS encrypted connection to the Instance on port 443 to push the data to the Instance. When using the MID server, the Instance is not making a connection to the LDAP server but, rather, the MID server is.

Using a MID Server to establish an LDAP connection prevents you from having to expose the LDAP server to external network traffic. It also eliminates the need to establish a VPN tunnel between your LDAP server and ServiceNow data centers.

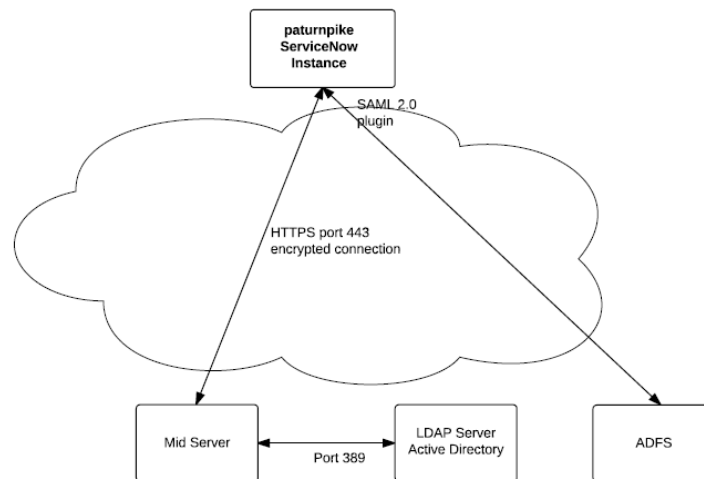


Figure 5. LDAP Integration.

3.4.3. Manage the (Self-)Service Portal Process

ServiceNow Service Portal provides self-service end user services from PTC's IT organization to PTC's end users. It provides a Service Catalog to request services and items, a Knowledge Base to view knowledge articles for self-help, multiple Incident reporting forms to fix something that is broken, and multiple widgets/pages that show the fulfillment progress of service requests or incident resolutions. Additionally, the Service Portal at PTC contains end user services provided by non-IT organizations such as accounting and cafeteria services.

The Service Portal is elastic and can incorporate additional ServiceNow modules and functionality over time such as Customer Service Management.

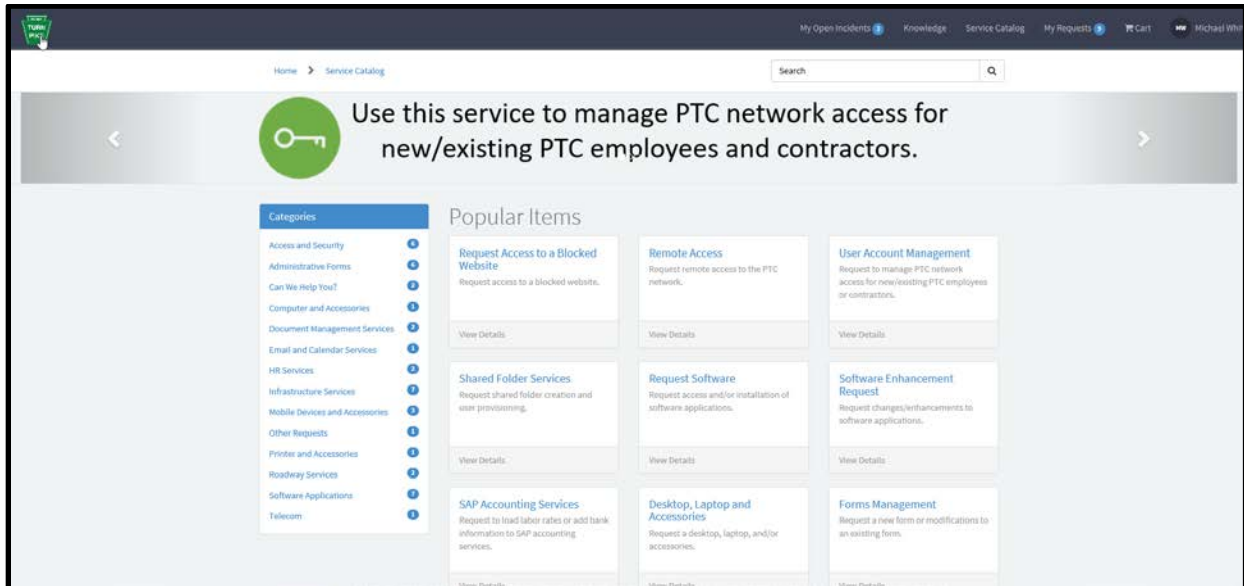


Figure 6. Order Something – Sub-Process.

From the homepage, if a user selects “Order Something” they come to the Service Catalog page. On this page they can:

- Drill down into the category structure on the left-hand menu of the page to access catalog items that belong to a particular category.
- Select a popular catalog item from the middle of the page. These popular items periodically change in order and availability as users request some items more often and other items less often.

3.4.4. View Request Status

For a user to view the status of their requests submitted for themselves, they can go to the My Requests widgets on the homepage or select the My Requests link on the top banner.

3.4.5. Access Knowledge Article

From the homepage, if a user selects “Knowledge Base” they come to the Knowledge Base page. On this page they can:

- Drill down into the category structure on the left-hand menu of the page to access knowledge articles that belong to that category.
- Select Top Rated Articles or Most View Articles from the center of the page to view, comment on, and rate them.

3.4.6. Report an Incident Process

PTC Employees request help through the Service Portal by reporting incidents using the Something’s Broken form, viewing status of submitted incidents, and reporting other issues such as a card access issue (Located in the Service Catalog).

Entering the Something’s Broken form, the user can see how the form is rendered within the Service Portal.

3.4.7. Change Management Process Overview

The following describes the ServiceNow recommended process flow for the Change Management process. The Change Management Process embodies the ITIL best practices for Change Management and is designed to manage the incident lifecycle including: logging, classifying, supporting, investigating, diagnosing, resolving, recovering, and closing.

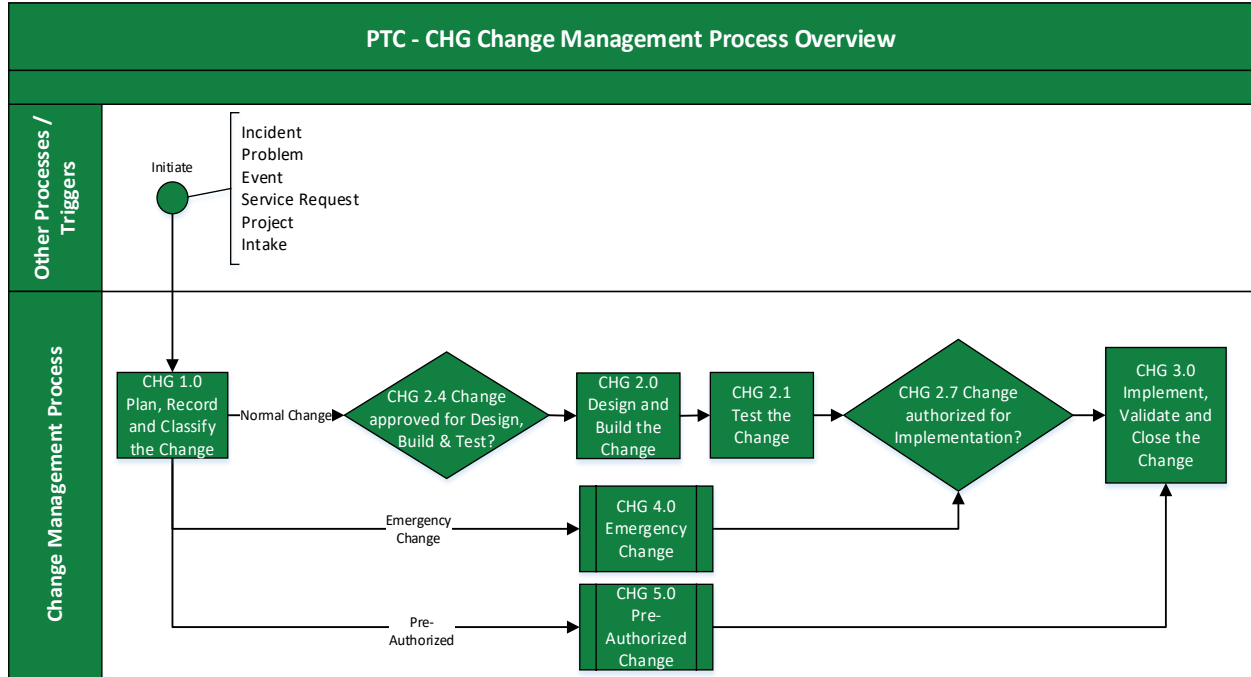


Figure 7. Change Management Process Overview.

3.4.7.1. Process Activity Description

ID	Activity	Description
CHG 1.0 Plan, Record and Classify the Change	<ul style="list-style-type: none"> Change Initiator/ Owner 	the Change Initiator/Owner logs and classifies a Request for Change in a Change Record. The Change Initiator/Owner performs preliminary change planning, and the functional area Change Manager validates the Change Record information before it is submitted for validation and approval.
CHG 2.4 Change approved for Build and Test?	<ul style="list-style-type: none"> ITSM Staff 	This is approval step for Design, Build and Test: <ul style="list-style-type: none"> For Candidates of <u>Pre-Authorized Change</u>, Change Review Board (CRB) does not review the change

ID	Activity	Description
		<ul style="list-style-type: none"> For <u>Normal Change</u>, Change Owner reviews, Change Coordinator validates and CRB approves or Rejects. <p>Based on scope, impact and risk, approval and notification are required for Business and Technical Sponsor(s) and Stakeholder(s).</p>
CHG 2.0 Design and Build the Change	<ul style="list-style-type: none"> Change Initiator/Owner Change Design & Build Lead 	approved Changes are designed and built
CHG 2.1 Test the Change	<ul style="list-style-type: none"> Change Test Lead 	built changes are tested
CHG 2.7 Change authorized for Implementation?	<ul style="list-style-type: none"> ITSM Staff 	<p>This is approval step for Implementation based on completed Design, Build and Test activities:</p> <ul style="list-style-type: none"> For Candidates of <u>Pre-Authorized Change</u>, Change Review Board (CRB) does not review the change For <u>Normal Change</u>, Change Owner reviews, Change Coordinator validates and CRB approves or Rejects. <p>Based on scope, impact and risk, approval and notification are required for Business and Technical Sponsor(s) and Stakeholder(s).</p>
CHG 3.0 Implement, Validate and Close Change	<ul style="list-style-type: none"> Change Initiator/Owner Change Implementation Lead/Team ITSM Staff 	approved Changes are implemented, and associated communication and training is conducted.
CHG 4.0 Emergency Change	<ul style="list-style-type: none"> Incident Manager Incident Resolver Change Initiator/Owner Emergency CRB 	Emergency Changes are created and handled end-to-end.

ID	Activity	Description
CHG 5.0 Pre-Authorized Change	<ul style="list-style-type: none"> ITSM Staff Change Initiator/Owner CRB 	Pre-Authorized Changes are created and handled end-to-end.

Figure 8. Change Management Process Description.

3.4.7.2. Define Metrics

Metrics are best represented as trend lines and tracked over time. They provide information on the effectiveness of the process and the impact of continuous improvement efforts.

Metric	Purpose
Percentage of changes completed by Type	Measure of process efficiency. Look for opportunities to increase the percentage of Standard changes and lower the percentage of Emergency changes.
Percentage of changes completed by Closure Code (Successful, Unsuccessful, etc.)	Measure of the effectiveness of the Change Management process.
Percentage of completed changes that caused incidents	Measure of the negative impact to IT service quality.

Figure 9. Metrics Definition.

3.4.7.3. Reporting

Active changes that require visibility, oversight, and possible management intervention are best tracked on a dashboard or homepage that is monitored by the Change Manager. In addition, reports can be developed and scheduled to gather required operational data and metrics.

Metric	Purpose
Forward schedule of changes.	Ability to see a calendar view of all changes that have been approved for implementation.
List of changes awaiting CAB or ECAB approval.	Provides view of work in progress.
List of changes awaiting post implementation review.	Provides view of work in progress.
List of changes that caused incidents.	Provides quick view of changes that need investigation to determine if process improvements are needed.

Figure 10. Reporting Metrics.

3.4.7.4. Process Improvement

The PTC Service Desk can improve the Change Management process using information gathered within the platform. The following plugins allow you to gather additional incident information:

Plugin	Definition
Metric Definition	Define the key performance indicators to monitor within the system. With these metrics, and the information within the database, it is possible to generate reports that can be added to homepages or automatically generated and distributed .
Database Views	Join tables for reporting purposes.
Vendor Ticketing	Add vendor data to incidents and integrate with vendor performance.

Figure 11. Plugins for Process Improvement.

3.4.8. Problem Management Business Process

The following describes the ServiceNow recommended process flow for the Problem Management process. The Problem Management Process embodies the ITIL best practices for Problem Management and is designed to manage the problem lifecycle.

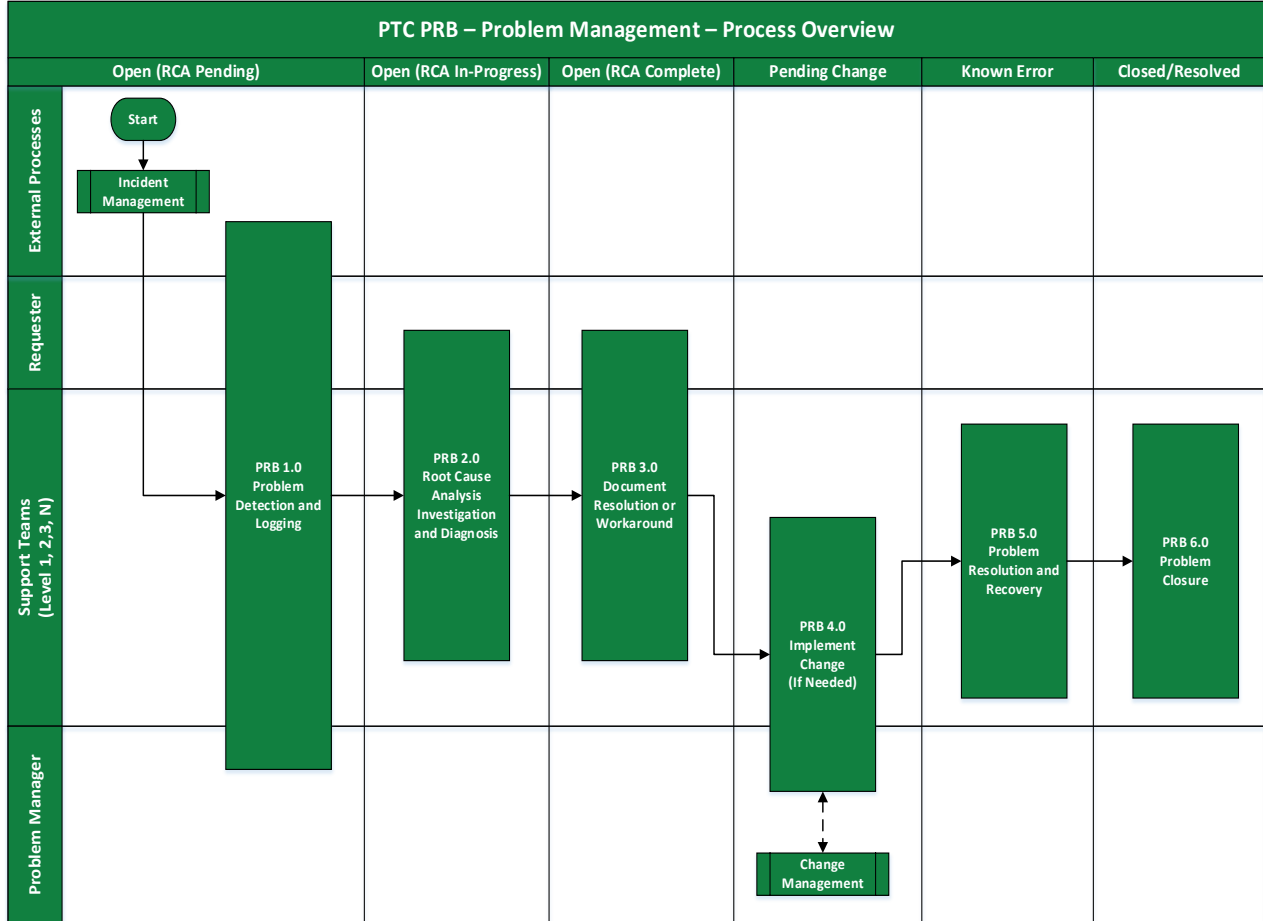


Figure 12. Problem Management Process Overview.

3.4.8.1. Process Activity Description

ID	Activity	Description
PRB 1.0	Problem Detection and Logging	<p>Multiple ways of detecting problems exist, including triggers for reactive and proactive problem management. Regardless of the detection method:</p> <ul style="list-style-type: none"> All relevant details of the problem must be recorded so that the full historic record exists. The problem record must be related to any incident record from which it was initiated or displays identical symptoms. <p>Problems should be categorized and prioritized in the same way as incidents so that the true nature of the problem can be easily traced in the future and meaningful management information can be obtained. Problem</p>

ID	Activity	Description
		prioritization should also take into account the severity of the problems. Severity in this context refers to how serious the problem is from a service or customer perspective.
PRB 2.0	Root Cause Analysis Investigation and Diagnosis	<ul style="list-style-type: none"> • Investigate, diagnose and document the root cause of the problem. • Gather additional information from a user or Vendor to assist with the Root Cause Analysis.
PRB 3.0	Document Resolution or Workaround	<ul style="list-style-type: none"> • When the root cause of the problem has been identified, create a known error record to ensure that if further incidents or problems occur, they can be identified, and the service restored more quickly. • Document the proposed resolution or workaround.
PRB 4.0	Implement Change (If Needed)	A Change Request (CR) should be initiated and completed if any change in functionality is required.
PRB 5.0	Problem Resolution and Recovery	Once the root cause of a problem has been found, a solution or workaround should be developed and implemented to resolve the problem.
PRB 6.0	Problem Closure	When a final resolution or workaround has been applied successfully, the problem record should be formally closed.

Figure 13. Process Activity Description.

3.4.9. Service Catalog Overview

The Service Catalog Management and Request Fulfillment Management Process embodies the ITIL best practices for managing service catalog items and is designed to manage the lifecycle of these service requests.

3.4.10. Idea and Demand Business Processes

PTC is in the process of defining its Idea, Demand and Project management business processes. As PTC's business processes mature, this SOP needs to be enhanced to accommodate the accepted business processes around Idea, Demand and Project Management.

The following process flow for PTC's Demand Management process is in a draft stage and is being finalized by PTC at the moment. The remaining sections of the SOP will assume that the process flow mentioned below accurately defines the current Demand Management process at PTC.

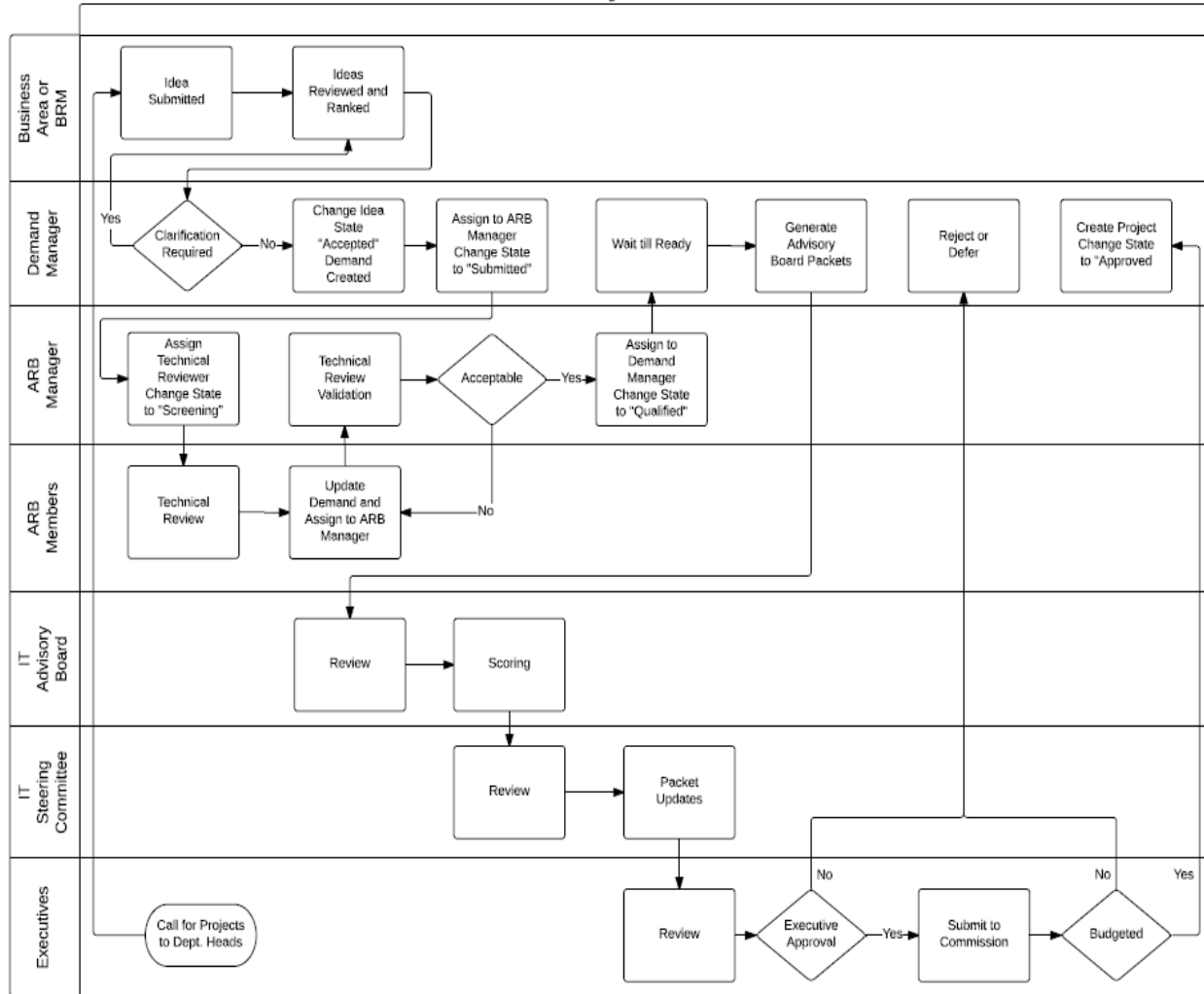


Figure 14. Demand Process Flow.

3.4.10.1. Demand Management Process Activities Description

Tasks	Procedure	Primary Role
Call for Projects to Dept. Heads	PTC Executives reach out to Department Heads at PTC to submit Ideas for potential projects for a given year. Note – Ideas could have been submitted by PTC employees as and when it occurred to them. Even such Ideas will be considered as inputs for this Demand Management process	PTC Executives
Idea Submitted	Ideas can be submitted by through the Self-Service menu on ServiceNow Application or through the ESS portal https://paturnpike.service-now.com/idea Users are required to enter title, short description and business justification when submitting an idea	Any PTC employee, Business users, Business Relationship Manager (BRM)

Tasks	Procedure	Primary Role
Ideas Reviewed and Ranked by BRM	Ideas submitted by users are reviewed for business justification and ranked based on variety of factors such as priority, scope, impact, and risk and business value.	BRM
Ideas Reviewed by Demand Manager	Demand Manager reviews the ranked ideas and seeks additional information or clarification if needed from the BRM. If the submitted Idea is deemed as potential project that can add value to PTC, then the Idea is accepted. Idea now gets promoted from “Submitted” to “Accepted” stage. ServiceNow automatically creates a new Demand in association to the “Accepted” Idea	Demand Manager
Assign Demand to Architecture Review Board (ARB) Manager and change Demand state to “Submitted”	Demand Manager assigns the Demand in “Draft” stage to ARB Manager for overall architecture/technical review and promotes the Demand stage to “Submitted”	Demand Manager
ARB Manager assigns technical reviewer to the Demand and changes demand state to “Screening”	ARB Manager assigns the technical reviewer to Demand and promotes the Demand stage to “Screening”	ARB Manager
ARB Team Members conducts technical review	Technical Reviewer conducts technical feasibility analysis of the Demand	ARB Technical Reviewer
Update Demand and Assign to ARB Manager	On completion of the technical review, the Technical Reviewer from the ARB team updates the demand with his notes and assigns it back to ARB Manager	ARB Technical Reviewer
Technical Review Validation	ARB Manager reviews the notes of the Technical Reviewer and validates his technical analysis. If the technical review needs more analysis or if it is missing information, then ARB Manager assigns the Demand back to Technical Reviewer for further review	ARB Manager
Assign to Demand Manager and change Demand state to “Qualified”	On finding the Technical Review acceptable, the ARB Manager changes the state of the Demand to “Qualified” and assigns it back to Demand Manager	ARB Manager
Submit the	The Demand Manager submits the “Qualified” Demand to PTC’s	Demand Manager

Tasks	Procedure	Primary Role
Demand to IT Advisory Board for Review along with Advisory Board Packets	IT Advisory Board for further review and approval.	
Review by IT Advisory Board	The IT Advisory Board reviews the Demand along with the underlying Idea and technical review notes information.	IT Advisory Board.
Scoring by IT Advisory Board	The IT Advisory Board scores the Demand in comparison to other Qualified Demands and passes the score to IT Steering Committee for review	IT Advisory Board.
Review by IT Steering Committee	The IT Steering Committee reviews the Demand score along with underlying information captured in the Demand and updates the packet with relevant review notes	IT Steering Committee
Review by Executives	This is the final review stage where PTC Executives get to review the Demand and either Approve it or Reject the Demand If approved, the Demands goes to PTC Commission for further review	PTC Executives
Review by Commission for Budget Approval	The PA Turnpike Commission reviews the Demand/s for budget availability and either Approve it or Reject it. If Rejected, the Demand state is updated to “Deferred” state by Demand Manager	PTC Commission
Create Project based on “Approved” Demand	The Demand Manager creates a Project in ServiceNow based on the budget approval received by PTC Commission to proceed further.	Demand Manager

Figure 15. Demand Management Process Activities Description.

3.4.11. ServiceNow Project Portfolio Suite Overview

Project Portfolio Suite (PPS) provides a simplified, team-oriented approach to Project Portfolio Management and IT development by combining several individual applications. Project Portfolio Suite was available starting with the Fuji release.

Project Portfolio Suite (PPS) includes the following applications:

- Demand Management: an application used for gathering and assessing ideas and promoting accepted ideas to strategic and operational demands.
- Project Management: a suite of tools used to manage projects, task, and resources.
- Software Development Lifecycle (SDLC): an application used for managing the software development and release process.
- Test Management: an application that provides tools for manual software testing.

- Resource Management: an application that enables resource requesters to create resource plans and request resources.

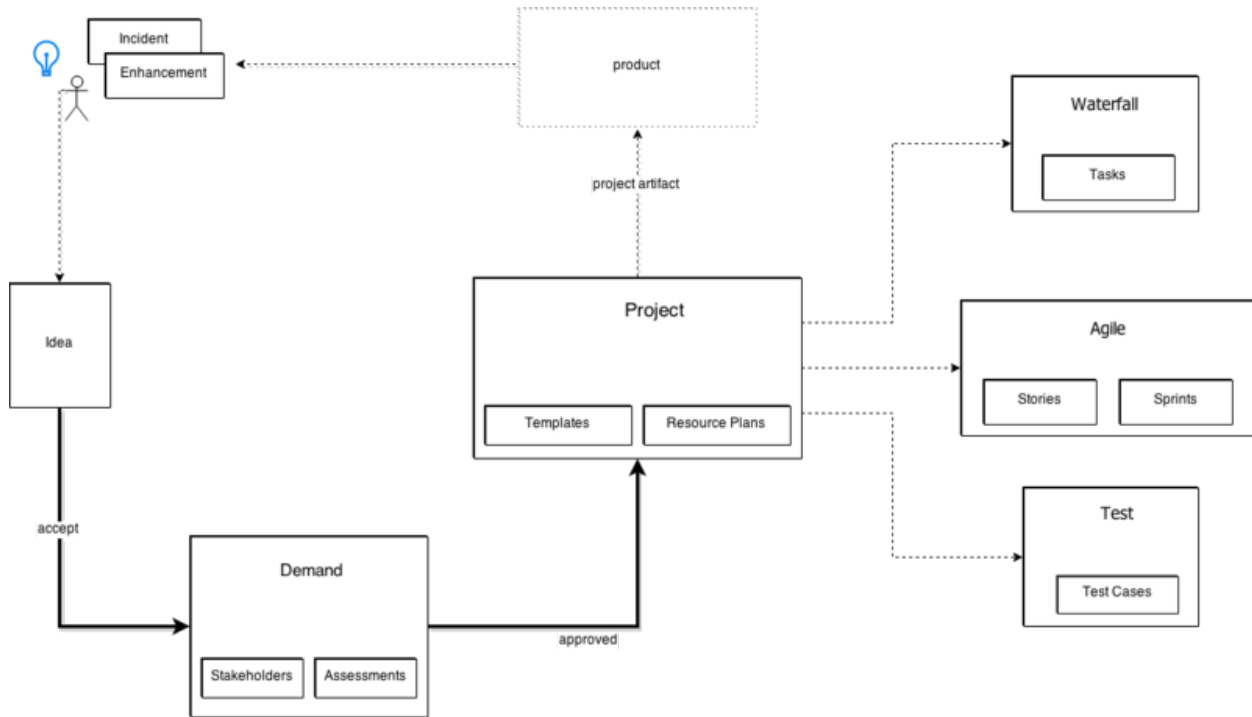


Figure 16. Project Portfolio Suite.

3.4.11.1. Initiate a Project

Project initiation is the process of evaluating and then approving or rejecting a proposed project. This can be based on the strength of a project’s business case, cost, timeframe, and whether the project is aligned to current business objectives or the longer-term strategic plan.

3.4.11.2. Plan the Project

Project planning is the process of defining the scope of a project and identifying all prerequisites for project execution. The project definition and scope should be reviewed and approved by the project sponsor and other appropriate stakeholders. Project scope, budget, and schedule should be confirmed. Project deliverables are refined. Risk assessment and mitigation plans are developed. And project team members may be allocated to the project. Project sponsors then provide final approval and authorization to proceed with project execution.

3.4.11.3. Execute the Project

After the project initiation steps are complete, the project can be started and measured against initial estimates. Project automation helps ensure ease of use, which also leads to adoption of and adherence to the project process. A well-defined project communication process will help provide necessary information to the PMO, team members, project sponsor, and stakeholders throughout the project process.

3.4.11.4. Monitor and Control the Project

The project manager must continually track budget, scope, and schedule (the “Triple Constraint”), as well as their effect on quality. Proper risk management processes should be defined to mitigate or resolve risks. When a risk arises that threatens the project’s scope, budget, schedule, or quality, the project manager must

determine the steps to take to ensure the integrity of the project. A list of issues should also be maintained along with an issue management plan that identifies steps for handling issues including, if necessary, transitioning the issue to the change control process.

3.4.11.5. Close the Project

Project closing typically includes a post-implementation review to gather feedback on the project from the project manager, project team members, project sponsor, and other stakeholders. Their feedback is reviewed to derive any lessons learned and best practices that can be stored in a central repository for use as a reference and guidance for future projects.

The project status is set as Closed complete when it has been successfully implemented and approved or accepted by the project sponsors. The project manager, appropriate extended team members, and stakeholders should now determine if and how well the project met the project sponsor’s requirements, including what the team did well and what lessons can be learned from any mistakes. Additionally, the project manager should evaluate ways to improve on processes to develop best practices; and then communicate findings in a post-implementation report.

3.4.11.6. PMO Dashboard

The PMO Dashboard comprises a variety of gauges are suggested for providing information about project status and the overall effectiveness of the project process to support continuous improvement efforts.

KPI/Metric	Purpose
Project Portfolios: list	View across and drill into all portfolios and projects.
Projects by State: list	Track projects by project state: Pending, Open, Work In Progress, Closed Complete, Closed Incomplete, Closed Skipped.
Projects by Risk: pie chart	Track projects by risk: Low, Moderate, High, Critical.
Active Projects by Priority: list	Track in flight (Work in Progress) projects grouped by priority: Low, Moderate, High, and Critical.
Projects by Project Manager: bar chart	Track projects by project manager.
Milestones by Project: list	Track milestone status and percent complete by project.
Projects by Configuration Item: list	Track projects against any CI in the CMDB.

Figure 17. Project Management KPIs.

3.4.11.7. Resource Management Dashboard

The following gauges are used to provide insights about individual and group resource task assignments over time, unassigned tasks, and time card tracking.

KPI/Metric	Purpose
All Planned Work by Resource by Month: stacked bar chart	Shows the current planned task workload for a 6-month period by resource, with ability to drill into detail task records.
(Departmental) Work by Resource by Task Type: stacked bar chart	Shows the current workload for the specified department’s resources by resource, by task type, with ability to drill into detail task records.
Assignments by Group: bar chart	Shows all current work by assignment group with ability

KPI/Metric	Purpose
	to drill into detail task records.
Planned vs. Actual Duration by Task Type: list	Lists all active planned tasks by task type showing assignment, planned duration, and actual duration.
Pending Planned Tasks by Task Type: list	Lists all pending planned tasks by task type showing assignment and planned duration.
Weekly User Resource Forecast: list	Lists project tasks for the current week by user resource.

Figure 18. Resource Management KPIs.

4. Metrics and User Administration

4.1. User Groups

1. SM_All
2. SM_ARB
3. SM_Auditor
4. SM_AV_Support
5. SM_Backup_and_Restore
6. SM_Basis
7. SM_BI
8. SM_CIO
9. SM_CISO
10. SM_Commissioner_Admins
11. SM_Communication_Cabling
12. SM_Communications
13. SM_Computer_Operator
14. SM_Data_Network
15. SM_Database
16. SM_Desktop
17. SM_EA_Policy
18. SM_ECM - Enterprise Content Management
19. SM_Email
20. SM_End_User_Support
21. SM_Engineering_Support
22. SM_Enterprise_Development
23. SM_ESSG_Design_and_Build
24. SM_ETC_Systems
25. SM_Intercom_Systems
26. SM_IS_Development
27. SM_IT_Procurement_Advisory
28. SM_Land_Mobile_Radio
29. SM_Maintenance
30. SM_Microwave
31. SM_Name_Change_Approver
32. SM_Net_Infrastructure
33. SM_Network_Control
34. SM_Network_Management
35. SM_OnBase
36. SM_OnSync
37. SM_Operations_Center
38. SM_Printer_Fax_Copier_Support
39. SM_ProjSys_PlantMaint_InvestMgt
40. SM_Qual_Assur
41. SM_SAP_BI_Portal
42. SM_SAP_Financial
43. SM_SAP_Frice
44. SM_SAP_GRC_Admin
45. SM_SAP_HCM
46. SM_SAP_Interface
47. SM_SAP_PM_Interfaces
48. SM_SAP_Release_Manager
49. SM_SAP_Security
50. SM_SAP_SRM_MaterialsMgt
51. SM_Security
52. SM_Servers_Storage_Mgt
53. SM_Service Now Knowledge Workers
54. SM_Service_Desk
55. SM_ServiceNow_Security
56. SM_ServiceNowAdmins
57. SM_Smartphone
58. SM_Telephone_Unified_Communications
59. SM_Toll_Revenue_Systems
60. SM_Training
61. SM_Video_Conferencing
62. SM_VidSurveillance_Comp
63. SM_VidSurveillance_FC
64. SM_VidSurveillance_PSP

65. SM_Wi-Fi

4.2. Licensing

Name	Type	Quantity
Approver User	Per-User	200
Discovery - Node	Capacity	700
ITSA Unlimited - Fulfiller User	Per-User	116
Software Asset Management - Computer	Capacity	2000
SolarWinds Alert Integration	Unlimited-User	N/A

Figure 19. ServiceNow Functional Areas Implemented.

4.3. ServiceNow Reports

The system has been deployed with the standard (boilerplate) reports and custom reports have been created by both the ServiceNow support team and other users of the system.

4.4. ServiceNow Forms

Custom Forms: 20. No further detail available.

4.5. ServiceNow Enhancements

Update Sets: 405. No further detail available.

4.6. Yearly Upgrade Frequency

- Quarterly Patching and Associated Releases/Year: four (4)

4.7. Yearly Number of Upgrades

- Upgrades: two (2)

4.8. Yearly Number of Release

- Releases: six (6)

4.9. Miscellaneous Metrics:

- Workflows 41
- Client Scripts: 22
- Catalog Client Scripts: 200
- Business Rules: 9
- UI Actions: 56
- UI Policies: 507
- Catalog UI Policies: 471
- Script Includes: 6

4.10. Service Levels

Currently there are no Service Level Agreements or Service Level Objectives in place between IT and the customer at the Commission for ServiceNow.

4.11. Key Terms

- **Roles:** Roles control access to features and capabilities in applications and modules.
- **Groups:** A group is a set of users who share a common purpose.
- **Impersonate a User:** Administrators can impersonate other authenticated users for testing purposes.
- **Manage User Sessions:** The ServiceNow platform provides the ability to view and terminate individual user sessions, lock out users from the system, and make users inactive.
- **System Usage:** The System Usage modules track usage for ServiceNow applications and for ServiceNow Store apps.
- **Authentication:** Authentication means validating the identify of a user who is trying to access an instance, and then authorizing the user to access features that match the user's role or job function.
- **LDAP Integration:** An LDAP integration allows your instance to use your existing LDAP server as the master source of user data.

4.12. Roles

4.12.1. Administrative Roles

In previous versions of ServiceNow, a great many administrative tasks and rights were granted through the admin role. The rights to change business rules, client scripts, and UI policy, and to create script includes were all controlled by this role. In the current system, a family of more granular administrative roles allows the granting of more specific rights to individual users without granting the broader privileges of the admin role.

For example, an administrator can now grant a user the rights to change UI policy, but not the rights to edit client scripts. The addition of these new roles does not change the existing behavior of the admin role, which still retains its general administrative privileges on the platform.

Assigning Roles to Groups

You can assign a role to a group to grant access to applications and modules to group members. Role required: user_admin or admin

When you assign roles to groups rather than to individual users, members of the group inherit the role. When a user switches groups, the new group role is assigned automatically.

4.12.2. Base System Roles

Administrators can assign one or more base system user roles to grant access to base system platform features and applications. The system does not support changing the name of any base system role. Changing the name of a base system role prevents users and groups from accessing base system resources that depend on these roles.

The [ServiceNow product document](#) enumerates the base system roles included with the platform:

4.12.3. Special Administrative Roles

Certain roles grant specific administrative rights without the full privileges of the admin role. For example, an administrator can grant a user the right to change UI policy but not client scripts.

These roles do not change the behaviour of the admin role, which grants full administrative privileges. The system does not support changing the name of any special administrative role. Changing the name of a special administrative role will prevent users and groups from accessing base system resources that depend on these roles.

The [ServiceNow product document](#) enumerates the special administrative roles included with the platform:

4.12.4. Read Only Role

The read-only role (snc_read_only) restricts a user or a group of users to read-only access on the tables to which the user already has access.

This role is not intended to be the only role a user has. It is intended to be an extra role to restrict insert, update, and delete operations on the tables that the user can access as defined by the other roles.

After you assign this role to a user, they no longer can create, update, or delete records on ANY tables. Assign this role only to users. Do not assign this role to other resources in the system, including applications, ACLs, and so on.

The snc_read_only role can be assigned to any user as a simple way to limit access to data without having to create ACLs for system and custom tables and fields. This practice is useful for performing internal or external audits without allowing a user to have insert or update access to data.

Users with the snc_read_only role have the following restrictions regardless of other roles and privileges they have:

- Cannot insert, update, or delete records from the UI or when using the GlideRecord API.
- Cannot activate or upgrade plugins.
- Cannot directly run SQL.
- Cannot upload XML files.
- Can only run background scripts when on an instance in the public sandbox environment.

4.12.5. Impersonation

Administrators can impersonate other authenticated users for testing purposes. When impersonating another user, the administrator has access to exactly what that user would have access to in the system, including the same menus and modules. ServiceNow records anything the administrator does while impersonating another user as having been

done by that user. Use this feature to test what different users can do in the system and to perform actions for them in their stead.

IT System Administrators [admin] can impersonate ServiceNow users; however, when impersonating a user with an application admin role for Human Resources or Security Incident Response, an admin is not able to access features granted by that role, including security incidents and profile information. Access to modules and applications in the navigation bar is also restricted. Also, admin cannot change the password of any user with an application admin role for Human Resources or Security Incident Response. When you impersonate a user, who is locked out or is inactive, the system forces you out of the system as well after you generate an event or click a link.

Several different logins are recommended to test the system:

- An admin account to do work.
- An ITIL (or similar) login to test as a technician.
- An ess login to test as an end user.

More logins may be required to adequately test the system.

4.12.6. Managing User Sessions

The ServiceNow platform provides the ability to view and terminate individual user sessions, lock out users from the system, and make users inactive.

- Terminating a specific user session effectively logs that user out of the next transaction, which is usually the next browser click. Use the terminate sessions feature when you want to perform system maintenance.
- Locking a user out of the system means the user can no longer log in or generate any actions from any email messages that the user sends to the instance. Locking out users also terminates their user sessions.
- Making a user inactive means that the user does not show up in any fields that reference active users on the User table.

4.13. System Usage Reports

The System Usage modules track usage for ServiceNow applications and for ServiceNow

Store apps. The usage analytics process collects data on all your instances and regularly updates the reports in the Usage Overview and ServiceNow Store Usage Overview modules. Application usage data is collected whenever an application is opened and counts on tables are collected once a day. Data is collected on:

- The number of active users in the system
- The hardware CIs discovered (for instances that use Discovery)
- The number of cloud management service catalog items available to users in instances that use Cloud Management

All users with the admin role can view Usage Overview and ServiceNow Store Usage

Overview reports.

Refer to the [ServiceNow documentation](#) on generating and viewing system usage overview reports:

4.14. Documentation: User, System and Developers' Documentation

The vast majority of documentation is in the form of Standard Operating Procedures (SOPs), which were used to describe business processes and sub-processes supported by ServiceNow.

Do to time constraints and other contributing factors, not all documentation is currently up to date.

4.15. Methodologies, Standards and Guidelines

1. Update Set Naming convention: project number, story number, sprint ([optional](#)), date, description ([optional developer's initials](#))

Sample Update Sets:

- PRJ0015813_STRY15813_01_07202016_IdeaForm
- PRJ0015813_STRY15813_01_07202016_IdeaForm2
- PRJ0015813_STRY15813_01_02_Merged
- PRJ0015813_STRY15813_02_07212016_Demandform
- PRJ0015813_STRY15813_02_072616
- PRJ0015813_STRY15813_02_072716_RP

2. Stories are numbered sequentially and are to be listed in the project.
3. Scripts naming convention: Begin with zPTC, followed by a description that includes the objects affected.
4. For coding development, we need to include an overview Change Log:

```
*&-----*
*& Module Z_ProgramName
*&
*&-----*
*& Project nbr:   BN_I009
*& Author/Date:  Ramakrishna Patnala-(RKP)/06/29/2007
*& Description:  This program creates file for SECA(State Employees
*& Appeal) with the information about employees details.
*& The generated file is sent via email. XI is not used for this
*& interface.
*&
*&-----*
*& C H A N G E   L O G
*&-----*
*& Date          Programmer      Request #    Description
*&-----*
*& mm/dd/yyyy   XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX*
*&
*&                                     update sets XXXXXXXXXXX, XXXXXXXXXXX
*&
*&-----*
```

5. Rules for transferring update sets between SN Instances (DEV to QA/QA to PROD/etc.)

Note: You can back out changes to existing records for any committed update set, starting with the Fuji release. Deleting sys_update_xml entries is not recommended because:

- It removes the record of modifications to the instance.
- Your customizations may be overwritten when the instance is upgraded.

Retrieve Completed Update Sets will load all completed updates sets from source instance.*

- a. Any update sets marked as **Completed** are transferred from the source instance to the target instance. Update sets that already exist on the target instance are skipped.
- b. The confirmation page provides detailed messages about how many update sets were transferred and how many were skipped (starting with the Dublin release).
- c. To view retrieved update sets, navigate to **System Update Sets > Retrieved Update Sets**.

* Source instance (DEV) that have update set records already committed in TEST/QA should be set to state=ignored to prevent these update sets from being reloaded into TEST/QA target instance.

-> Best practice to follow when concurrent development is in process is to unload an update set as an XML file and then transfer it to another instance. This will avoid the issue of having completed update sets reloaded in target instance.

* User must be able to Elevate privileges to the security_admin role.

5. Additional Documentation

5.1. ServiceNow Deployment Checklist

#	Item to Update	Document Link to related Folder, File or App	Is Item Updated	Any Notes/ Changes required after review
1	Issue List			
2	Unit Test Plan	W:\IT\Operations\Software and Systems\ServiceNow\ServiceNow\Unit_Test_Plans		Supervisor will store them in this location.
3	Stories / Scrums / Requirements	Updated in Production instance. Referenced by the Update Set. W:\IT\Operations\Software and Systems\ServiceNow\ServiceNow\Requirements Catalogue Item Questionnaire		
4	Update Set	Follow naming conventions		
5	Scripts	Naming convention: Begins with zPTC... Includes Change Log		
6	Go-Live Plan	W:\IT\Operations\Software and Systems\ServiceNow\ServiceNow\GoLive_Plans		Stored here

5.2. ServiceNow Platform Roadmap



Pennsylvania Turnpike Commission

ServiceNow Platform Roadmap

September 10, 2018

Table of Contents



Historical Roadmap Topics

- Roadmap Development Background (Slide 3)
- Stakeholder Interviews (Slide 4)
- ITIL Processes observed (Slide 5)
- Key Findings by Function/Application (Slides 6-8)
- Recommended Activities Overview (Slide 9)
- Priority/LoE Scatterplot (Slide 10)

Updated Activity Timelines and Details

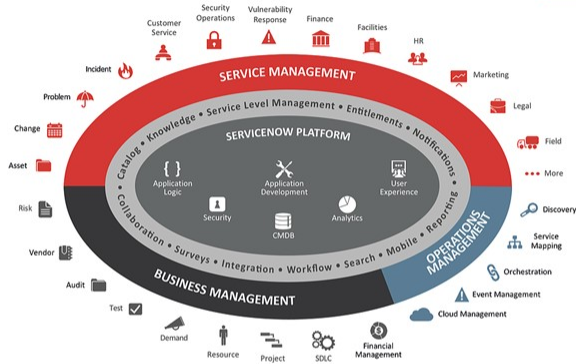
- Timeline and Details – Complete Activities (Slides 12 – 21)
- Timeline and Details – Future Activities (Slides 22 – 35)
- Timeline and Details – Ongoing Activities (Slide 36 – 41)

2

Roadmap Development Background



The Pennsylvania Turnpike Commission seeks a strategic plan outlining all ServiceNow activities to occur during the next 12-14 month period. PTC is evolving as a Service Management organization and is committed to establishing strong governance and incorporating best practices into the lifecycle of the organization's ServiceNow platform.



PTC's ServiceNow platform environment was evaluated based on:

- Structured interviews with PTC stakeholders and over-the-shoulder observations of current processes
- Observations from the upgrade of PTC's ServiceNow environment from Fuji to Helsinki version
- Findings from the recent platform health check assessment

3

Stakeholder Interviews



PTC stakeholders were interviewed, and in some cases processes were observed first-hand, to ascertain the extent of platform implementation, enumerate developed customizations, and to determine how effectively the tool has been aligned to support PTC business processes.

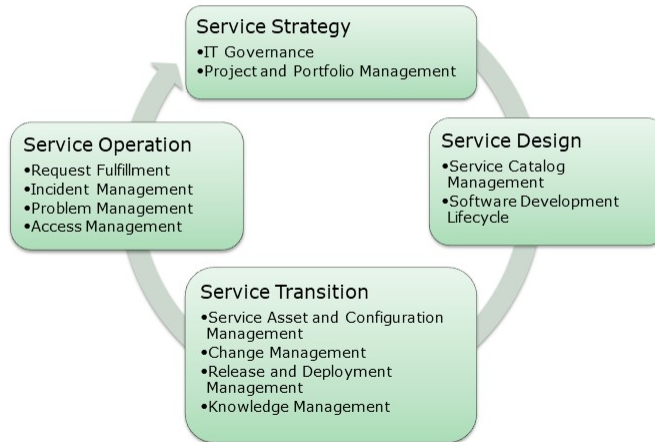
Stakeholder	Main Functional/Governance Topic	Date
Gary Hentz	Incident, Problem, Asset, Service Catalog, Self Service	05/02/2017 05/23/2017
Tim Choban / Rod Snyder	Change	05/02/2017
Ty Richins	Knowledge, Contracts	05/03/2017
Bob Taylor / Stephen Husic	Overall Roadmap / Governance	05/04/2017
Kathryn Hartzell	Idea, Demand, PPM	05/05/2017
Michael Klase	Governance – Cloning, Stories, Customizations, Users	05/09/2017
Carl Defebo Jr.	Customer Service - CACTUS Transition	05/17/2017
Brenda Beal / Don Klingensmith / Brad Hackman	Form 30-03 Disposal Automation	05/22/2017

4

ITIL Processes Observed



PTC processes within four of the ITIL phases were observed; specifically, aspects of Service Strategy, Service Design, Service Transition, and Service Operation were observed in order to make recommendations to support the evolution of PTC's Service Strategy.



5

Key Findings by Function/Application



Platform Governance

- Lack of SOPs that define platform roles and responsibilities, and other administrative and security-related activities including the use of groups and assignment of roles
- Support staff requires conceptual ITIL refresher training
- Platform Patching and Upgrades are not executed regularly
- A backlog of enhancement requests exists

CMDB

- Configuration Management is not defined
- Contains duplicates imported from previous discovery efforts and is too granular for the business need
- Currently developing an ITAM roadmap that envelops CMDB re-implementation

Service Catalog

- Contains one complex workflow, with too many required authorizations and vague notifications
- The ESS Portal is difficult and complex; low adoption
- There is a need for more pre-approved items
- Inconsistent categorization
- Several backlog items relating to the Service Catalog

6

Key Findings by Function/Application cont.



Incident

- Does not align with business processes
- Categories and subcategories are not available or consistent
- Does not make use of auto-routing
- No formal SLAs exist

Problem

- Problem Management is undefined
- Problem Management application used only for duplicate issues

Change

- Governance surrounding emergency changes is needed
- Lacks adequate business line representation

Knowledge

- ITSP knowledge base requires functional enhancements to support the business process
- General knowledge base does not adequately support resolution of incidents/problems or end user questions

7

Key Findings by Function/Application cont.



SDLC

- Undefined process and charter
- Used primarily for platform development

Idea, Demand, PPM

- Undefined process; lacks end-user training
- Out of the box implementation

Asset Management

- Cannot be fully implemented with current state of CMDB
- Currently developing an ITAM roadmap

Customer Service Management

- Several different call center applications in use, including custom developed CACTUS system
- Expensive O&M Support required for CACTUS
- Manual processes required

Facilities Management

- Data is manually maintained and isolated in current drawings
- Existing GIS infrastructure is not leveraged with the platform

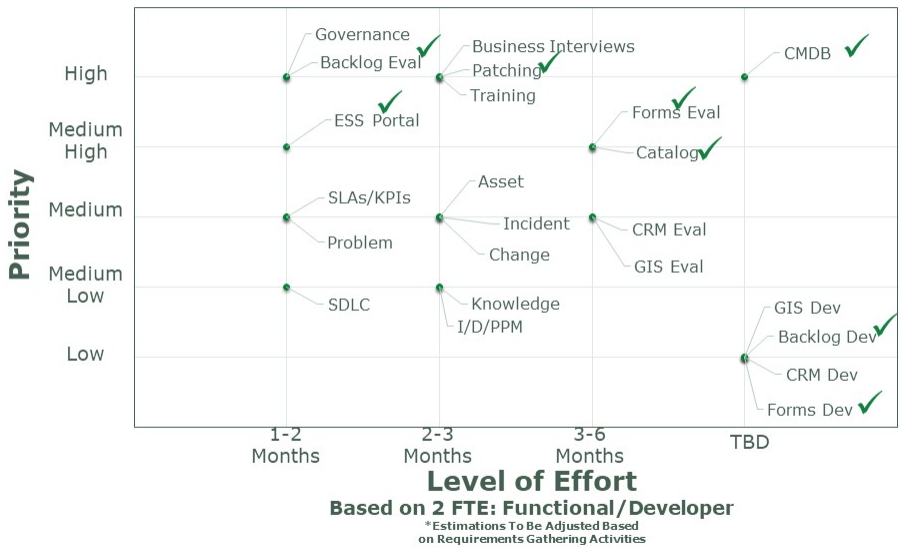
8

Roadmap Recommended Activities Overview



Governance		<ul style="list-style-type: none"> Define Platform Roles and Responsibilities Develop and implement an upgrade/patching program Deliver conceptual ITIL training to IT Staff 	<ul style="list-style-type: none"> Review and establish platform security (Users, Groups, Roles) Address platform enhancement backlog priorities Interview / educate business lines on platform capabilities
CMDB			
		<ul style="list-style-type: none"> Define and develop configuration management program Perform CMDB re-discovery and normalization 	
Service Catalog		<ul style="list-style-type: none"> Streamline catalog workflow and categories Address backlogged requests related to catalog Simplify ESS/Self Service and market to users 	Knowledge <ul style="list-style-type: none"> Develop knowledge base to support ITSM Deliver functional enhancements to IT Standards & Procedures knowledge base
Incident		Asset	
<ul style="list-style-type: none"> Define Incident Process Develop SLAs Develop categories and subcategories Implement auto-routing 		<ul style="list-style-type: none"> Leverage re-discovery of CMDB Implement recommendations from ITAM roadmap currently in development 	
Problem		Customer Service	
<ul style="list-style-type: none"> Define Problem Management Process Reinforce ITIL training of Service Desk regarding Problem Management 		<ul style="list-style-type: none"> Evaluate the platform as candidate for transition from CACTUS customer assistance system Develop consolidated call-center requirements Develop proof-of-concept utilizing platform 	
Change		Facilities	
<ul style="list-style-type: none"> Develop governance around emergency change procedures Investigate Helsinki change plug-in features 		<ul style="list-style-type: none"> Evaluate platform integration with PTC Geographical Information System (data/drawing format) Leverage Asset information Develop proof-of-concept utilizing platform 	
		SDLC	Idea Demand PPM
		<ul style="list-style-type: none"> Define SDLC charter and process for the platform 	<ul style="list-style-type: none"> Define process and deliver training
		Remaining Backlog	Forms Automation
		<ul style="list-style-type: none"> Prioritize and address remaining enhancement backlog 	<ul style="list-style-type: none"> Prioritize and automate forms housed on PTC Intranet

Roadmap Priority/Level of Effort Scatterplot

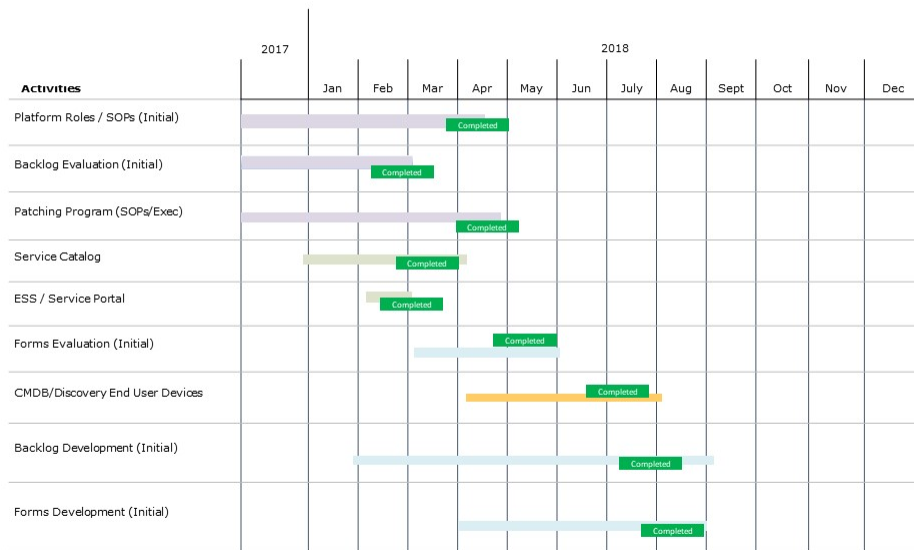


Appendix – Roadmap Activity Details



Roadmap Activity Timeline and Details

Roadmap Timeline – Completed Activities



Define Initial Platform Roles/Responsibilities & Issue SOPs



PTC will develop organizational structures and processes to ensure that future ServiceNow development efforts sustain and extend the organization's strategies and objectives. PTC will achieve this governance by implementing standard operating procedures that define platform roles and responsibilities and other system administrative and security-related activities, including the appropriate use of groups and assignment of system roles. By incorporating recommendations from leadership training and aligning the platform to support business processes, PTC will ensure the organization's objectives are met.

Benefit

- Establishing governance is a foundational activity, enabling platform support.
- Effective governance extends PTC's strategies and objectives.

Dependencies

- Executive sponsorship establishes vision and enhances adoption.
- PTC's strong commitment to the ServiceNow platform will allow for maturity and organization-wide leverage of the platform data.

Priority

- High

Level of Effort

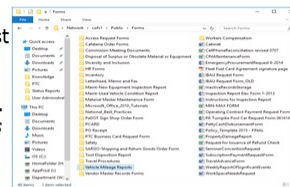
- Team of 2 resources, 1-2 months

13

Backlog Evaluation

Work in Progress

PTC currently maintains an intranet location housing forms used to initiate frequently requested services such as property damage reports, business card request forms, and access request forms. PTC will seek to prioritize and automate these requests and their associated workflows through the ServiceNow platform. *As of March 5, 2018, PTC has automated 6 paper forms i.e. Seminar/Convention, Card/Key, Cafeteria, Travel Expense Voucher, GTW, Vehicle Mileage Log*



Benefit

- The platform provides a single repository of historical requests, enabling reporting.
- Automating forms increases efficiency and productivity with standard workflow.

Dependencies

- Some request types are associated with larger strategic goals and should be appropriately prioritized and scheduled (e.g. future Facilities Management efforts encompass WorkspaceNeedsRequest)

Priority

- Evaluation: Medium-High
- Development: TBD; Granular evaluation is needed.

Level of Effort

- Evaluation: Team of 2 resources, 3-6 months
- Development: TBD; Full requirements

14

Develop Platform Patching/Upgrade Program



Stakeholders emphasized the need for not just regular upgrades and patches aligned with ServiceNow's release schedule, but for a framework that allows the organization to understand and plan for upcoming platform enhancements that potentially enable or extend business objectives. The use of upgrade tools/reports to identify potential upgrade/patch conflicts with developed functionality will mitigate against post-upgrade support. The ServiceNow App Store should be evaluated to potentially support identified new functionalities, limiting the need for custom development and allowing for ease of maintenance.

Benefit

- Understanding the release roadmap in context of enhanced functionalities will enable business objectives.
- Establishing standard processes for regular upgrades/patches will allow PTC to shift from product delivery to service delivery.

Dependencies

- PTC will need to define platform support roles and responsibilities in order to develop an effective upgrade/patching program.

Priority

- High

Level of Effort

- Team of 2 resources, 2-3 months

15

Service Catalog Re-Design and Enhancement



PTC's Service Catalog consists of one workflow with multiple levels of approvals and contains catalog taxonomy that is not intuitive. As a result, requests are time-consuming for both end users and IT staff, notifications and task descriptions are generic and not descriptive or intuitive, and users cannot find items for which they are searching. PTC will develop appropriate workflows and re-develop catalog items and descriptions to provide ease of use. PTC will undertake a multi-tiered approach: develop strategy and taxonomy, clean up existing catalog with quick wins, and redevelop the service catalog in parallel based on the new, holistic strategy.

Benefit

- Service Catalog improvements will ease use and improve user adoption.
- Simplified catalog workflows will allow for effective maintenance.
- Intuitive notifications and task descriptions will increase user satisfaction.

Dependencies

- Several current backlogged enhancements are related to the service catalog.
- Improvements to Service Catalog improve the Self Service Portal experience as well.

Priority

- Medium-High

Level of Effort

- Team of 2 resources, 3-6 months

16

Simplify ESS Portal and Market to End Users



Stakeholders reported that the current ESS Portal was difficult to use, hard to understand, and needs simplification to speed user adoption. Most users find it easier to call the Service Desk rather than attempt to adopt self-service. In addition to Service Catalog improvements regarding workflow and catalog item naming and descriptions, the user interface should be optimized for simplicity and ease of use. End user adoption will require a marketing effort.

Benefit

- A simplified ESS Portal will increase the rate of end user adoption and fewer phone requests.
- An easy-to-use Portal will increase end user satisfaction

Dependencies

- Service Catalog improvements should be made in parallel to portal enhancements
- End user marketing of the redesigned portal will be required.

Priority

- Medium-High

Level of Effort

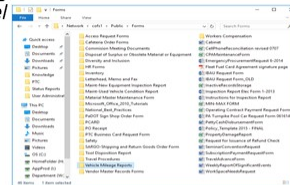
- Team of 2 resources, 1-2 months

17

Forms Evaluation

Work in Progress

In addition to enhancing several existing service catalog items (*Seminar/Convention, Card/Key, Cafeteria, Travel Expense Voucher, GTW, Vehicle Mileage Log*), PTC seeks to automate additional forms. PTC will review nearly 140 manual forms and determine business need for automation and streamlining workflow.



Benefit

- The platform provides a single repository of historical requests, enabling reporting.
- Automating forms increases efficiency and productivity with standard workflow.

Dependencies

- Some request types are associated with larger strategic goals and should be appropriately prioritized and scheduled (e.g. future Facilities Management efforts encompass WorkspaceNeedsRequest)

Priority

- Evaluation: Medium-High
- Development: TBD; Granular evaluation is needed.

Level of Effort

- Evaluation: Team of 2 resources, 3-6 months
- Development: TBD; Full requirements

18

Develop Configuration Mngmt & CMDB Re-Discovery



The platform health check qualified the PTC CMDB at a maturity level of zero, and noted that no Configuration Management process is formally defined, and although some CIs are defined, no other platform applications are leveraging the CMDB. PTC has released a Configuration Management scope and supporting processes, to perform CMDB re-discovery and normalization to include software assets. PTC has commissioned the development of an ITAM roadmap, including the CMDB re-discovery. PTC will evaluate Discovery to determine appropriate integration or retirement of existing discovery tools.

Benefit

- A well-developed CMDB enables integration and adoption of other platform applications.
- A well-developed CMDB allows for effective ITAM and SAM.
- A well-developed CMDB allows for impact analysis of configuration changes.

Dependencies

- CMDB is a foundational element for Asset Management and the platform.
- CMDB is most effective as part of a broader IT service management strategy.

Priority

- High

Level of Effort

- TBD, based on analysis to be delivered in ITAM Roadmap

19

Initial Backlog Development

Work in Progress



PTC currently maintains an excel spreadsheet documenting prioritized requests for ServiceNow platform development/enhancement. The latest version contains 27 backlogged items, including 10+ requests for CI additions or form layout changes. PTC will seek to eliminate the backlog and triage enhancement requests as they are submitted from the business community. *As of March 5, 2018 PTC has addressed 6 Backlogged requests i.e. Asset Disposal Form, SMP Work Manager Requests, Horizon Apps - VDI Catalog Item,, Cabling, Security Requests, Network Control TransCore Radio.*

Benefit

- Fulfilling enhancement requests improves user satisfaction.
- Business-driven enhancements increase business utility from the platform.

Dependencies

- Some of the enhancement requests are associated with larger strategic goals or are of high priority and should be appropriately prioritized and scheduled.

Priority

- Evaluation: High
- Development: TBD; Granular evaluation needed

Level of Effort

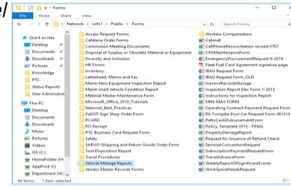
- Evaluation: Team of 2 resources, 1-2 months
- Development: TBD; Full requirements need to be developed

20

Forms Development

Work in Progress

In addition to enhancing several existing service catalog items (*Seminar/Convention, Card/Key, Cafeteria, Travel Expense Voucher, GTW, Vehicle Mileage Log*), PTC seeks to automate additional forms. PTC will review nearly 140 manual forms and determine business need for automation and streamlining workflow.



Benefit

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- Some request types are associated with larger strategic goals and should be appropriately prioritized and scheduled (e.g. future Facilities Management efforts encompass WorkspaceNeedsRequest)

Priority

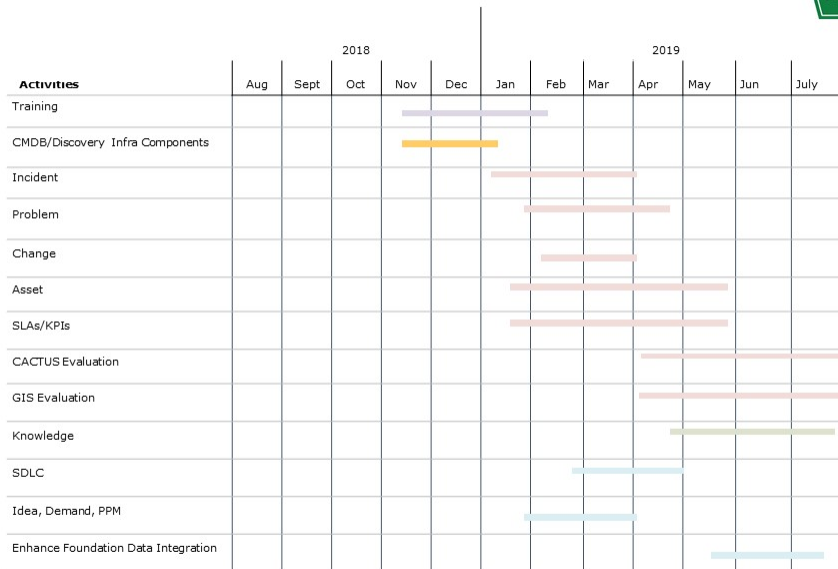
- Evaluation: Medium-High
- Development: TBD; Granular evaluation is needed.

Level of Effort

- Evaluation: Team of 2 resources, 3-6 months
- Development: TBD; Full requirements

21

Roadmap Timeline – Future Activities



Deliver ITIL Best Practices Training to IT Staff



PTC IT support staff has received ITIL Foundation training; however, there was a gap of time between the training and when the organization began using ServiceNow to support ITSM processes. Stakeholders indicated that refresher learning content should be developed to support PTC's adoption of ITIL best practices. Additionally, the learning content should be reusable – a recorded webinar or similar vehicle that could be accessed on-demand and not require classroom seats and time.

Benefit

- A common vernacular and adoption benefit realization among staff.
- On-demand conceptual content will be developed that can be used repeatedly and indefinitely.

Dependencies

- PTC must remain committed to ITIL best practice adoption and transformation of the enterprise into a service management organization

Priority

- High

Level of Effort

- Team of 2 resources, 2-3 months

23

Implement Discovery of Infrastructure Components



PTC should consider leveraging ServiceNow Discovery for collection and population of data center, network and other infrastructure devices into the CMDB. As PTC continues to increase the number of devices on the network a methodical and comprehensive collection of device metadata should be implemented and used to manage the system. The ServiceNow CMDB and Discovery combination provides a single source of data. Additionally PTC should consider leveraging SCCM to populate the CMDB with device data where the device isn't often online at the time Discovery runs. i.e., field laptops

Benefit

- A well-developed CMDB enables integration and adoption of other platform applications.
- A well-developed CMDB allows for effective ITAM and SAM.
- A well-developed CMDB allows for impact analysis of configuration changes.

Dependencies

- CMDB is a foundational element for Asset Management and the platform.
- CMDB is most effective as part of a broader IT service management strategy.

Priority

- High

Level of Effort

- TBD, based on analysis to be delivered in ITAM Roadmap

24

Incident Management Enhancement



PTC should consider developing the category and sub-category fields and using them consistently across Incident, Problem, and Change. Additionally, PTC seeks to automate the creation and management of Incidents based on event management alerts and discovered services. Event Management collects events from the MID Server and generates alerts, applies rules, prioritizes, and can perform root cause analysis.

Benefit

- Categorization and automation increases efficiency and productivity.
- Automated Incident creation reduces time spent monitoring events.

Dependencies

- Event Management subscription is required for automated creation.
- (Optional) Service Analytics can be activated to provide root cause analysis
- CMDB Re-discovery and normalization would be required to support automated incident creation.

Priority

- Medium

Level of Effort

- Team of 2 resources, 2-3 months

25

Define & Implement SLAs/KPIs for Measuring Service



Stakeholders reported that attempts to implement formal SLAs within the ITSM processes have been unsuccessful, and that informal manager escalation procedures to internal (tier 2) and vendor (tier 3) support are utilized instead. KPIs exist to support Change and the IT Standards and Procedures knowledge base. SLAs and KPIs will be developed in parallel with service development in order to provide benchmarking and visibility to leadership, and drive service improvement to internal and external customers.

Benefit

- Defining and measuring service targets allows for continual service improvement.
- Metric-based reporting provides service visibility to PTC leadership.

Dependencies

- In order to define effective SLAs, the service owners must be clearly defined.
- In order to define effective SLAs and KPIs, the business processes must be clearly defined.

Priority

- Medium

Level of Effort

- Team of 2 resources, 1-2 months

26

Problem Management Definition / Implementation



Problem Management has been implemented out-of-the-box and is not widely used, outside of addressing duplicate issues. PTC will define the organization's Problem Management process, develop appropriate conceptual and tool training to support the adoption of the process, and utilize tool features to develop relationships between incidents and problems. This will allow for organizational metrics and reporting, and ultimately the realization of formal SLAs to provide visibility to stakeholders.

Benefit

- Effective Problem Management prevents problems and resulting incidents from happening.
- Effective Problem Management eliminates recurring incidents.

Dependencies

- ITIL best practices refresher training is needed to support Problem.
- PTC's Problem Management process should be defined.
- Formal SLAs should be defined and communicated to support escalation.

Priority

- Medium

Level of Effort

- Team of 2 resources, 1-2 months

27

Enhance Change Management Process



PTC's Change Management benefits from defined and documented processes, and identified stakeholders; however, it lacks consistent business line participation. PTC should consider shifting focus of the CRB from technical membership to business line customer membership. PTC should establish governance around emergency change procedures, and evaluate the Change plugin available in Helsinki for fit with current processes.

Benefit

- Business line participation ensures changes are aligned with the evolution of the business.
- Emergency Change procedures should be well-defined with specified participants and activities.

Dependencies

- Functionality of the latest plugin should be evaluated with a determination to align PTC with latest plugin or make modifications to align the plugin with current processes.

Priority

- Medium

Level of Effort

- Team of 2 resources, 2-3 months

28

Asset Management Definition / Implementation



Stakeholders report that asset management is being performed to some extent, primarily with respect to endpoints. However, the current CMDB is immature and not trusted by the organization, preventing an integrated, enterprise implementation of Asset Management. PTC has recognized the critical importance of the CMDB and Asset Management and so has commissioned the development of an ITAM roadmap to provide clarity and guidance on the ITAM implementation.

Benefit

- Asset Management enables the acquisition, maintenance, re-use, and disposal of assets.
- Asset Management improves license compliance.
- Asset Management improves asset usage and monitoring.

Dependencies

- CMDB re-discovery and normalization will be required to fully realize the benefits of asset management
- Recommendations from the ITAM roadmap commissioned by PTC should be evaluated and implemented.

Priority

- Medium

Level of Effort

- Team of 2 people, 2-3 months

29

Evaluate CACTUS to ServiceNow Transition



PTC's CACTUS system is used to log and track calls from the organization's customers and external public officials. The service provided by this system is high visibility. PTC should consider evaluating the migration of CACTUS functionality, along with other consolidated call functions to the ServiceNow platform. A proof-of-concept might be developed in order to evaluate platform fit with PTC's requirements.

Benefit

- Consolidated customer service functions will improve quality and reliability of service.
- Consolidation of customer service platforms will save costs and improve leadership visibility into the service.

Dependencies

- The consolidation of PTC call centers will involve the convergence of several disparate supporting systems.
- A proof-of-concept may ease the transition and agent resistance to change of platform.

Priority

- Evaluation: Medium
- Development: TBD; process/data discovery needed; recommend a proof-of-concept project.

Level of Effort

- Evaluation: Team of 2 resources, 3-6 months
- Development: TBD; Granular requirements need to be developed

30

Evaluate GIS Platform Integration for Facilities Mngmt



PTC currently maintains architectural and assignment plans for facilities in CAD format and within their GIS platform. Updates to metadata relating to space, occupancy, equipment, asset all currently require manual update to the master records. PTC seeks to streamline Facilities Management operations by integrating existing drawings/data with the ServiceNow platform, enabling a single source of data for input, and automating common facilities requests.

Benefit

- Integration would allow for a single source of facilities data.
- Integration would create automated workflow for facilities requests.
- Dynamic visual representations of occupancy types, incident locations, labelling of space

Dependencies

- The accuracy and integrity of existing drawings/data needs to be verified.
- Floor plan visualization functionality requires drawings to be converted to GeoJSON format.

Priority

- Evaluation: Medium
- Development: TBD; Process/data discovery needed; recommend a proof-of-concept project.

Level of Effort

- Evaluation: Team of 2 resources, 3-6 months
- Development: TBD; Full requirements need to be developed

31

Develop Knowledge Management to Support ITSM



PTC has implemented a general knowledge base out-of-the box, and a minimally customized knowledge base to support the publishing of organizational IT Standards and Procedures. The ITSP knowledge base requires minor tactical enhancements; however, the general knowledge base is not widely used to support ITSM processes. PTC will create content, including FAQs, Desk Guides, and how-to articles along with appropriate suggestions from Incident to realize end-user adoption.

Benefit

- Knowledge articles made available to users will increase efficiency and productivity.
- The use of knowledge bases will improve business decisions with improved access to expertise.

Dependencies

- PTC will need to develop a process to manage the cultivation of knowledge content.
- PTC will need to identify and develop appropriate content to populate the knowledge base.

Priority

- Medium-Low

Level of Effort

- Team of 2 resources, 2-3 months

32

Develop SDLC Process



PTC has implemented SDLC to house stories related to ServiceNow development. PTC will need to formally define the organization's SDLC processes across application development and configure the tool to appropriately support these processes.

Benefit

- A well-developed SDLC process defines the tasks required to support the lifecycle.
- An established SDLC process provides visibility into the development lifecycle.
- SDLC will serve as the single system of record for the entire lifecycle.

Dependencies

- SDLC owner to be identified

Priority

- Medium-Low

Level of Effort

- Team of 2 resources, 1-2 months

33

Develop Idea, Demand, PPM Process



As part of the initial ServiceNow implementation, PTC has implemented Idea, Demand, PPM out-of-the-box. However, PTC has created an incident to turn off the Idea, Demand, PPM modules for now. Whenever, PTC decides to develop the Idea, Demand, PPM process it will need to formally define the organization's Idea, Demand, PPM processes across the enterprise and configure the tool to appropriately support these processes.

Benefit

- A well-developed Idea, Demand, PPM process centralizes demand management and enables the alignment of resources to business strategy.
- An established Idea, Demand, PPM process provides visibility from the initial Idea to project execution to operations.

Dependencies

- Idea, Demand, PPM owner to be identified

Priority

- Medium-Low

Level of Effort

- Team of 2 resources, 2-3 months

34

Enhance Foundation Data Integration



PTC's ServiceNow implementation is currently missing elements of Foundation Data that may need to be pulled from its SAP enterprise system and Active Directory. For e.g. Not all PTC employees in the Users table of ServiceNow application have a Manager assigned. Many users do not have a cost center associated to their record in ServiceNow. Clean up of users, roles, and groups may be undertaken as part of this effort as well.

Benefit

- A well-integrated ServiceNow system will streamline the Service Catalog and Service Request Fulfillment processes.

Dependencies

- Existing AD feed and integration scripts need to be enhanced.

Priority

- Medium-Low

Level of Effort

- Team of 2 resources, 1 to 2 months

Roadmap Timeline – Ongoing Activities



Activities	2017	2018											
		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Platform Roles / SOPs													
Backlog Evaluation and Dev													
Patching Program Execution													
Business Outreach													
Continued Forms Automation													

Define Platform Roles/Responsibilities & Issue SOPs



PTC should continue to maintain and create new standard operating procedures as the use of the platform continues. This would involve additional SOPs or updates to SOPs for any of the roadmap activities not already complete and planned for a future date.

Benefit

- Establishing governance is a foundational activity, enabling platform support.
- Effective governance extends PTC's strategies and objectives.

Dependencies

- Executive sponsorship establishes vision and enhances adoption.
- PTC's strong commitment to the ServiceNow platform will allow for maturity and organization-wide leverage of the platform data.

Priority

- High as new ServiceNow modules and functionality are enabled

Level of Effort

- TBD

37

Backlog Evaluation and Development



Work in Progress

PTC should continue to monitor incidents and suggestions that fuel the backlog, prioritizing and developing functionality to leverage the platform, providing efficiencies, increasing collaboration and productivity.

Benefit

- The platform provides a single repository of historical requests, enabling reporting.
- Automating forms increases efficiency and productivity with standard workflow.
- Enhance collaboration between organizations through workflows and information availability.

Dependencies

- Some request types are associated with larger strategic goals and should be appropriately prioritized and scheduled (e.g. future Facilities Management efforts encompass WorkspaceNeedsRequest)

Priority

- Evaluation: Medium-High
- Development: TBD; Granular evaluation is needed.

Level of Effort

- TBD based on need

38

Continue to Execute Patching/Upgrade Program



PTC should continue to maintain a systematic and comprehensive patching and upgrade program to remain in alignment with ServiceNow. Doing so will help improve quality and security as new releases address past deficiencies. New releases also introduce new features and function within the platform that could benefit PTC and add value to the business.

Benefit

- Understanding the release roadmap in context of enhanced functionalities will enable business objectives.
- Establishing standard processes for regular upgrades/patches will allow PTC to shift from product delivery to service delivery.

Dependencies

- PTC will need to define platform support roles and responsibilities in order to develop an effective upgrade/patching program.

Priority

- High

Level of Effort

- As required

39

Business Outreach



PTC seeks to leverage the ServiceNow platform beyond ITSM capabilities. Specific business needs involving forms automation, customer service, and facilities management have been identified; however, PTC will seek to educate business lines on platform capabilities and identify additional opportunities to leverage the tool as PTC continues to transform its service management capabilities, through use-case demonstrations. These opportunities will be prioritized, a level of effort will be determined, and the living roadmap will be updated as necessary to encompass these activities.

Benefit

- A platform supporting the enablement of business initiatives will allow PTC to evolve as a service management organization
- Leveraging the platform to meet additional business needs is a core customer service function.

Dependencies

- PTC will need to thoroughly analyze and document the business needs to determine platform viability.

Priority

- High

Level of Effort

- Team of 2 resources, 2-3 months

40

Continued Forms Evaluation and Automation



Work in Progress

PTC currently maintains a large library of physical (manual) forms. While nearly 50 forms have been addressed in past activities there are more forms that should be reviewed and automated based on business return on investment. Additionally PTC should look at manual processes that exist today and strive to automate where possible.

Benefit

- The platform provides a single repository of historical requests, enabling reporting.
- Automating forms increases efficiency and productivity with standard workflow.

Dependencies

- Some request types are associated with larger strategic goals and should be appropriately prioritized and scheduled (e.g. future Facilities Management efforts encompass WorkspaceNeedsRequest)

Priority

- Evaluation: Medium-High
- Development: TBD; Granular evaluation is needed.

Level of Effort

- TBD based on need

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1. Notice

The information within this document is a point in time snapshot of the systems and will change from time to time as the commission’s needs change. The Selected Proposer will perform detailed due diligence as part of the transition activities during the Transition Period. The **purpose** of **this** information is to familiarize the Proposers on the systems herein.

2. Overview

This document is a high-level source of reference for the Microsoft Dynamics 365 system, which has been implemented at the Pennsylvania Turnpike Commission.

2.1. Production Architecture

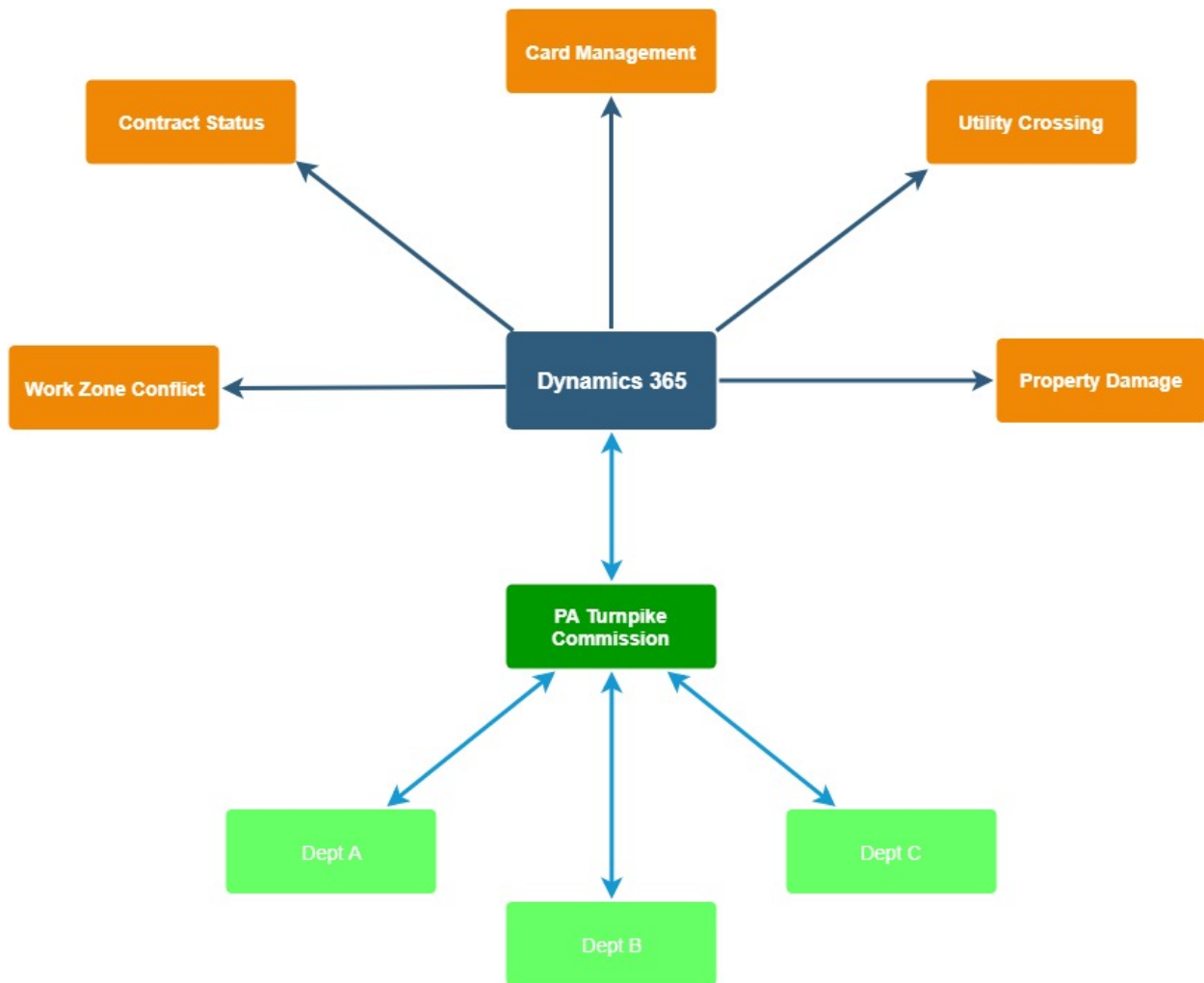


Figure 1. Production Architecture.

2.2. Version & OS platform where applicable

Application Name	Current Version Level	Operating System Platform & Version
Microsoft Dynamics 365	1612(8.2.3.181)	DB 8.2.2.1310 (Cloud)

Figure 2. Version & OS Platform.

2.3. Cloud Applications

1. Card Management
2. Contract Status
3. Work Zone Conflict
4. Utility Crossing
5. Property Damage

2.4. Licensing

Name	Type	Quantity	Status
Dynamics 365 Customer Engagement Plan for Govt.	Purchased	77 of 310 available	Active

Figure 3. Licensing.

3. MS Dynamics Environment

3.1. MS Dynamics Environment Overview

The Commission’s MS Dynamics implementation is Dynamics 365, version 8.2.2.160 maintained in the Cloud.

Although in the Cloud, one Development and one production Server are maintained on-premise within the Commission’s firewall to enable integration with other Commission systems: SAP HCM, OnBase, the Emergency Notification System (ENS – Internet-based)), and the Commission’s fleet fueling management system, Gasboy. MS Visual Studio .Net supports the custom integration between MS Dynamics and SAP. All changes are made in MS Dynamics’s Development instance, then are moved to the QA/UAT (Stage) instance for testing and deployed to Production. In addition, two “Sandbox” environments are available.


 PA Turnpike - Microsoft Dynamics 365 Environments Updated 1/10/2019					
PTC Description	URL	Office 365 Name	Office 365 Purpose Description	Organization Name	CRM Version
Production	https://paturnpike2.crm9.dynamics.com/	Production Environment	(blank)	paturnpike2	Dynamics 365 version 8.2.2.160
QA / UAT	https://paturnpike1.crm9.dynamics.com	QA/UAT Environment	Clone from Production 7/11/2018	paturnpike12	Dynamics 365 version 8.2.2.160
Development	https://paturnpike.crm9.dynamics.com	Development Environment	Development Environment	paturnpike	Dynamics 365 version 8.2.2.160
Sandbox	https://paturnpike0.crm9.dynamics.com/	Sandbox Environment	Clone from Production 9/26/2018	paturnpike0	Dynamics 365 version 8.2.2.160
Sandbox 7	https://paturnpike7.crm9.dynamics.com/	Sandbox 7 Environment	Cloned from Production 1/9/2019	paturnpike7	Dynamics 365 version 8.2.2.160

Figure 4. Microsoft Dynamics 365 Environments.

Both real-time and scheduled nightly jobs allow MS Dynamics to pull SAP data and push updated back to data to SAP. The Property Damage App dialogue with OnBase similarly is a scheduled nightly job.

3.2. MS Dynamics Functional Areas Implemented

Functionality Supported

1. Card and Badge Management
2. Contract Management (Engineering, Environmental Mitigation, and Open End)
3. Engineering Consultant Evaluation Process
4. Property Damage Claims Management Process
5. Engineering Utility Crossing Management
6. Work Zone Conflict Management

6.1. MS Dynamics Application Version

Dynamics 365, version 8.2.2.1259.

6.2. MS Dynamics Support Pack Levels

Dynamics 365, Update 9.0.2 scheduled approximately for August/September 2018.

6.3. MS Dynamics Technical Components

6.3.1. MS Dynamics Interfaces

Direction	Interfaces
Outbound	<p>From MS Dynamics/Card Management/Badge Management System to Fleet Fueling Management System (Gasboy). The following card records are extracted via Visual Studio C# program from the Card/Badge Management System:</p> <ol style="list-style-type: none"> 1. All active PTC employee card records; 2. All active Pennsylvania State Police (PSP) Troop T non-revenue cards; 3. PTC contractor non-revenue card records that are permitted to fuel vehicles. <p>These types of records are put in a file named FuelEmployeeCardExtract.TXT. The file will be placed in \\COFS3\AppDev\CardControl\Extracts\Fuel by the Card/Badge Management system, where SAP PI will retrieve the file.</p> <p>PI will then send the file over SFTP to the EKOS file server with the file named as FuelEmployeeCardExtract.TXT. The file is placed in the folder path: /dev/sap/ on the EKOS server. PI also sends the file to the PI archive folder: \\cvxd2\Archive\Outbound\LO\FUEL\CARD MANAGEMENT\</p> <p>NOTE: For the initial implementation of the Gasboy system, there is only one contractor that meets this criterion. A future enhancement to the Card Management will be required to avoid hard coding.</p>
Inbound	<p>From SAP HCM to MS Dynamics/Card/Badge Management System, pulling in personnel data to generate up to six types of badges and revenue cards.</p>
Outbound	<p>From MS Dynamics/(Engineering, Environmental Mitigation, and Open End) Contract Management to SAP.</p>

Direction	Interfaces
Outbound	From MS Dynamics/Engineering Consultant Evaluation to SAP.
Outbound	From MS Dynamics/Property Damage Claims Management Process to SAP.
Outbound	From MS Dynamics/Property Damage Claims Management Process to OnBase.
Outbound	From MS Dynamics/Engineering Utility Crossing Management to OnBase.
Inbound	From the Internet-based Emergency Notification Systems (ENS) to MS Dynamics/Work Zone Conflict Management.

Figure 5. MD Dynamics Interfaces.

6.3.2. MS Dynamics Business Processes and Sub-Processes

Business Process	Scenario	Sub-Processes
Property Damage Claims Management System (PDCMS)	This scenario covers the seven distinct stages of the PDCMS process.	<p>Create Incident:</p> <ul style="list-style-type: none"> • Create Incident Description <p>Create Claim:</p> <ul style="list-style-type: none"> • Input: Claim information (WBS Number, Claim Type, Owner, Review Date, etc.; • Link documents and artifacts to the claim record or upload them to OnBase; • Damage claim created in SAP. <p>Complete Repair:</p> <ul style="list-style-type: none"> • As Incident damage is repaired, work items are logged against the DC in SAP by the appropriate personnel; • The Repairs Stage will provide a view of all logged work elements in SAP for the DC; • PD Staff will be able to review repair activities and charges; • When the EU is satisfied that all repairs are completed and realistic activities and replacement charges for the damage have been recorded in SAP, they will enter the TECO Date field to move the Claim to the Invoicing Stage. <p>Invoice:</p> <ul style="list-style-type: none"> • Accounting will be notified that a claim is ready to be invoiced when repairs are completed and recorded in SAP, PD Staff have input a TECO date on the Claim, and 60 days from the Incident Date has elapsed;

Business Process	Scenario	Sub-Processes
		<ul style="list-style-type: none"> • Accounting Staff will access SAP and export repair work element details to an Excel spreadsheet; • Accounting Staff will utilize the exported data to create a Draft Summary Invoice; Upon completion of the Draft Summary Invoice, Accounting will attach it and Repair Details spreadsheet to the PDCMS claim; • When this is complete, Accounting Staff will select the Summary Attached check box to move the Claim to Accounting Supervisor review; • The Accounting Supervisor utilizes the attached Draft Summary Invoice and attachments to input the Invoice into SAP; • A Final Invoice will be created from SAP and attached to the Claim. • The Accounting Supervisor (approver) will select the Invoice Attached check box to move the Claim to the Review Stage (PD Claims Supervisor Review). <p>Review Final Invoice:</p> <ul style="list-style-type: none"> • PD Staff Supervisor will be notified that a Final Invoice is ready for review. In the Review Stage, the EU will see all artifacts that have been uploaded to OnBase and continue to add further documents to the repository (i.e. Cover Letter(s), Final Invoice package). • After final review is complete and all applicable documentation uploaded to OnBase, the PD Staff Supervisor will enter the Invoice Sent Date to move the Claim to the Payments Stage. <p>View Payment:</p> <ul style="list-style-type: none"> • In the Payments Stage, the EU will be able to view payment information recorded in SAP. <p>Record Final Status of Claim:</p> <ul style="list-style-type: none"> • In the Resolution Stage, the final status of the claim is recorded. <p>PD Staff will indicate whether the claim has been Paid in Full, is In Legal, the License [has been] Suspended, is in Negotiated Settlement, referred to Office of Attorney General, or deemed Uncollectable.</p>

Business Process	Scenario	Sub-Processes
<p>Property Damage Claim - Creation to Adjudication (Closure)</p>	<p>This scenario covers all stages of the lifecycle for a Property Damage Claim, which are created and managed as Case records</p>	<p>Create Record:</p> <ul style="list-style-type: none"> • Create new incident case record with all relevant initial information and save the case. Convert incident case to claim case. • Create children incident cases and assign to parent case record (if more than 1 incident exists per claim). <p>Repair:</p> <ul style="list-style-type: none"> • Create Responsible Party records (as necessary). • Send claim notification letter to responsible parties. • Use the Notes field to enter any relevant information or correspondence. • Coordinate repairs with the SAP WBS record. Enter date repair is completed (TECO). • Move case to the Invoicing stage when repairs complete. <p>Invoice:</p> <ul style="list-style-type: none"> • Accounting staff are notified that claim is ready for invoice. • Accounting staff access SAP to obtain all information needed to create the invoice. • Invoice letter is created by Accounting and attached in the Notes field. • Case is moved to Review stage when Final invoice is ready for review by Claims administrator. <p>Review:</p> <ul style="list-style-type: none"> • Claim Supervisor is notified that a Final Invoice is ready for review, will review all claim artifacts to date, will add further documents to the OnBase (Cover Letter(s), Final Invoice Letter). • Final Invoice is mailed to responsible party. <p>Indicate Claim Status:</p> <ul style="list-style-type: none"> • Claims administrator indicates adjudication status of the claim (e.g. Paid in Full, In Legal review, Uncollectable, etc.). <p>Once the claim is Adjudicated, the Case record status is changed to Inactive.</p>

Business Process	Scenario	Sub-Processes
<p>Card Management/Badge ID creation to destruction of card</p>	<p>This scenario covers from the initial card application to the final return and destruction of the card. NOTE: There are several different types of cards, including employee ID, summer employee, tour card, non-revenue card, special revenue card, maintenance card.</p>	<p>Create New Application Record:</p> <ul style="list-style-type: none"> The Card application is sent to the Access Coordinator, typically emailed to the cardkey@paturndpike.com email address. The Access Coordinator logs into Dynamics, selects the Application entity, and creates a new Application record for the card request. <p>Approve Application:</p> <ul style="list-style-type: none"> The Access Coordinator approves the application record that was just created. The Card status is set to PRINTQ and is ready to be printed. <p>Alt Flow:</p> <ul style="list-style-type: none"> If PTC Card Group (e.g. card type) equals “Employees,” then employee photo is attached to the card record prior to printing. The Access Coordinator prints the card and sends card along with a copy of the original application to the requesting person. <p>Alt Flow:</p> <ul style="list-style-type: none"> If the card to be created is Non-Revenue or Special Revenue, an Account record is created for the requesting organization prior to the creating of the card application and card. <p>Alt Flow:</p> <ul style="list-style-type: none"> If the card is worn and needs to be replaced, the card is returned to Access Coordinator, who reprints and reissues the same card number. <p>Alt Flow:</p> <ul style="list-style-type: none"> When an employee is terminated or retired, the employee ID card (and tour card if applicable) is returned to the Access Coordinator, and the card status is updated to Returned. <p>The employee's corresponding SAP Object on Loan record for that card number is updated to denote the date the card was returned.</p>

Business Process	Scenario	Sub-Processes
<p>Engineering Utility Crossing Management</p>	<p>This scenario covers the process used by the Utility Crossing Coordinator to manage Engineering Utility Companies and Crossings.</p> <p>NOTE: OnBase documents for a Utility Crossing are uploaded to OnBase by logging into the OnBase system, and not via the Dynamics application.</p>	<p>Access Detail Record:</p> <ul style="list-style-type: none"> The Utility Crossings entity contains detail records for a specific crossing. Access detail records by navigating to the entity view named "Active Utility Crossing" and selecting a record. NOTE: For each record, all data associated with the crossing is listed on the form, including any OnBase documents associated to this crossing number. <p>View “Active Utility Companies:”</p> <p>Navigate to the entity view "Active Utility Companies" to open a record. Every utility is associated with a Utility Company.</p>
<p>Engineering Contract Status - Maintain WBS Information</p>	<p>This scenario covers the process used by the Engineering Contract Status Administrator and Users.</p> <p>NOTE: Within SAP, the "Program Priority" on the WBS element must be maintained with value of "CRM." This will include the WBS record in the daily sync job from SAP WBS to Dynamics WBS record.</p>	<p>Maintain/Modify WBS Status:</p> <ul style="list-style-type: none"> Within Dynamics, navigate to "Engineering Contract Status", "WBS Elements" entity. Search for and open existing WBS record. Modify detail information as needed. <p>Alt Flow:</p> <ul style="list-style-type: none"> For Open End WBS contracts, navigate to "Open-End Contracts" entity. Select an existing WBS record. Maintain information on the WBS record. Create new or maintain existing Work Authorization records associated with the Open End WBS record. <p>Modify detail information as needed.</p>
<p>Engineering Consultant Evaluation - Create and Maintain Evaluation Records</p>	<p>This scenario covers the process of creating, modifying, and printing consultant evaluation records, for both Design and CMCI evaluations.</p>	<p>Search for and Open Existing Record:</p> <ul style="list-style-type: none"> Navigate to the "Consultant Evaluation", "Contracts" entity. Search for and open existing contract record. NOTE: Contracts are imported from SAP automatically via daily interface process. <p>Alt Flow:</p>

Business Process	Scenario	Sub-Processes
		<ul style="list-style-type: none"> • If Design Consultant Evaluation record does not exist, create new record. <p>Alt Flow:</p> <ul style="list-style-type: none"> • If CMCI Consultant Evaluation record does not exist, create new record. <p>Select and Edit:</p> <ul style="list-style-type: none"> • Select and edit existing evaluation record. <p>Print Report: Print Evaluation reports as needed.</p>
Work Zone Conflicts	<p>This scenario covers the process regarding ENS Travel advisories, data import of lane charts, and Red Flag creation and monitoring.</p> <p>NOTE: Travel Advisories from the www.paturndpike.com website are imported into the "ENS Advisories" entity, via Dynamics background job.</p>	<p>Import Lane Charts (on annual basis) into the "Lane Requirements" and "Lane Segments" Entities.</p> <p>NOTE:</p> <p>Import by using a custom .NET developed program called the parser, which is hosted on PTC internal web server.</p> <p>The Engineering Department maintains a set of Lane charts in Microsoft Excel.</p> <p>Maintain "Special Events" Entity.</p> <p>NOTE: The "Special Events" Entity is maintained with the list of PTC Holidays and any special events, such as the Carlisle auto show.</p> <p>Create "Red Flag" Entity Records.</p> <p>NOTE: "Red Flag" entity records are created via a Dynamics background job, by comparing the ENS travel advisories against a defined set of business rules.</p> <p>View "Red Flag Entity" record.</p> <p>NOTE: The "Red Flag" records are viewable by means of several system views on the entity.</p>

Figure 6. MS Dynamics Business Processes and Sub-Processes.

6.3.3. MS Dynamics Reports

- Property Damage: 12 Reports
- Card/Batch Management: Five (5) Reports
- Engineering Contract Status: 13 Reports
 - 12 Quarter Planning Schedule by Letting Date
 - Beyond 12 Quarter Planning Schedule by Category
 - Beyond 12 Quarter Planning Schedule by Letting Date

- Active Open-End Meeting
- Engineering Project Liaisons
- Five Quarter Let Schedule
- Highway Program Over/Underspend
- Open End Work Authorization Cost Summary
- Open End Work Authorization Cost Delivery
- PA DEP Anticipated Applications
- PA DEP Applications
- Zombie Contracts
- Consultant Evaluation: Two (2) reports
- Utility Crossing: One (1) Report

6.3.4. MS Dynamics Forms: N/A

6.3.5. MS Dynamics Enhancements

- 1 Implement Active Open-End Meeting Report for Dynamics CRM Engineering Contract Status system
- 2 Card Management modify interface to Toll Host system to provide correct district number
- 3 Dynamics Card Management - Removing Non-Revenue Privileges on new employee cards
- 4 Use this Service to request new or changes to existing Active Directory account or network access.
- 5 Request an enhancement to a system other than SAP
- 6 Card Management - Changes to the Fare Collection District ID data maintenance for Tour and Maintenance cards
- 7 Card Management Non-Revenue access for Employee ID badges
- 8 Implement Active Open-End Meeting Report for Dynamics CRM Engineering Contract Status system
- 9 MS Dynamics PD Claims - Add 2 new sections
- 10 Modify Card Management Toll Host Extract program to include SAP Personnel number
- 11 Property Damage Claims - Add new department and section in CRM Production
- 12 Property Damage Claims - Add new department and section in CRM Production
- 13 Card Management modify interface to Toll Host system to provide correct district number
- 14 Dynamics Card Management - Removing Non-Revenue Privileges on new employee cards
- 15 Use this Service to request new or changes to existing Active Directory account or network access.
- 16 Request an enhancement to a system other than SAP
- 17 Card II Enhancements - MS-Dynamics solution
- 18 Card Management Enhancements are necessary due to the Auditor General's findings, and Senior Management's recommendations. These Enhancements include the automation of Cards requests, SAP integration, PRINTQ dashboard upgrades, On-Base integration, and processing of Payments and Refunds by Accounting.

- 19 CRM 2016 Upgrade
- 20 Implementation of Consultant Eval and Engineering Contract Status MS Dynamics Apps Application Code
- 21 Implementation of Consultant Eval and Engineering Contract Status MS Dynamics Apps Integration
- 22 Implementation of Property Damage Upgrade
- 23 MS Dynamics - Card Management special revenue cards expiring letters
- 24 MS Dynamics - CRM Engineering Contract Status WBS Element Updates
- 25 MS Dynamics - PD Claims - Request to validate the "Incident No." field on the PD Claim Form to only accept a 10-digit entry.
- 26 MS Dynamics - Property Damage System - Update the Dashboard "Claims Management" and "Claims for Review by Caroline" View
- 27 MS Dynamics - Property Damage System - We require the addition of another Department and Section.
- 28 MS Dynamics - Card Management update CRM SDK files - valuation and fix any custom Visual Studio .NET code that is using the old version of the Dynamics CRM SDK DLLs - Microsoft is deprecating the old DLLs as of 5/31/2017. Any custom .NET code leveraging the old DLLs will no longer work past that date.
- 29 MS Dynamics Property Damage Claims - add ability to search for claims where Damage type equals "Plan"
- 30 Work Zone Conflicts - New MS Dynamics Application for the Traffic Engineering Department
- 31 Property Damage Claims - Notes area on PD Claim form
- 32 Card Management Non-Revenue access for Employee ID badges: Add functionality to remove employee ID cards from being included on the Positive List file, which essentially removes their Non-Revenue access for the ID card.
- 33 Remove Non-Revenue Privileges on new employee cards (Enhancement #35 undoes part of Enhancement #34)
- 34 Modify Card Management Toll Host Extract program modification to include SAP Personnel number
- 35 Provide ability to create TransCore maintenance cards starting with 847 and 848 account numbers - Card Management TransCore Maintenance Cards starting with 847, 848 account numbers

Figure 7. MS Dynamics Enhancements.

7. Metrics and User Administration

7.1. Yearly Upgrade Frequency

- Quarterly Patching and Associated Releases/Year: four (4)

7.2. Yearly Number of Upgrades

- Upgrades: one (1)

7.3. Yearly Number of Releases

- Releases: five (5)

7.4. Miscellaneous Metrics: N/A

7.5. Service Levels

Currently there are no Service Level Agreements or Service Level Objectives in place between the Commission's IT department and the rest of the Commission for MS Dynamics.

7.6. User Application Security Management (User ID, Passwords, Profile)

Required for access: Active network account, license for MS 365 assigned and specific role.

7.7. Miscellaneous – Supplementary Equipment

- Two (2) Fargo printers to print badges.
- One (1) card swipe device to check in returned cards.

8. Additional Diagrams and Screen Captures

8.1. Current Card Control System (CCS) Process

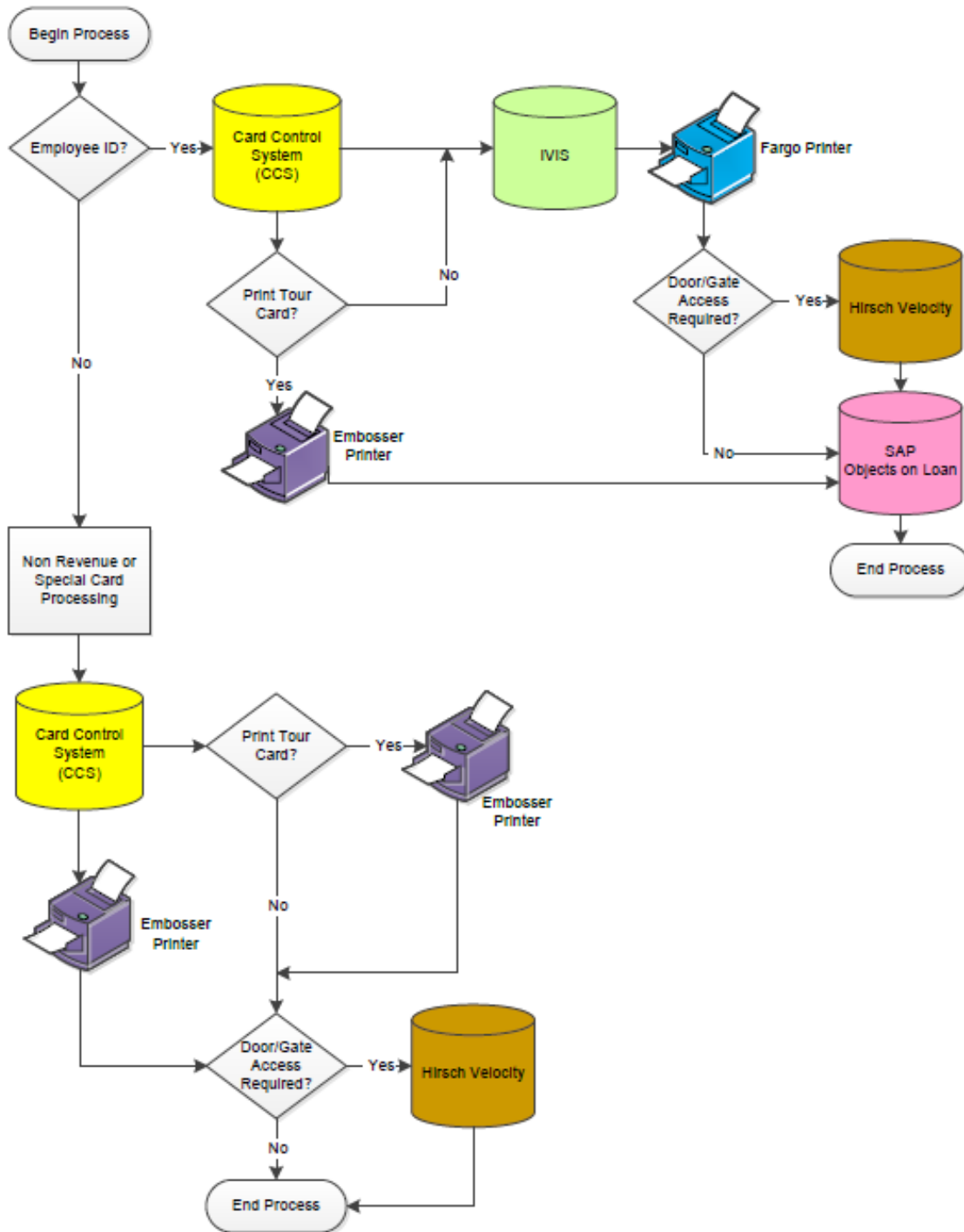


Figure 8. Current Card Control System Process.

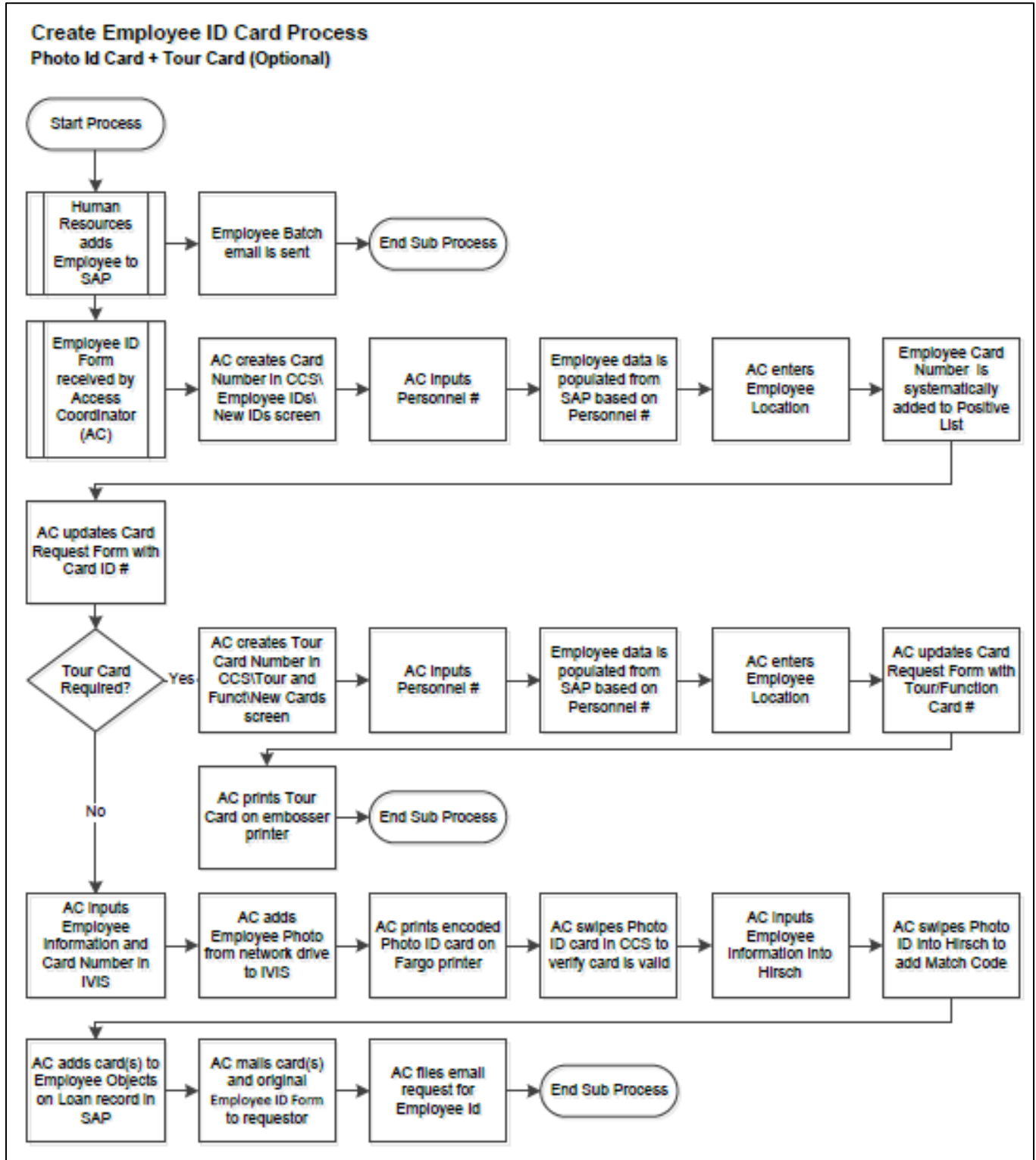


Figure 9. Create employee ID Card Process.

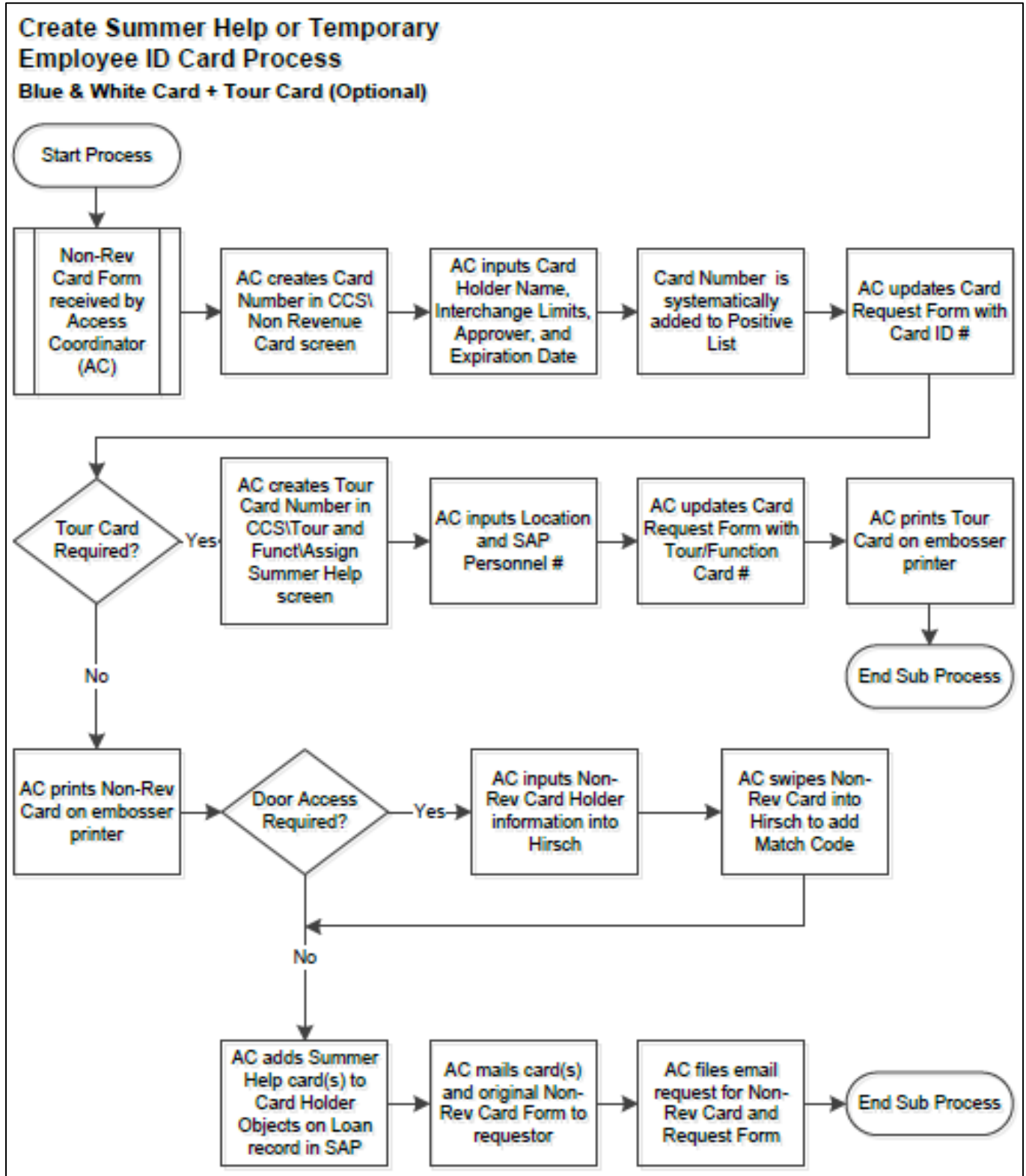


Figure 10. Create Summer Help or Temp Empl. Card Process.

Maintenance Card for TransCore Employees Card Process

Brown Card

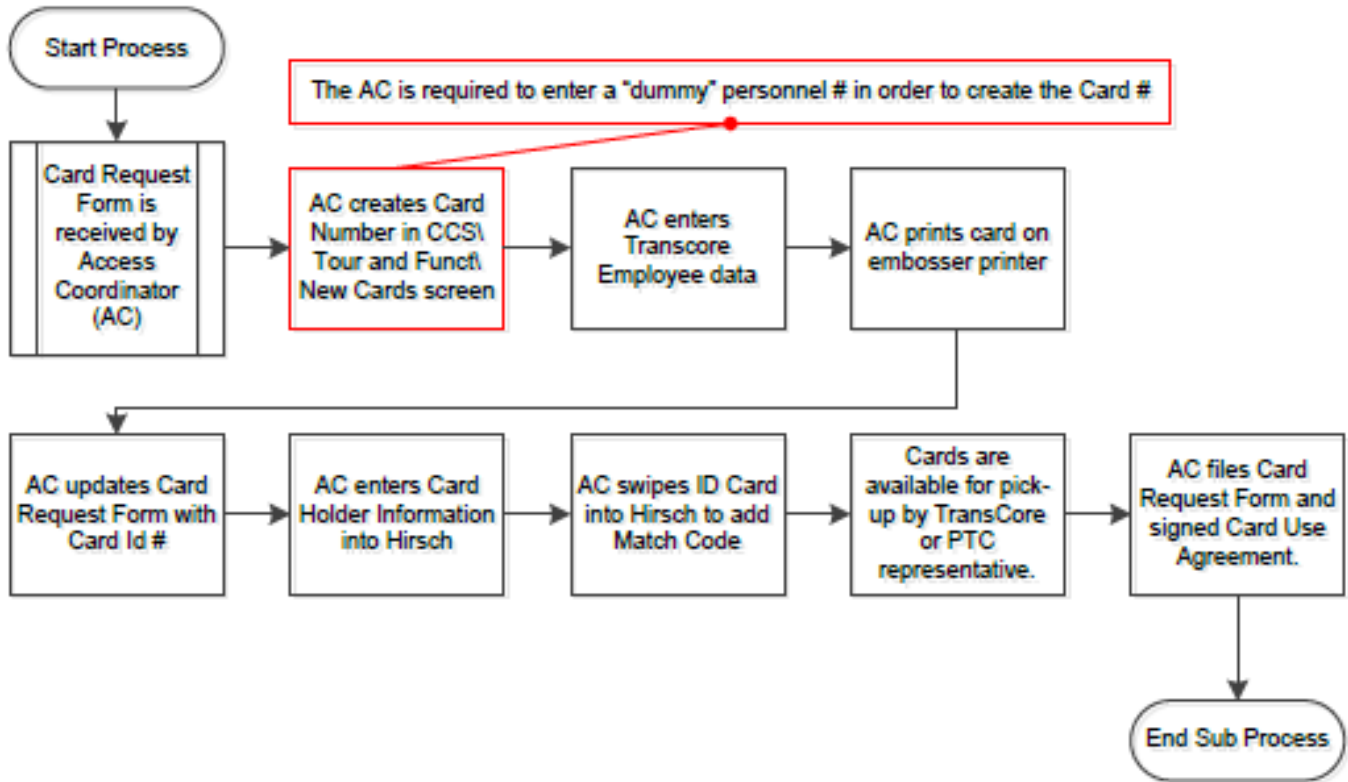


Figure 11. Mtc Card for TransCore Employee Card Process.

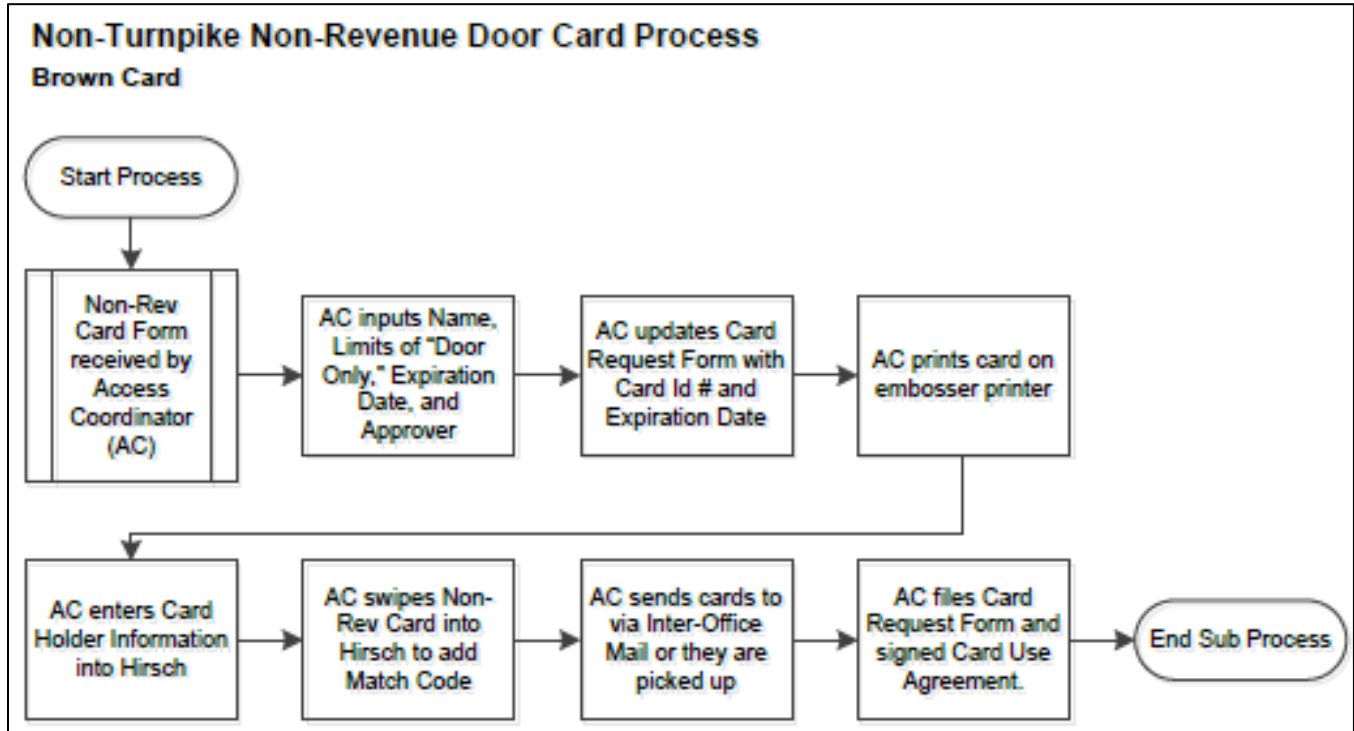


Figure 12. Non-Turnpike Non-Revenue Door Card Process Architecture.

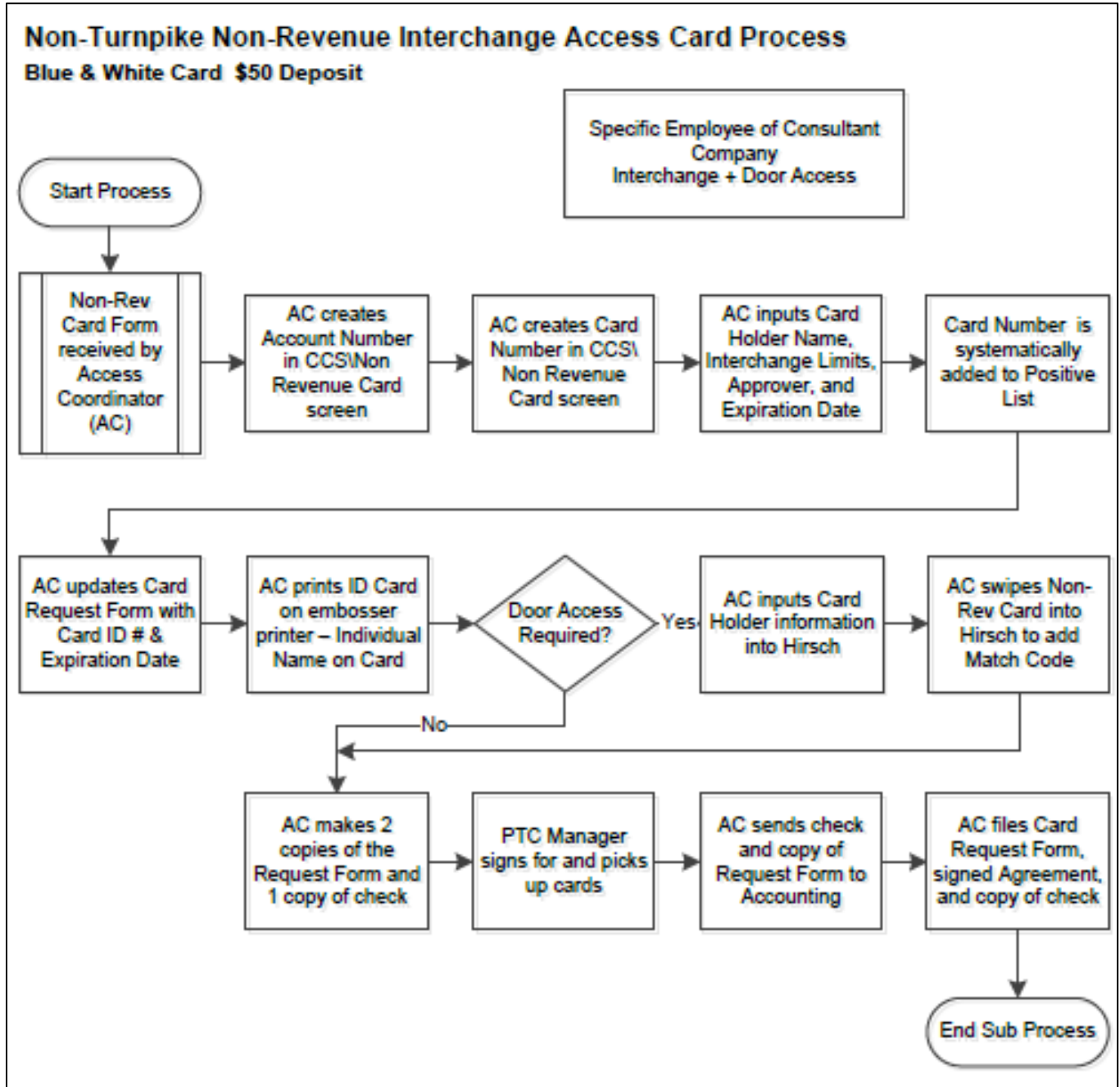


Figure 13. Non-Turnpike Non-Revenue Interchange Access Card Process.

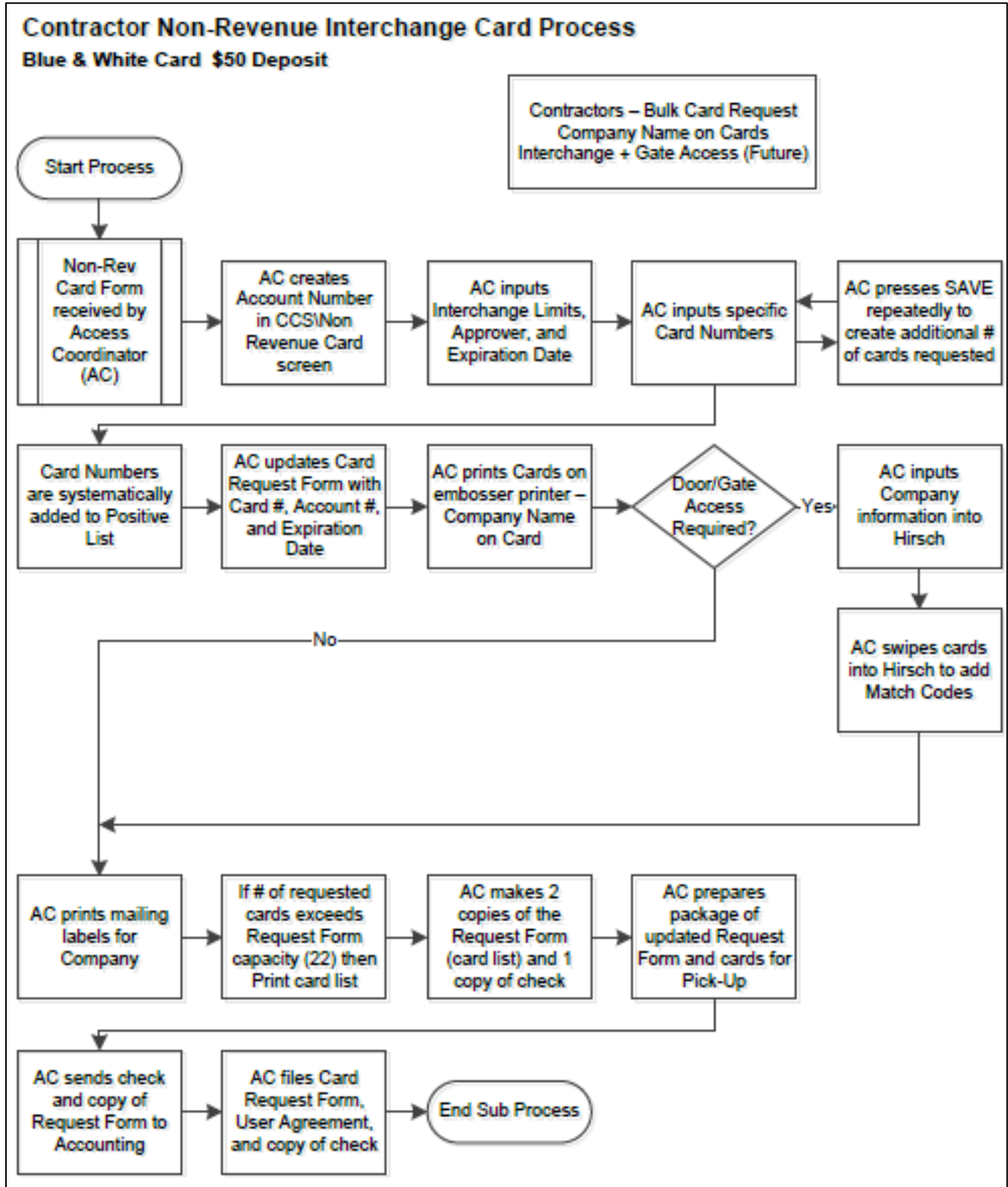


Figure 14. Contractor Non-Revenue Interchange Card Process

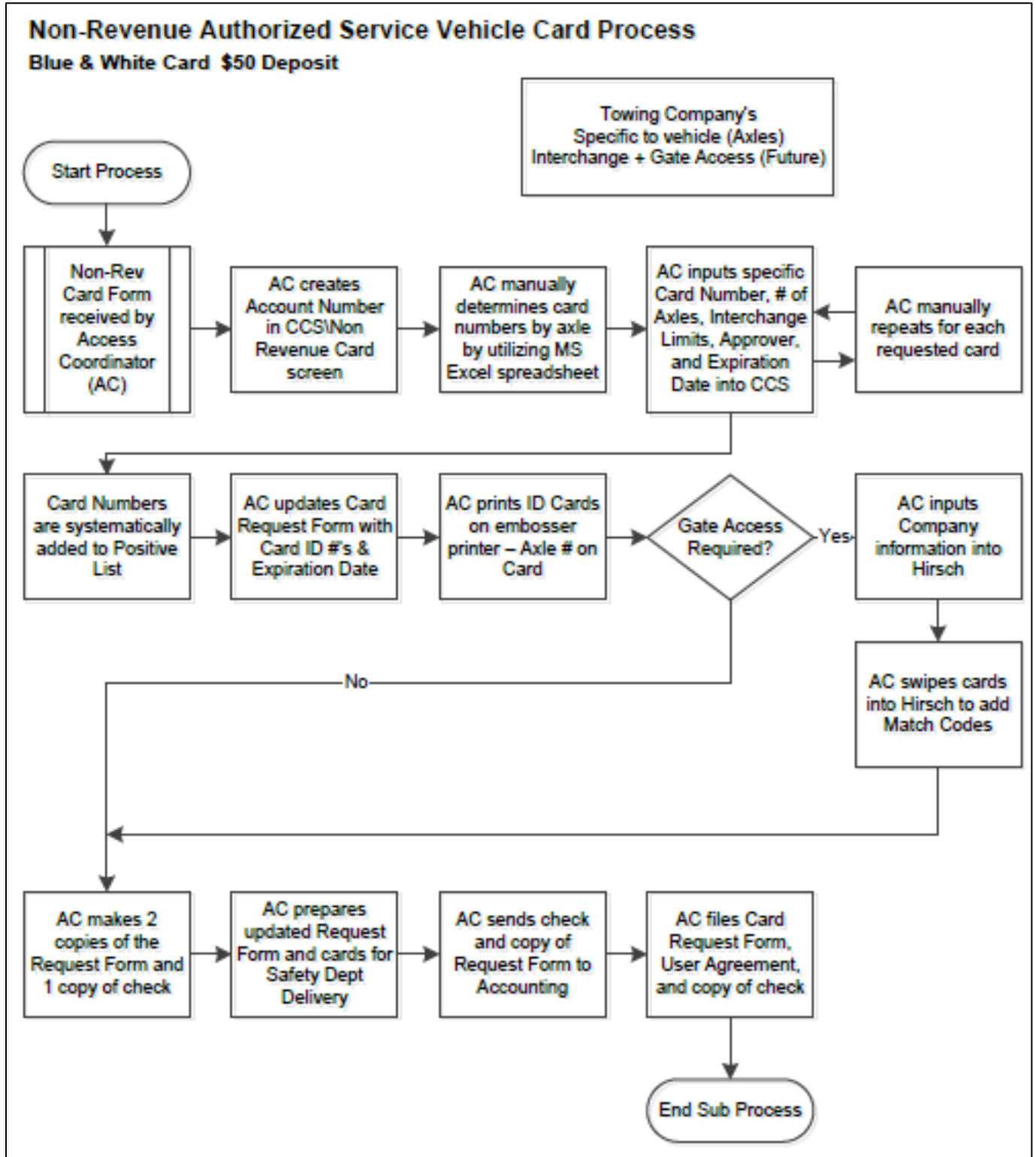


Figure 15. Non-Revenue Authorized Service Vehicle Card Process.

Special Revenue Card Process
Green & White Card Surety Bond Required

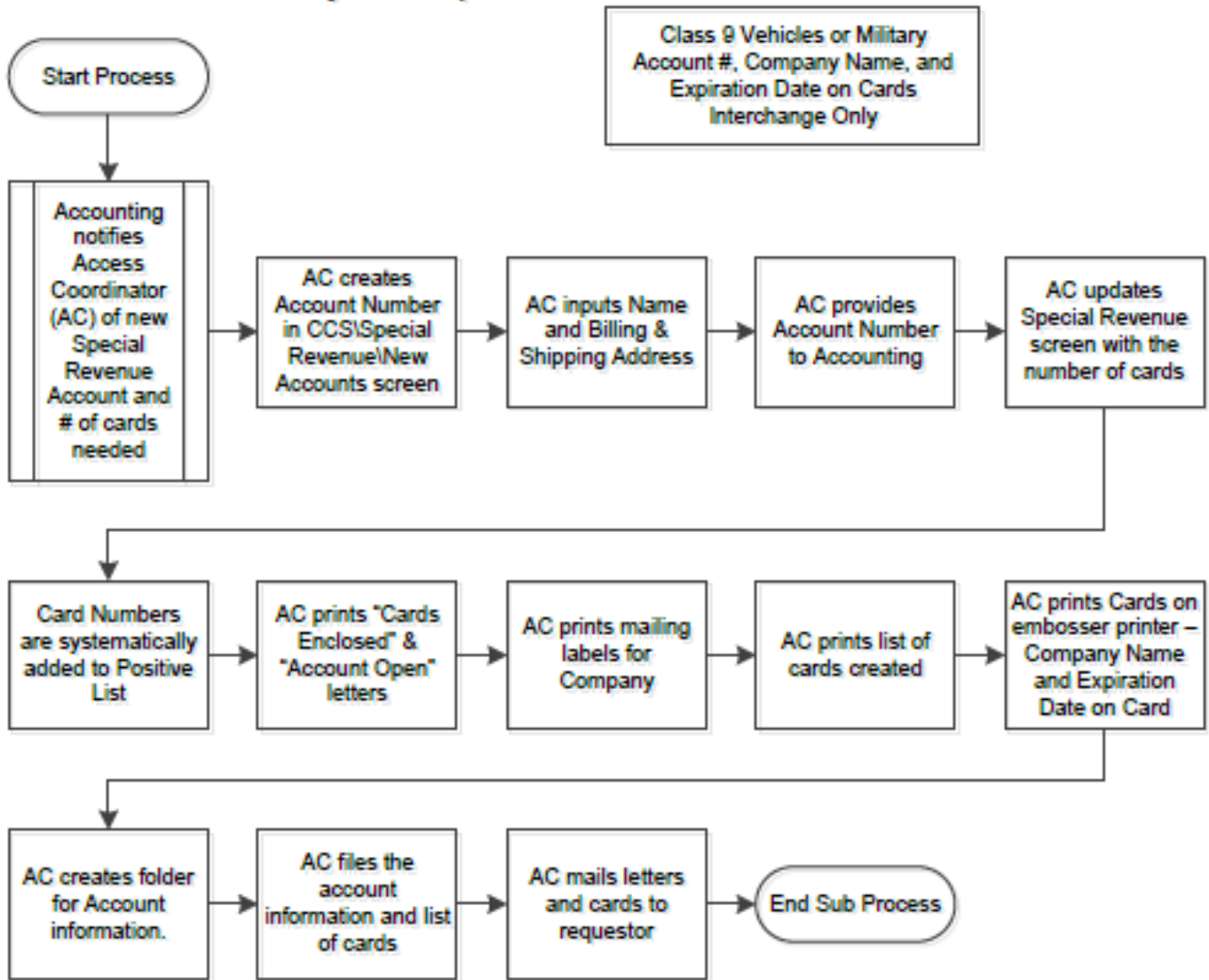


Figure 16. Special Revenue Card Process.

8.2. Contract Status

Create and Maintain Contracts Use Case Diagram

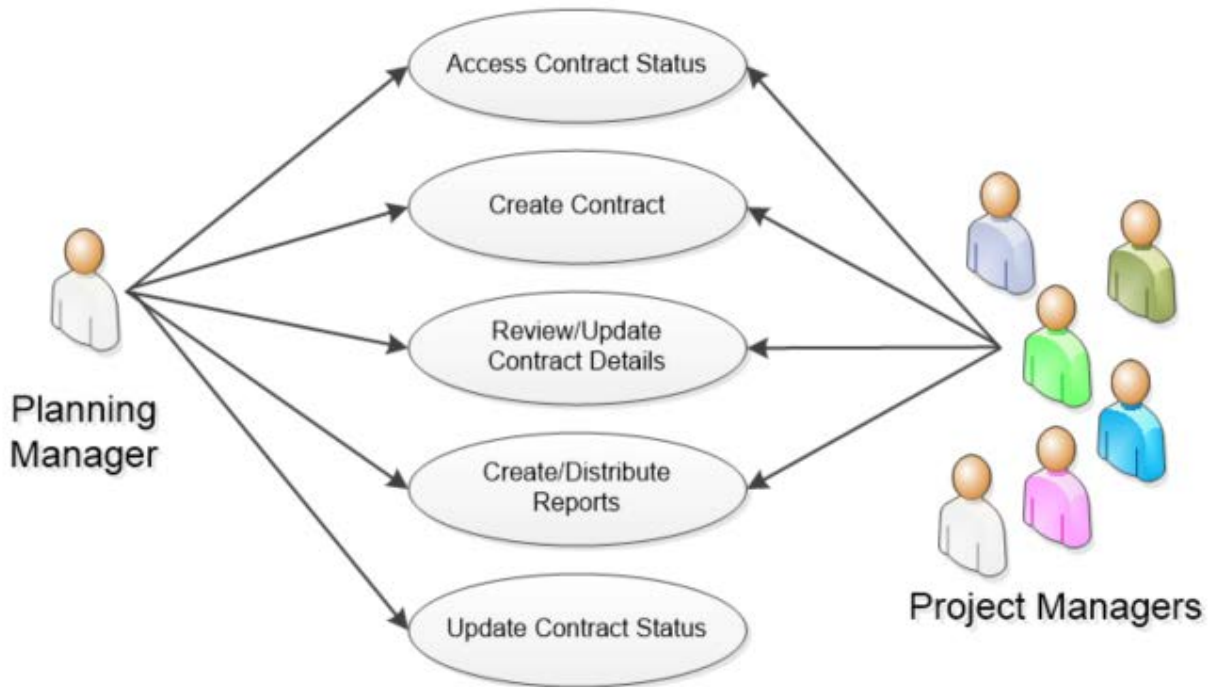


Figure 17. Create and Maintain Contracts Use Case Diagram.

Super User Use Case Diagram

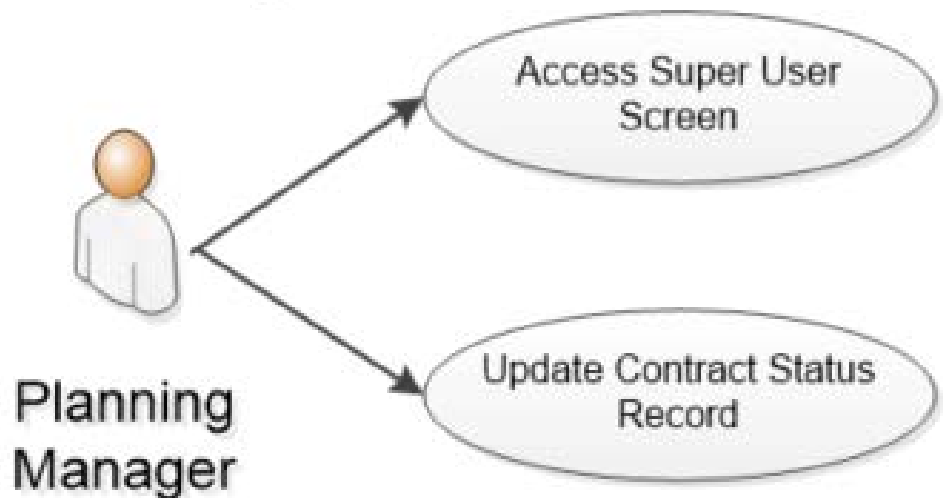


Figure 18. Super User Use Case Diagram.

Create and Maintain Open End Contracts Use Case Diagram

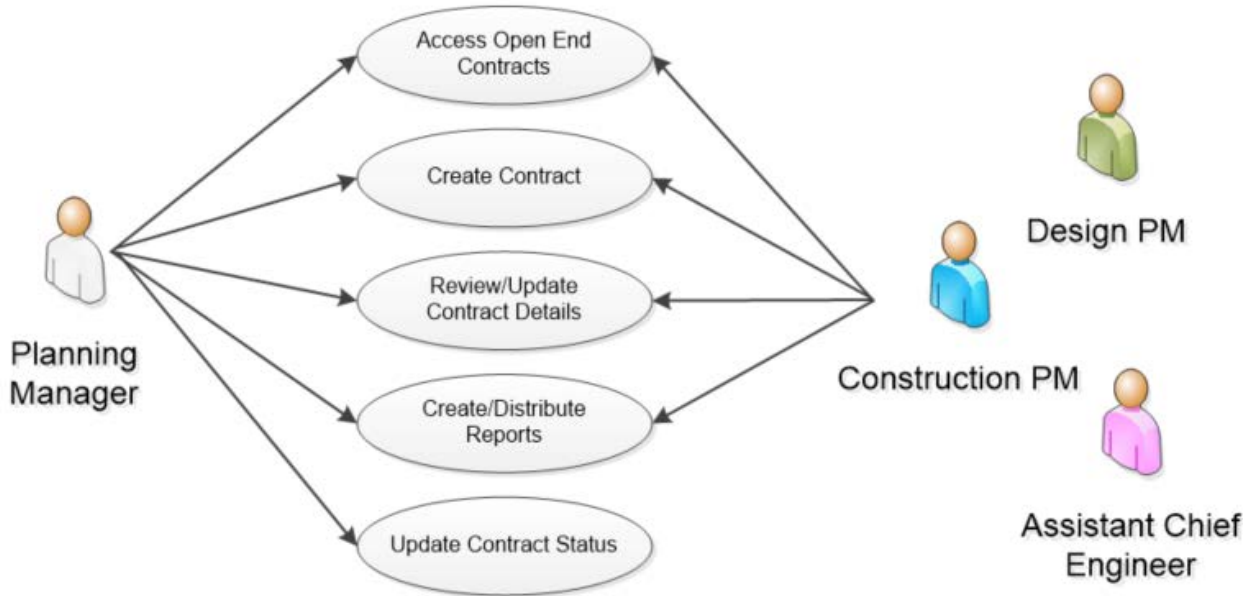


Figure 19. Create and Maintain Open End Contracts Use Case Diagram.

Create and Maintain Environmental Mitigation Use Case Diagram

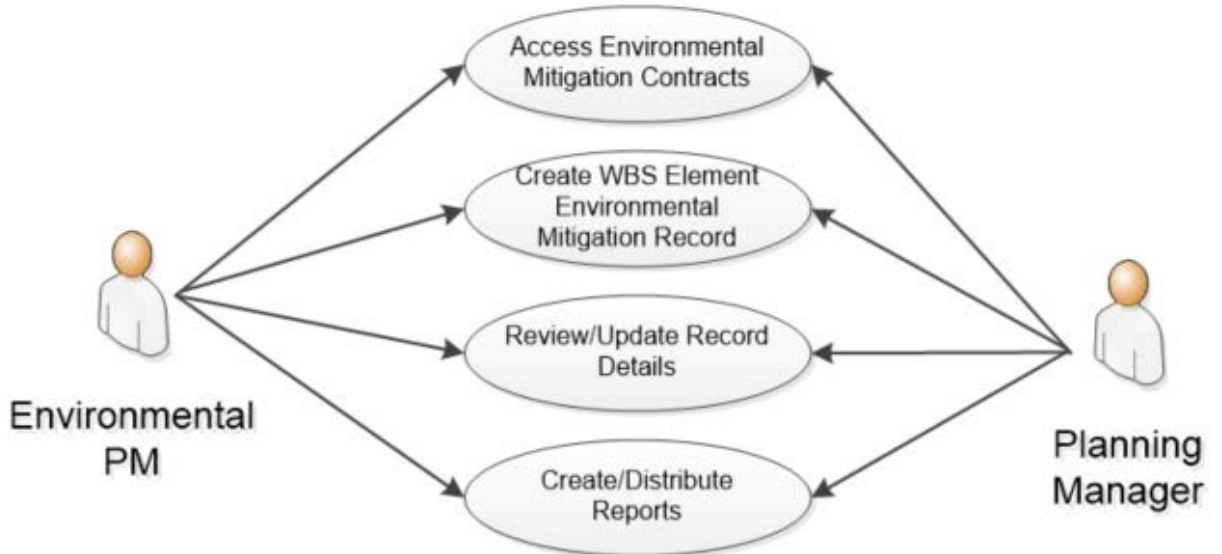


Figure 20. Create and Maintain Environmental Mitigation Use Case Diagram.

Use Case Diagram

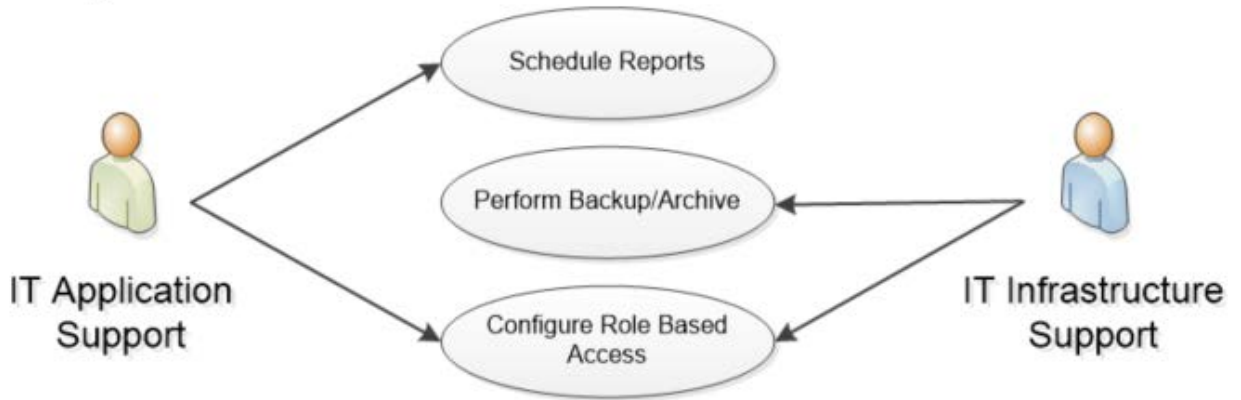


Figure 21. Use Case Diagram.

8.3. Consultant Evaluation Process System

Design Consultant



Construction Management/Construction Inspection Consultant

CM/CI CONSULTANT EVALUATION PROCESS

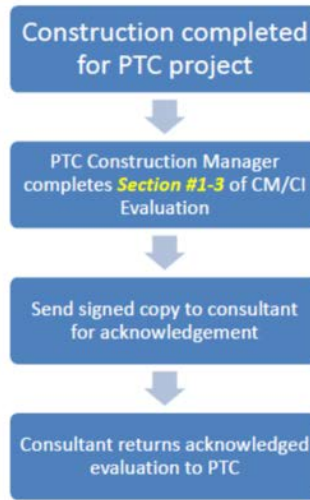


Figure 22. CM / CI Consultant Evaluation Process.

At the outset of a Consultant's engagement with PTC, if Consultant's work is to be evaluated, then PTC must configure the evaluation criteria, evaluation timing, and how the evaluation information will be reported.

Use Case Diagram

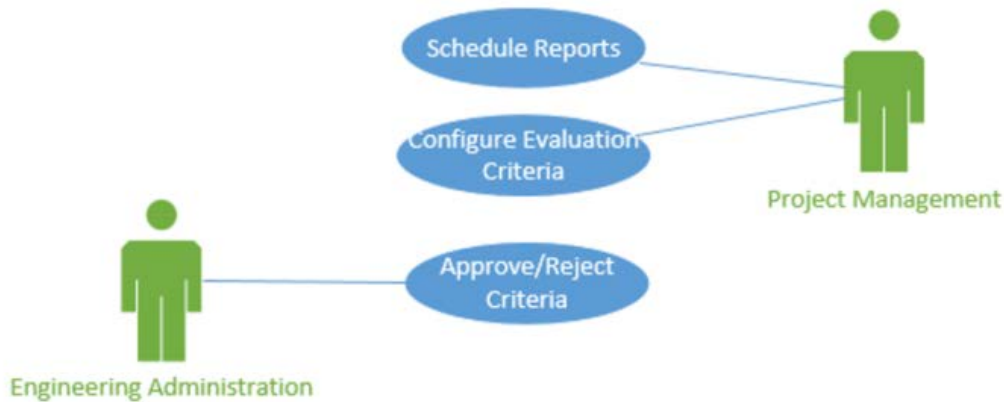


Figure 23. Use Case Diagram 1, CM / CI Consultant Evaluation Process.

At the appointed interval(s), PTC must evaluate the Consultant's performance, assure the evaluation is acceptable, and offer the evaluation to the Consultant for comment and signature.

Use Case Diagram

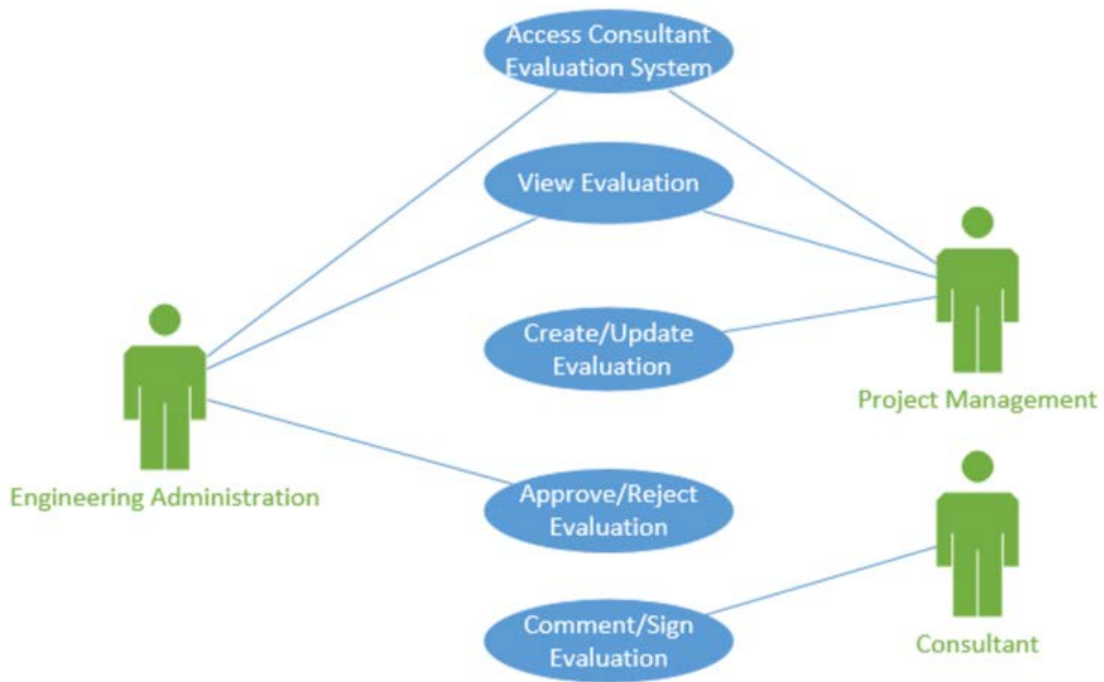


Figure 24. Use Case Diagram 2, CM / CI Consultant Evaluation Process.

As part of monitoring evaluated work, PTC must have timely access to performance data. Furthermore, PTC must be able to use performance history data from CEP when assessing a Consultant's viability to be awarded new contracts.

Use Case Diagram

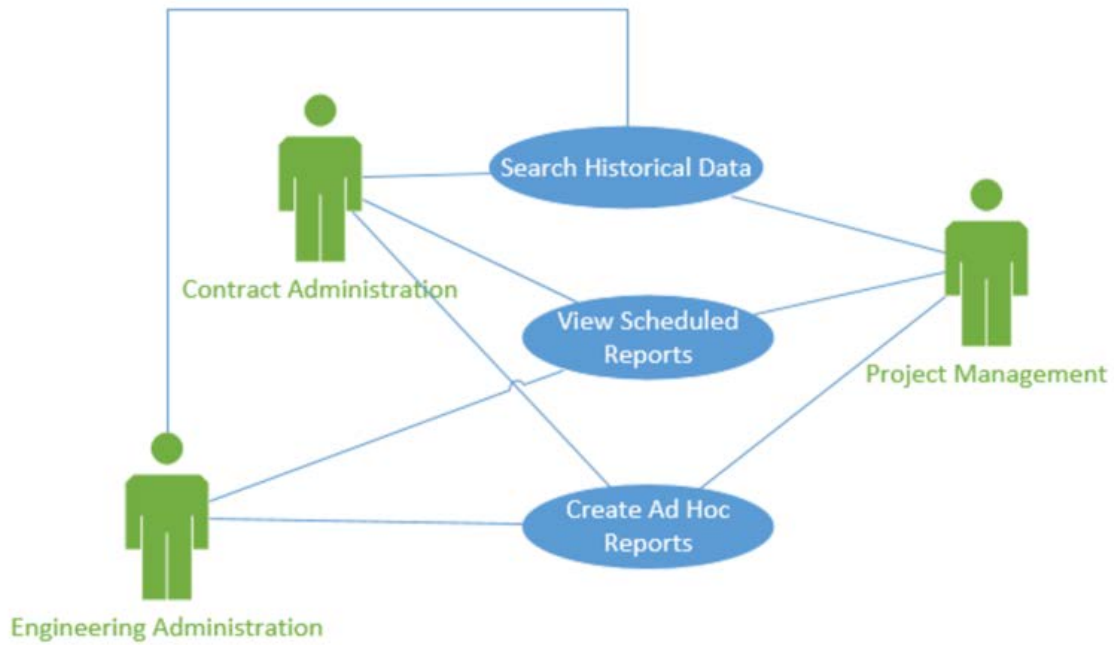


Figure 25. Use Case Diagram 3, CM / CI Consultant Evaluation Process.

PTC Information Technology (IT) must have the capability to maintain the CEP Application and Infrastructure.

Use Case Diagram

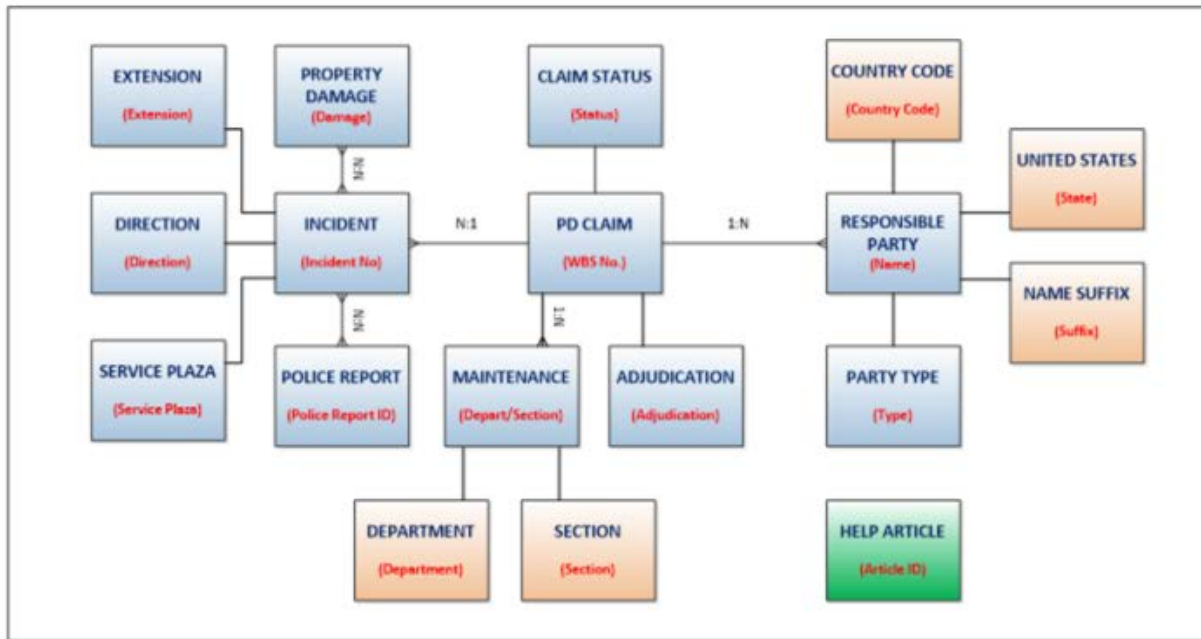


Figure 26. Use Case Diagram 4, CM / CI Consultant Evaluation Process.

8.4. Property Damage Claim Management System

The Pennsylvania Turnpike Commission (PTC) PDCMS was developed using Microsoft Dynamics CRM. PDCMS will replace existing spreadsheets used to track activities entailed in property damage repair claim recovery. This document represents the process that is enforced by the application to effectively track property damage claims from claim creation through resolution.

Data Relationship



1:N indicates 1 to many relationship.
 N:1 indicates many to 1 relationship.
 N:N indicates many to many relationship.

Figure 27. Property Damage Claim System.

8.5. Utility Crossings

Depending on your role within PTC and the Security Role(s) you've been granted in the Utility Crossing applications, your screens may look different from what you see in this guide. Each user has the ability to set their Default Pane (screen) & Tab (navigational).

Security Roles:

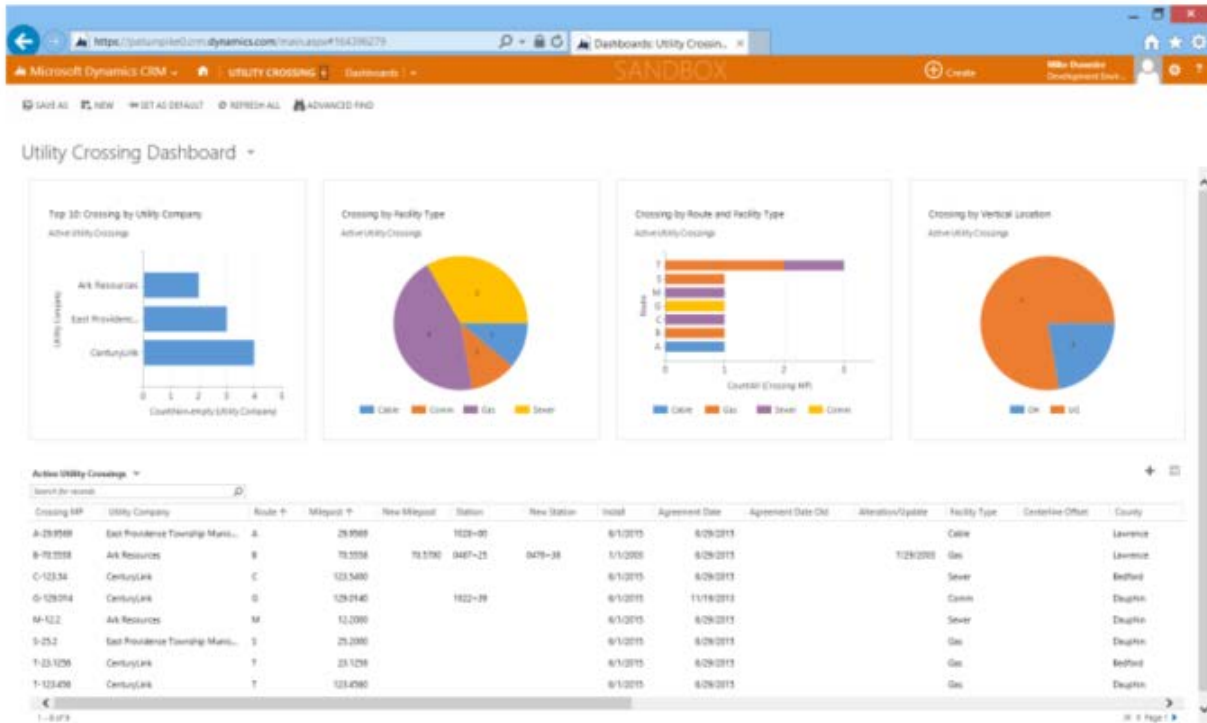
- **Utility Crossing Supervisor** – Users have full access to the Utility Crossing application, except for *Delete* access. Therefore, users in this Security Role will not see a Delete button.
- **Utility Crossing Coordinator** – Users have full access to the Utility Crossing application, except for *Delete* access. Therefore, users in this Security Role will not see a Delete button.
- **Utility Crossing Read-Only** – This role was requested specifically for instances where an intern may be working with Utility Crossing. This role does not provide access to *Create, Modify, or Delete* records. This role also prevents Users from exporting data. Users in this role will see very minimal
- **System Administrator** – System Administrator always has full access to the entire system. The System Administrator role can never be modified. Therefore, users in this Security Role will see everything in the system, even non-Utility Crossing functionality.

Note: It was determined during the 7/28/15 demo/meeting to remove *Delete* access from the *Utility Crossing Supervisor* role. System Administrators will have the ability to delete records as needed. Therefore, the Supervisor and Coordinator roles are identical at the time of this documents creation. Security Roles could be modified in the future as needed.

Utility Crossing Dashboard ▾

DASHBOARDS

Below is an example of the Utility Crossing Dashboard. **Note:** The design of this Dashboard may have changed during development. Data included in screenshots is fictitious and should not be referenced as real data.



Don't worry if your screen looks different. All of the topics in this guide are designed so that the clicks are the same for everyone. You'll be able to use this guide to learn the basics of Microsoft Dynamics CRM and the Utility Crossing customizations, no matter your role, or whether your screens are arranged differently from the examples shown here.

FIRST-LEVEL NAVIGATION (WORK AREAS & ENTITIES)

There are two levels of navigation. At the top level, you'll find tiles for different applications within the overall CRM system. For purposes of this training, you will most likely only have access to Utility Crossing, unless you are a System Administrator, or are already using CRM for other applications. The tiles shown in this top-level navigation, **Utility Crossing** and **Settings**, are called **work areas**. The **Settings** work area is generally used by system administrators and for purposes of Utility Crossing users, there is functionality that you'll need from that work area, so you can solely focus on the Utility Crossing work area. Depending on your role(s) at PTC, and/or your CRM Security Role(s), you may have access to additional Work Area(s).

- On the nav bar, choose the Dynamics CRM logo to display the tiles for the work areas. Then choose the tile for the work area you want. In this case, **Utility Crossing**.
- You can always click on the **Home** button (house icon) to immediately navigate to the home page you've set in Personal Options. This concept was covered previously in this document.

SECOND-LEVEL NAVIGATION

The second level of navigation takes you to the different types of records stored in the system, such as Utility Crossings, Utility Companies, Counties (UC), Townships/Municipalities, Facility Types, Routes, and Vertical Locations.

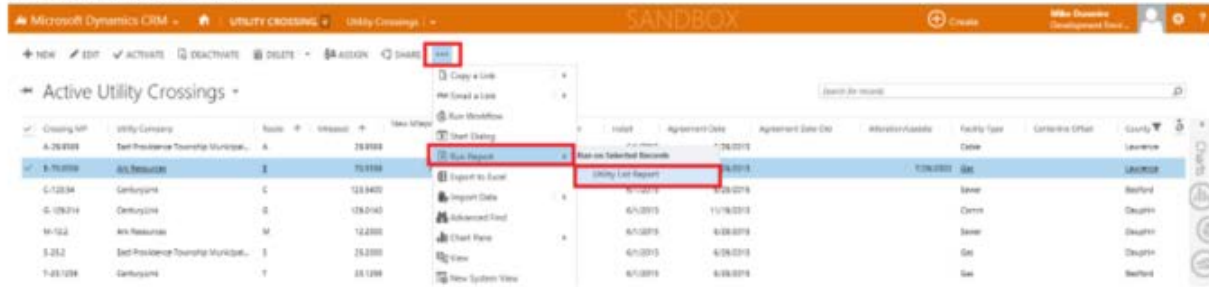
- On the nav bar, choose the **Utility Crossing** work area, and then choose the tile for the type of record you want (Utility Crossing, Utility Company, etc.). Click the right arrow (on the far right side of the row of tiles) to scroll, and see more tiles for all the types of records available. Or, you can scroll with the mouse wheel.
- Depending on your role, you may see additional tiles as you scroll to the right.

The default screen that you'll see when clicking on an Entity tile is a list of records within that entity. This list is controlled by a **View**. You'll have different Views available to you, allowing you to filter data as needed. Summary information about multiple records can be viewed at once in a list or **grid**. To view complete information or edit a record, you open the record's **form**.

When you choose a tile for Utility Crossings, Utility Companies, and so on, you'll see a list of the records of that record type. You can filter the list of records to see only the records you're interested in, such as all Active Utility Crossings. You can further filter the list by using *Search* or *Advanced Find*.

REPORTS

A Utility List Report was requested and developed for the system. Depending on your role(s) at PTC and your Security Role(s) within CRM, you may see the Run Report button immediately in the Utility Crossings entity, or you may need to click the “...” to expand the option menu. In the image below, we are logged on as System Administrator so there are several additional options. If “Run Report” shows up immediately for you, you can click it to access the Report menu. If not, click “...”, “Run Report”, and click the Report you want to run.



After running a Report, you'll have the ability to save it as several popular document formats such as CSV, PDF, etc. The Report will also contain a Refresh button which allows you to update the data in the report without having to re-run it.

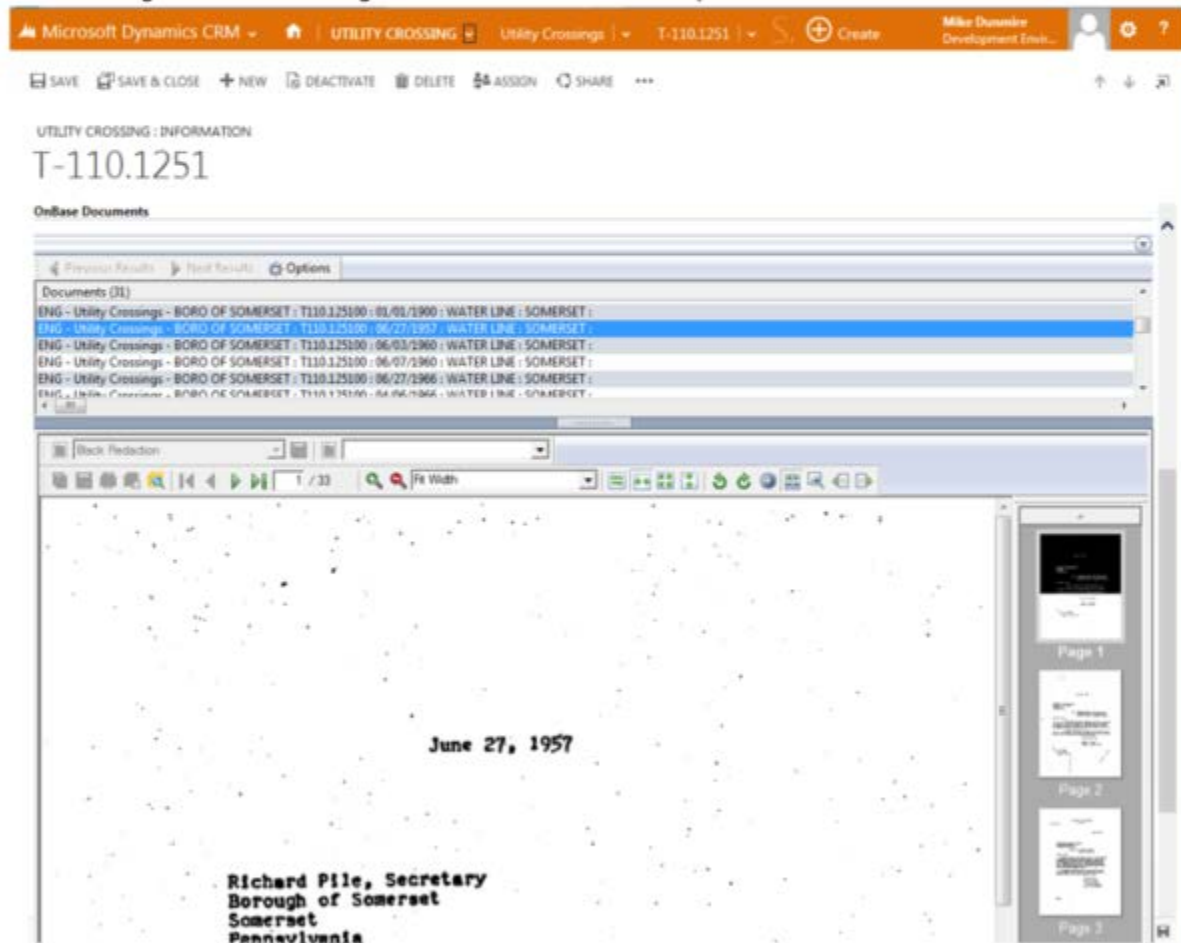
Note: Reports can have a maximum of 960px width before they spill over onto additional horizontal page(s). If you are using Report designer to create a new report, or modify the layout of an existing report, CRM will prompt you if you have exceeded that limit. It is up to you whether to accept it or continue to modify the report to stay under the 960px barrier. Exceeding the 960px limit will not harm anything, but it will result in additional pages if you print the report. For example, if you exceed the 960px limit and the report is 10 pages in length when you run it, your printed report will be at least 20 pages total. The Utility List Report created by Planet for this project is less than 960px.

ONBASE INTEGRATION

A third party program, OnBase, can be accessed through an iframe in CRM. An iframe can be thought of as a 'window' into another system. Therefore, OnBase functionality is not part of CRM, nor is it reliant upon CRM to function. However, in order for CRM to be able to display the OnBase functionality, there is a dependency within CRM that OnBase be running and accessible, and also that the CRM User has access directly to OnBase. This configuration was put in place by the PTC OnBase Administrator prior to go-live of the Utility Crossing CRM application. You, as the CRM User, should not need additional access in order to interact with OnBase via CRM. If you experience any issues with OnBase functionality via CRM, but do not experience issues with CRM itself, please contact your PTC OnBase Administrator.

On the bottom of the Utility Crossing Form, you will find the OnBase iframe. The original spec for this functionality was to use right-click to open from the OnBase menu. However, at the time of this document creation, that functionality was not available from OnBase. That functionality may be available in the future. Please contact your PTC OnBase Administrator with questions concerning this issue.

For training and deployment of the Utility Crossing CRM application, you will still be able to access the OnBase documents by double-clicking them. Double-clicking will cause the document to load up within the same iframe as shown below.



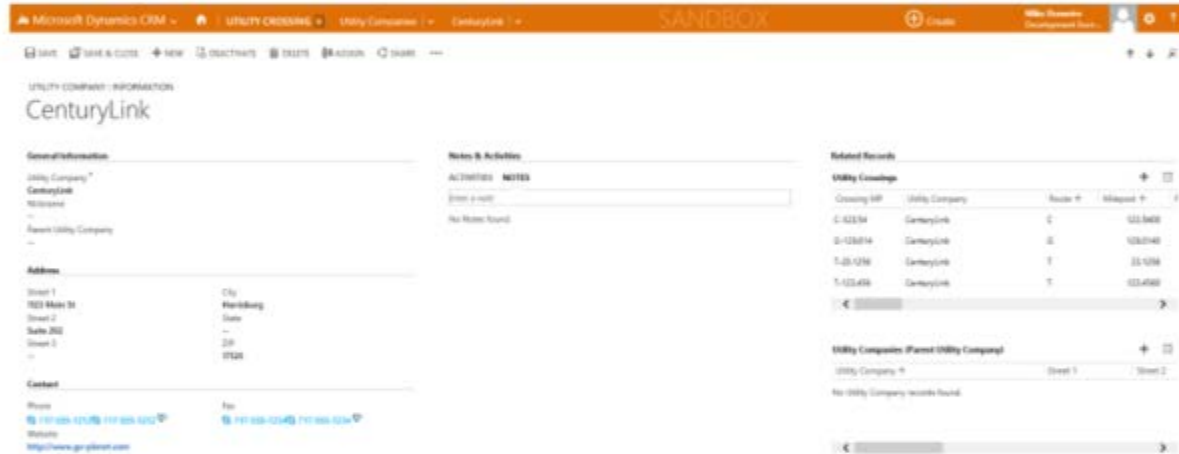
It should be noted that several undesirable behaviors were encountered in regards to the OnBase iframe during testing phase and are listed below. These behaviors/issues are not CRM-related. For further information and/or questions regarding OnBase, please contact your PTC OnBase Administrator:

- Large PDF files may take a while to load and may cause CRM to become sluggish or unresponsive for a period of time.

- OnBase is hosted internally at PTC, while CRM is hosted in the cloud with Microsoft Dynamics CRM. Therefore, when accessing CRM directly from outside the PTC network, there will be no connection to OnBase. This will result in a blank area within the OnBase section of the form. Additionally, you may be presented with a popup alerting you to this scenario.
- The OnBase iframe code may pop up an alert stating “No document found” for Crossing records where no OnBase documents are associated.
- The OnBase iframe may load up a graphic that says “OnBase 13 a Hyland Software solution”, instead of the OnBase document interface.

UTILITY COMPANY

This form contains several fields which describe the Utility Company, including address and contact information. You also have Notes functionality available to you. In the 3rd column, you'll find sub-grids showing all Utility Crossings associated with the Utility Company. Note: This entity contains a self-referencing relationship, allowing you to track Parent Utility Companies. If a Utility Company has a Parent, use the lookup in the General Information section of the form. For Utility Companies that have been defined as a Parent of 1 or more Utility Companies, you will see the Child Utility Companies in the sub-grid in the 3rd column. This functionality did not exist in the old MS-Access database, therefore PTC Utility Crossing personnel will need to update records to take advantage of this new functionality.



General Information

Utility Company
CenturyLink
Millstream
Parent Utility Company

Address

Street 1	City
1023 Main St	Harrisburg
Street 2	State
Suite 202	PA
Street 3	ZIP
	17104

Contact

Phone
1717-635-4276 | 1717-635-6252 | 1717-635-1234 | 1717-635-1234
Website
http://www.gigamon.com

Notes & Activities

ACTIVITIES NOTES
Enter a note
No Notes Found

Related Records

Utility Crossings

Crossing ID	Utility Company	Route #	Milepost #
C-1234	CenturyLink	0	123.567
D-1234	CenturyLink	0	123.567
E-1234	CenturyLink	1	123.567
F-1234	CenturyLink	1	123.567

Utility Companies (Parent Utility Company)

Utility Company #	Street 1	Street 2
No Utility Company records found.		

COUNTY

This form contains 1 field; County. You also have Notes functionality available to you. In the 3rd column, you'll find sub-grids showing all Utility Crossings and Townships/Municipalities associated with this County. Note: As there are a set number of Counties in Pennsylvania, there should be no reason to add new records to this entity.



General Information

County
Dauphin

Notes & Activities

ACTIVITIES NOTES
Enter a note
No Notes Found

Related Records

Utility Crossings

Crossing ID	Utility Company	Route #	Milepost #
D-1234	CenturyLink	0	123.567
E-123	Avx Resources	5	12.345
F-123	East Providence Township Munic...	5	12.345
G-1234	CenturyLink	1	123.456

Townships/Municipalities

Township/Municipality	County
Dauphin	Dauphin

VERTICAL LOCATION

This form contains 2 fields; Vertical Location, and Description. You also have Notes functionality available to you. In the 3rd column, you'll find a sub-grid showing all Utility Crossings associated with this Vertical Location. **Note:** Unless a new Vertical Location is defined in the future, there should be no reason to add new records to this entity.



The **Traffic Ops - Workzone Conflicts** Dashboard appears. This Dashboard has been configured to show 4 charts and 1 data grid as shown below. Additional components could be added to the Dashboard in the future. The data grid includes a View Selector, which allows you to quickly filter the data within the grid, based on any preset System View.



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1. Notice

The information contained within this document is a point in time snapshot of the OnBase systems and applications. This information is intended to provide knowledge on the Commission OnBase world but be aware that the OnBase systems are in a constant state of change as upgrades and projects occur. The Selected Proposer must support the OnBase systems for the duration of this agreement with the understanding that the configuration may not be completely documented in this Appendix N.

2. Overview

This document is a high-level source of reference for the many various versions and application components surrounding the OnBase system, which has been implemented at the Pennsylvania Turnpike Commission.

2.1. OnBase Production Architecture

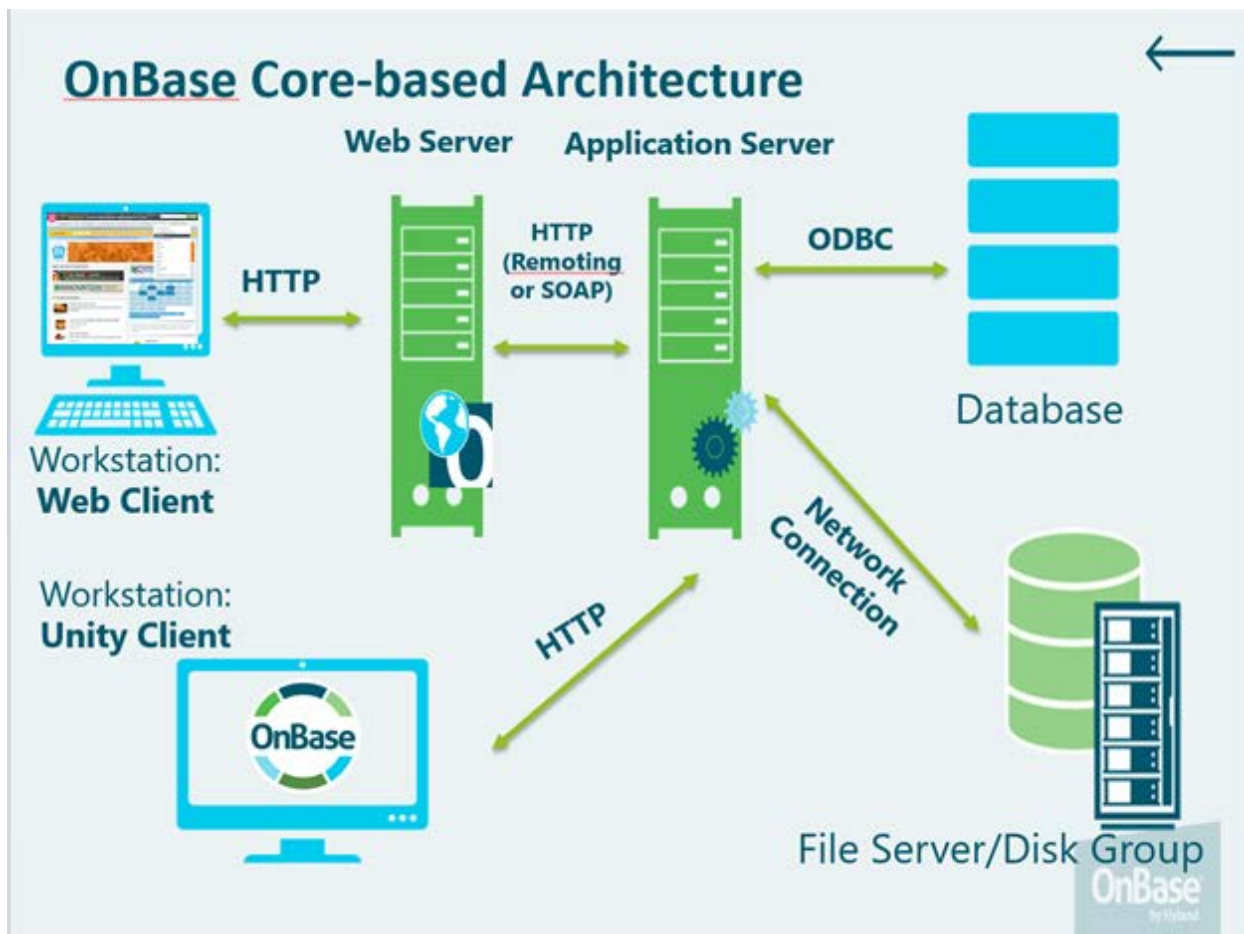


Figure 1. OnBase Production Architecture.

2.2. OnBase Version & OS platform where applicable

Application Name	Current Version Level	Operating System Platform & Version
Hyland Full-Text Service	17.0.175	Windows Server 2016 Standard
Hyland Application Server 17	17.0.175	Windows Server 2016 Standard
Hyland Workflow Timer Service	17.0.175	Windows Server 2016 Standard
Hyland OnBase Studio	17.0.175	Windows Server 2016 Standard
Hyland Data Capture Server	17.0.175	Windows Server 2016 Standard
Hyland Web Server	17.0.175	Windows Server 2016 Standard
Hyland Diagnostics Components	17.0.175	Windows Server 2016 Standard
Hyland OnBase Client	17.0.175	Windows Server 2016 Standard
Hyland BIC Service for SAP ArchiveLink	17.0.175	Windows Server 2016 Standard
Hyland Integration for ArcGIS Server	17.0.175	Windows Server 2016 Standard
Hyland OCR Engine 19.20 P08 for DC Server	19.20.6143.655	Windows Server 2016 Standard
Hyland Unity Client for use with SAP ArchiveLink	17.0.175	Windows Server 2016 Standard
Hyland Distribution Service	17.0.175	Windows Server 2016 Standard
Hyland IDOL Configuration	17.0.175	Windows Server 2016 Standard
Hyland Integration for ArcGIS Configuration	17.0.175	Windows Server 2016 Standard
Hyland OnBase Configuration	17.0.175	Windows Server 2016 Standard
Hyland Connector for SAP ArchiveLink	17.0.175	Windows Server 2016 Standard
Hyland IDOL Server	15.0.5582.657	Windows Server 2016 Standard

Figure 2. Version and OS Platform.

2.3. OnBase UserGroups

1. App_Onbase_Admin	ngs_A	39. APP_OnBase_FE_R
2. Accident Reports Group	23. App_OnBase_Commission_Meeti	40. APP_OnBase_FI_AC_M
3. AP_Export	ngs_R	41. APP_OnBase_FI_AC_NoDel
4. APP_OnBase_AccessSecurity_M	24. App_OnBase_Commission_Meeti	42. APP_OnBase_FI_AC_Scanner
5. APP_OnBase_ACCRPT_C	ngs_Scanner_NoDel	43. APP_OnBase_FI_AC_Scanner_N
6. APP_OnBase_ACCRPT_M	25. App_OnBase_CP_A	oDel
7. APP_OnBase_ACCRPT_R	26. App_OnBase_CP_R	44. APP_OnBase_FI_AC_Utility_Sca
8. APP_OnBase_AdminSvcs	27. App_OnBase_demo	anner
9. APP_OnBase_AllDocs_Audit_R	28. APP_OnBase_ENG_AA	45. APP_OnBase_FI_AC_Viewer
10. APP_OnBase_AP_A	29. APP_OnBase_Eng_Field_S	46. APP_Onbase_Forms_A
11. App_OnBase_AP_Admin	30. App_Onbase_Eng_Indexers	47. APP_Onbase_Forms_Manager
12. APP_OnBase_AP_R	31. APP_OnBase_ENG_M	48. APP_Onbase_Forms_Viewer
13. APP_OnBase_AP_S	32. APP_OnBase_ENG_P	49. App_OnBase_FRICE_R
14. APP_OnBase_AP_Scan	33. APP_OnBase_ENG_R	50. App_OnBase_HR_19_U
15. APP_OnBase_AP_Uilities	34. APP_OnBase_ENG_Review_Gro	51. App_OnBase_HR_19_V
16. App_Onbase_Audit_R	up	52. App_OnBase_HR_Admin
17. APP_OnBase_BAKER_M	35. APP_OnBase_ENG_Review_Mgr	53. APP_OnBase_HR_Audit
18. APP_OnBase_BAKER_R	s	54. APP_OnBase_HR_Audit_Senior
19. APP_OnBase_Bond_A	36. APP_OnBase_ENG_S	55. APP_OnBase_HR_BE_U
20. App_OnBase_CMS_A	37. APP_OnBase_ENG_Util_S	56. APP_OnBase_HR_BE_V
21. App_OnBase_CMS_R	38. APP_OnBase_ESSG_Business_Pr	57. APP_OnBase_HR_CB_U
22. App_OnBase_Commission_Meeti	ocesses	58. APP_OnBase_HR_CB_V

59. App_OnBase_HR_CO_U	92. APP_OnBase_IT_Management	122.APP_OnBase_PR_V
60. App_OnBase_HR_CO_V	93. APP_OnBase_Mail_Dist_Reports	123.App_OnBase_PRMA_M
61. APP_OnBase_HR_DT_U	94. APP_OnBase_Maint_Training_Admin	124.App_OnBase_PRMA_R
62. APP_OnBase_HR_DT_V	95. APP_OnBase_MCS_M	125.APP_OnBase_PSP_M
63. APP_OnBase_HR_EmpPhoto	96. APP_OnBase_MCS_R	126.APP_OnBase_PSP_R
64. App_OnBase_HR_HEB_Admin	97. APP_OnBase_MM_A	127.App_OnBase_PSPReports_R
65. App_OnBase_HR_HEB_Viewer	98. APP_OnBase_MM_R	128.App_OnBase_PSPReports_Support
66. APP_OnBase_HR_IPF_BM_A	99. APP_OnBase_MM_Scan	129.APP_OnBase_RRS_A
67. APP_OnBase_HR_IPF_BM_R	100.App_OnBase_PA_A	130.APP_OnBase_RRS_R
68. APP_OnBase_HR_IPF_BM_S	101.App_OnBase_PA_R	131.App_OnBase_SecTreas
69. APP_OnBase_HR_IPF_P_A	102.APP_OnBase_PAY_M	132.App_OnBase_SP_A
70. APP_OnBase_HR_IPF_P_R	103.APP_OnBase_PAY_R	133.APP_OnBase_TCS_R
71. APP_OnBase_HR_IPF_P_S	104.App_OnBase_PD_A	134.APP_OnBase_Treasury_A
72. APP_OnBase_HR_IPF_SA_A	105.App_OnBase_PD_Dev_PTC	135.APP_OnBase_Treasury_R
73. APP_OnBase_HR_IPF_SA_S	106.App_OnBase_PD_R	136.App_OnBase_Ven_A
74. APP_OnBase_HR_LR_U	107.App_OnBase_PL_A	137.App_OnBase_Ven_Audit
75. APP_OnBase_HR_LR_V	108.App_OnBase_PL_COODesignee	138.App_OnBase_Ven_R
76. APP_OnBase_HR_ME_U	109.App_OnBase_PL_COODesignee_Backup	139.APP_OnBase_WC_Admins
77. APP_OnBase_HR_ME_V	110.App_OnBase_PL_Legal	140.APP_OnBaseDev_IT_Test
78. App_OnBase_HR_OC_U	111.App_OnBase_PL_SecTreasurer_Commission	141.DEMO
79. APP_OnBase_HR_PA_U	112.APP_OnBase_PM_EQ_A	142.DocPopGroup
80. APP_OnBase_HR_PA_V	113.APP_OnBase_PM_EQ_Scan	143.Documentation
81. APP_OnBase_HR_PE_U	114.APP_OnBase_PM_FL_A	144.Engineering_Group
82. APP_OnBase_HR_PE_V	115.APP_OnBase_PM_FL_Scan	145.Engineering_Export
83. APP_OnBase_HR_SA_U	116.APP_OnBase_PM_R	146.MANAGER
84. APP_OnBase_HR_SA_V	117.APP_OnBase_PM_WO_A	147.Payroll
85. App_OnBase_HR_Scan_View	118.APP_OnBase_PM_WO_Add	148.PUBLICACCESS
86. App_OnBase_HR_ScanOnly	119.APP_OnBase_PM_WO_IT	149.Snell_Test
87. APP_OnBase_HR_Training_U	120.APP_OnBase_PM_WO_Scan	150.SQL_ServiceManagerExtract
88. APP_OnBase_HR_Training_V	121.APP_OnBase_PR_M	151.Testing
89. APP_OnBase_HR_Vista_R		152.Web_API_Read_Only
90. APP_OnBase_HR_WC_U		
91. APP_OnBase_HR_WC_V		

Figure 3. OnBase User Groups.

2.4. OnBase List of Document Types with Counts and Date Stored

Doc #	Doc Type	Date Stored	Count
102	Time Sheets	12/27/2006	1,641,491
165	AP - Invoices	9/26/2018	452,976
166	HR - Active Personnel Folders	9/26/2018	343,474
163	AP - Invoices - Backfile	8/19/2008	290,414
164	HR - Inactive Personnel Folders	9/10/2015	288,599

Doc #	Doc Type	Date Stored	Count
101	Engineering Drawings	9/27/2016	116,289
177	ENG - Drawings	5/17/2016	87,861
196	Mail Distribution Group Membership	9/27/2018	77,626
115	SR - Accident Reports	10/2/2017	59,733
158	ENG - Invoices	7/28/2008	49,123

Doc #	Doc Type	Date Stored	Count
203	PD - Property Damage Claim	9/26/2018	48,785
186	SR - PSP Accident Reports	9/27/2018	43,534
122	SR - Fare Evasion Reports	4/26/2016	41,384
179	ENG - Bridges	10/19/2012	41,376
223	DMS - Sign Documents	7/23/2018	29,252
159	ENG - Utility Crossings	9/21/2018	27,380
108	Meeting Minutes - Images	3/7/2001	17,408
157	ENG - Spec Books	11/23/2012	16,757
200	VEN - Vendor Attachments	9/26/2018	15,254
116	SR - Assignment Reports	10/2/2017	12,146
154	ENG - Agreements	7/28/2008	10,923
112	Right Of Way Drawings	12/10/2001	10,659
184	FI - Agreement & Contracts	9/14/2018	10,164
202	PD - Property Damage Claim Backfile	7/31/2014	10,072
150	RR - Box Forms	8/23/2016	9,300
188	FI - Trade Tickets	9/26/2018	6,118
147	PF - Technology Request	7/11/2011	6,016
171	PM - Equipment	9/20/2018	4,628
215	PA - Acceptable Use Policies	8/22/2016	4,478
221	SM - Extracts	7/1/2016	3,698
201	AS - Key Agreement	2/27/2015	3,494
124	BE - Contract Number	5/18/2012	3,357
170	MM - Materials Management Documents	9/27/2018	2,893
176	ENG - Standards	3/7/2011	2,670
210	DMS - Building Documents	7/30/2018	2,462
187	FI - CUSIP Descriptions	9/24/2018	2,352

Doc #	Doc Type	Date Stored	Count
175	PM - Notifications & Workorders	9/25/2018	2,347
174	ENG - Attenuator Photos	9/10/2018	2,232
224	PRMA - Property Management	6/5/2018	1,806
178	ENG - Sign Structures	7/11/2008	1,496
153	CP - Supporting Documents	9/18/2018	812
183	PR - Articles	1/21/2011	789
216	CM - Meeting Minutes	10/31/2017	669
151	CP - Checks	9/26/2018	531
211	DMS - Facility Documents	1/10/2018	440
218	CM - Attachments	10/31/2017	436
129	BE - General Files	4/20/2010	412
193	WC - Archived Documents	5/1/2013	357
181	ENG - Walls	7/11/2008	356
173	ENG - Wide Area Location Photos	2/16/2008	332
195	HR - Hepatitis B Documents	9/25/2018	313
180	ENG - Tunnels	7/10/2008	307
148	BE - Agreements	1/18/2012	286
197	MA - Equipment Operator Certification	7/24/2014	269
182	AP - Invoices - Late Archival	2/8/2018	259
106	Agendas	2/15/2018	248
103	Meeting Minutes	2/14/2001	232
131	MCS - Contracts	6/20/2003	210
209	PL - Published Policies	8/6/2018	192
204	RR - Record Classes - Changeable	6/24/2014	182
130	BE - Commission Meetings	7/23/2012	114
207	PL - Changeable Policies	10/18/2017	103
125	BE - Milepost	12/6/2005	80
152	CP - Contracts	4/5/2016	43
121	IT Images	9/12/2013	33

Doc #	Doc Type	Date Stored	Count
126	BE - Interchanges- Service Plazas	4/22/2008	25
220	HR - ACA	3/16/2018	25
127	BE - Utility	11/22/2005	22
199	MA - Training Signin Sheet	7/10/2014	16
172	PM - Functional Location	7/16/2010	12
143	IT PDF Test	1/28/2015	9
118	IT Scanned Documents	5/27/2011	8
114	IT Word Documents	9/21/2004	7
134	Excel - Restroom Inspections	11/14/2002	4
185	HR - Vista Comments	2/16/2010	4
136	Excel -Restaurant Inspections	1/23/2003	3
168	FI - Bond Issues	8/25/2010	3
192	FI - Large Format Documents	5/17/2012	3

Doc #	Doc Type	Date Stored	Count
128	BE - Baker Invoices - Retired 08/18/2005	7/16/2002	2
120	HR - Job Descriptions	12/6/2001	2
191	HR - Performance Evaluations	11/16/2015	2
140	IT - Workflow Test	10/6/2003	2
142	ENG - Survey Monuments	4/23/2003	1
133	Excel Documents - Test	10/2/2002	1
135	Excel -Service Plaza Inspections	10/2/2002	1
205	HR - Temp	6/25/2014	1
111	Onbase Technical Guides	2/15/2001	1
117	Word Documents- Test	10/5/2001	1
GRAND TOTALS			3,810,187

Figure 4. Document Type.

2.5. OnBase Licensing

Code	Name	Type	Quantity	Status	Expires
KEYUPDATE		Non-Chargeable	1		
ARMP11	Archival API Maintenance	Purchased	1	Active	1/31/2019
SBMP11	Bar Code Import for use with SAP ArchiveLink Maintenance	Purchased	1	Active	1/31/2019
OCMPW1	Batch OCR Maintenance	Purchased	1	Active	1/31/2019
SIMPI1	Business Indexing Connector for SAP ArchiveLink Maintenance	Purchased	1	Active	1/31/2019
CLMPW1	COLD/ERM Maintenance	Purchased	1	Active	1/31/2019
CTMPC1	Concurrent Client (1-100) Maintenance	Purchased	100	Active	1/31/2019
SAMPI1	Connector for use with SAP ArchiveLink Maintenance	Purchased	1	Active	1/31/2019
WFMPD1	Departmental Workflow Server Maintenance	Purchased	1	Active	1/31/2019
DPMPW1	Document Import Processor Maintenance	Purchased	1	Active	1/31/2019
DVMPW1	DVD Authoring Maintenance	Purchased	2	Active	1/31/2019
DMMPI1	EDM Services Maintenance	Purchased	1	Active	1/31/2019
FMMP11	E-Forms Maintenance	Purchased	1	Active	1/31/2019

Code	Name	Type	Quantity	Status	Expires
EXMPC1	Export Maintenance	Purchased	1	Active	1/31/2019
IDMPC1	Full-Text Indexing Concurrent Client for Autonomy IDOL Maintenance	Purchased	5	Active	1/31/2019
IDMPI1	Full-Text Indexing Server for Autonomy IDOL Maintenance	Purchased	1	Active	1/31/2019
EGMPI1	Integration for ESRI ArcGIS Server Maintenance	Purchased	1	Active	1/31/2019
OBMPW1	Multi-User Server Maintenance	Purchased	1	Active	1/31/2019
SCMPI1	OLE Viewer for use with SAP ArchiveLink Maintenance	Purchased	1	Active	1/31/2019
PIMPW1	PDF Input Filter Maintenance	Purchased	1	Active	1/31/2019
SDMPI1	Print List and Data Archive for SAP ArchiveLink Maintenance	Purchased	1	Active	1/31/2019
DIMPW1	Production Document Imaging (Kofax or Twain) (1) Maintenance	Purchased	1	Active	1/31/2019
DIMPW2	Production Document Imaging (Kofax or Twain) (2+) Maintenance	Purchased	14	Active	1/31/2019
PBIAI1	Publishing	Purchased	1	Active	1/31/2019
APMPQ3	Query API (Initial 500queries/hour) (OnBase Unity/Core) Maintenance	Purchased	1	Active	1/31/2019
UAMPI1	Unity Automation API Maintenance	Non-Chargeable	1		
UNMPI1	Unity Client Server Maintenance	Non-Chargeable	1		
UNMPI1	Unity Client Server Maintenance	Purchased	1	Active	1/31/2019
UFMPI1	Unity Forms Maintenance	Non-Chargeable	1		
UIMPI1	Unity Integration Toolkit Maintenance	Purchased	1	Active	1/31/2019
WTMPW1	Web Server Maintenance	Purchased	1	Active	1/31/2019
WFMPC1	Workflow Concurrent Client Maintenance	Purchased	1	Active	1/31/2019
WFMPC1	Workflow Concurrent Client Maintenance	Purchased	10	Active	1/31/2019
WFMPW1	Workflow Workstation Client Maintenance	Purchased	3	Active	1/31/2019

Figure 5. OnBase Environment Overview.

3. OnBase Environment

3.1. OnBase Environment Overview

The Commission’s OnBase implementation is version 17.0.1.75 is maintained on-premise.

OnBase Current Server Environment

Production			
CVONBASEP17 OnBase Web Server 	CVONBASEP17 OnBase App Server https://ptcobapp.ptc.local 	PS71WPCHC OnBase Process Server 	CVDB16A Microsoft SQL Server\MSSQL13.MSSQLSERVER\ OnBase  SQL Server
QA			
CVONBASEQ17 OnBase Web Server 	CVONBASEQ17 OnBase App Server https://ptcqaobapp.ptc 	CVONBASEQ17 OnBase Process Server 	CVDB16D Microsoft SQL Server\MSSQL13.MSSQLSERVER\ OnBaseQA  SQL Server
Dvlp			
CVONBASED17 OnBase Web Server 	CVONBASED17 OnBase App Server https://ptcdevobapp.ptc 	CVONBASED17 OnBase Process Server 	CVDB16D Microsoft SQL Server\MSSQL13.MSSQLSERVER\ OnBaseDevelopment  SQL Server

Figure 6. OnBase Current Server Environment.

All changes are made in OnBase’s Development instance, then are moved to the QA (Stage) instance for testing and deployed to Production. In addition, a “Sandbox” environment is available.

3.2. Environment Overview:

Installation Files Storage Location?	G:\OnBase V17Files\InstallationFiles_17\\CVONBASED17\G\$\G:OnBase V17Files\InstallationFiles_17.
Physical location of servers?	PTC - TIP Bldg
Are servers virtualized? (VMWare)? Y/N?	Y - VMWare
Are servers load balanced? If so, describe setup.	N/A

Figure 7. OnBase Environment Overview.

3.3. OnBase Database Server Information

UNC name for Server?	DEV: CVDB16D PROD: CVDB16A
What CPU is in the database server? How many cores?	2CPU's 2cores
What OS is installed? Build Number? SP Level?	WINDOWS SERVER 2016Datacenter
How much RAM is installed in the database server?	8GB
What is the disk and memory configuration?	Onbasedevelopment/OnBaseStaging H: Onbasedevelopment DB/OnBaseStaging DB Storage limit: 149GB I: Logs Storage limit: 20GB
Approximate size of your OnBase Database?	Onbasedevelopment 40GB OnBaseStaging 40GB

What Database and Version is used with OnBase?	SQL SERVER 2016SP1
Microsoft .NET Version	4.5.1,4.5.2
Microsoft Redistributable Package Version	2015version 14.0.23026.0

Figure 8. OnBase Database Information.

3.4. OnBase Application/Web/File Server Information

UNC name/IP for Server?	STAGING: CVONBASES17 DEV: CVONBASED17 QA: CVONBASEQ17 PROD: CVONBASEP17
What CPU is in the file server? How many?	DEV: 2.80GHz 2Core CPU QA: 2.80GHz 2Core CPU PROD: 2.80GHz 2Core CPU
What OS is installed? Build Number? SP Level?	DEV: Microsoft Windows Server 2016Standard (10.0.0) QA: Microsoft Windows Server 2016Standard (10.0.0) PROD: Microsoft Windows Server 2016Standard (10.0.0)
How much RAM is installed in the application server?	DEV: 8GB QA: 8GB PROD: 8GB
What is the disk and memory configuration?	DEV: QA: PROD:
Approximate Size/Number of your OnBase Data Files?	4M+
Microsoft .NET/IIS Version?	.NET 4.6/IIS 10Express
Microsoft Redistributable Package Version	MS Visual C++ Redis. 2005/2008/2010/2012/2013/2015

Figure 9. OnBase Application/Web/File Server Information.

3.5. Backup Procedures

Use	Server Name	IP Address	Backup Schedule	Dev/QA/ Prod
Database	CVDB16D	10.16.4.212	Nightly.	DEV/QA
Database	CVDB16A	10.16.4.107	Nightly.	PROD
Application/File/Web	CVONBASED17	10.16.4.205	Nightly.	DEV
Application/File/Web	CVONBASEQ17	10.16.5.206	Nightly.	QA
Application/File/Web	CVONBASEP17	10.16.6.12	Nightly.	PROD

Figure 10. Backup Procedures.

3.6. Current Licensing

(As of 01/19/2018)

Name	Type	Status	Renewal Date
ARMP11	Archival API	1	1/31/2018
SBMP11	Bar Code Import for use with SAP ArchiveLink	1	1/31/2018
OCMPW1	Batch OCR	1	1/31/2018
SIMPI1	Business Indexing Connector for SAP ArchiveLink	1	1/31/2018
CLMPW1	COLD/ERM	1	1/31/2018
CTMPC1	Concurrent Client (1-100)	100	1/31/2018
SAMPI1	Connector for use with SAP ArchiveLink	1	1/31/2018

Name	Type	Status	Renewal Date
WFMPD1	Departmental Workflow Server	1	1/31/2018
DPMPW1	Document Import Processor	1	1/31/2018
DVMPW1	DVD Authoring	2	1/31/2018
DMMPI1	EDM Services	1	1/31/2018
FMMP11	E-Forms	1	1/31/2018
EXMPC1	Export	1	1/31/2018
IDMPC1	Full-Text Indexing Concurrent Client for Autonomy IDOL	5	1/31/2018
IDMPI1	Full-Text Indexing Server for Autonomy IDOL	1	1/31/2018
EGMPI1	Integration for ESRI ArcGIS Server	1	1/31/2018
KEYUPDATE	Keyword Update	1	
OBMPW1	Multi-User Server	1	1/31/2018
SCMPI1	OLE Viewer for use with SAP ArchiveLink	1	1/31/2018
PIMPW1	PDF Input Filter	1	1/31/2018
SDMPI1	Print List and Data Archive for SAP ArchiveLink	1	1/31/2018
DIMPW1	Production Document Imaging (Kofax or Twain) (1)	1	1/31/2018
DIMPW2	Production Document Imaging (Kofax or Twain) (2+)	14	1/31/2018
PBIAI1	Publishing	1	1/31/2018
APMPQ3	Query API (Initial 500queries/hour) (OnBase Unity/Core)	1	1/31/2018
UAMPI1	Unity Automation API	1	
UNMPI1	Unity Client Server	1	
UNMPI1	Unity Client Server	1	1/31/2018
UFMPI1	Unity Forms	1	
UIMPI1	Unity Integration Toolkit	1	1/31/2018
WTMPW1	Web Server	1	1/31/2018
WFMP11	Workflow Concurrent Client	10	1/31/2018
WFMP11	Workflow Concurrent Client	1	1/31/2018

Figure 11. Current Licensing.

3.7. OnBase Nightly Batch Jobs

Both real-time and scheduled nightly jobs allow OnBase to pull SAP data and push updated back to data to SAP. The Property Damage App dialogue with OnBase similarly is a scheduled nightly job.

Use	Server Name	IP Address	Backup Schedule	Dev/QA/ Prod
Database	CVDB16D	10.16.4.212	Nightly.	DEV/QA
Database	CVDB16	10.16.4.107	Nightly.	PROD
Application/File/Web	CVONBASED17	10.16.4.205	Nightly.	DEV
Application/File/Web	CVONBASEQ17	10.16.5.206	Nightly.	QA
Application/File/Web	CVONBASEP17	10.16.6.12	Nightly.	PROD

Figure 12. Batch Jobs.

3.8. OnBase Functional Areas Implemented – see Business

Processes [OnBase Business Processes](#)

3.9. OnBase Application Version

Version 17.0.1.75.

3.10. OnBase Support Pack Levels

Dev: 17.0.0.75

QA: 17.0.0.75

PROD: 15.0.2.128/ Pending upgrade go-live 5/11/2018to 17.0.0.75

3.11. OnBase Technical Components

Component	Supports				
	User Workstations	Scanning Workstations	SAP	Agile Assets	Dynamics
Hyland Unity Client	X	X			
Hyland Web ActiveX Controls	X				
Kofax Scanning Software		X			
Integration Only/Requires SAP Service Objects Config			X		
No Installed Components/Integration Only			X	X	X
DocPop from Dynamics to Display Documents					X

Figure 13. OnBase Technical Components.

3.12. OnBase Interfaces (see also Exhibit F) [Exhibit F: Interface](#)

Direction	Interfaces	#
Bidirectional	SAP ArchiveLink and DMS send to and receive documents from OnBase	1
Inbound	AgileAssets sends data from Signs, PVMT, Pontis to OnBase; DIP Process uploads documents and data from AgileAssets to OnBase	1
Inbound	Dynamics sends PD Claims, Employee Photos to OnBase; DIP Process uploads documents and data from AgileAssets to OnBase	1
Bidirectional	Scanning Workstations (use Thick/Unity Client/Kofax)	1
Bidirectional	User workstations use Web or Unity Client for Document Viewing	1

Figure 14. OnBase Interfaces.

3.13. OnBase Business Processes and Sub-Processes

Business Process	Scenario	Sub-Processes	Business Process Count	Sub-Process Count
Archival The IT Standards	SAP Late Archival (PM, AP, NM, FI)	N/A	1	
	SAP Late Archival (HCM)	<ul style="list-style-type: none"> • General Documents • Employee Photos • W2s – PDF COLD • Performance Evaluations – PDF COLD 		
	Treasury	N/A		1
	Policy Letters	N/A		1
Access and View	View Attached Documents		1	
Attach Documents	Attach new documents (Create – Store business document)	<ul style="list-style-type: none"> • Document Maintenance - OAAD • Early Storage - OAWD • HCM attachments - OAWD 	1	
Scan Requirements for Scanned Requirements for Scanned 1	N/A	N/A	1	
Sweep	N/A	N/A	1	
DIP Using the Document	N/A	N/A	1	
Autofill Keyword Set Update	N/A	N/A	1	

Figure 15. OnBase Business Processes and Sub-Processes.

3.14. OnBase Reports

Report Name	Report Location	#
Disk Group Report	\\Cvonbased17\g\$\OnBase V17Files\BackupsFromV15\Current OB Config Reports	1

Report Name	Report Location	#
Document Type Report	\\Cvonbased17\g\$\OnBase V17Files\BackupsFromV15\Current OB Config Reports	1
User Group Report	\\Cvonbased17\g\$\OnBase V17Files\BackupsFromV15\Current OB Config Reports	1
User Report	\\Cvonbased17\g\$\OnBase V17Files\BackupsFromV15\Current OB Config Reports	1

Figure 16. OnBase Reports.

3.15. OnBase Enhancements

Update Sets: six (6).

#	OnBase Enhancements															
1	<p>Changes to OnBase configuration for Engineering document type Utility Crossings. In order to facilitate import of imaged documents into OnBase, the following changes were completed:</p> <ol style="list-style-type: none"> 1) Remove Required status from the County, Facility and Municipality keywords 2) Change the text caption for the Utility Keyword to Utility Name 3) Change the text caption for the UTIL Document Category Keyword to Utility Document Category <p>The first change does not impact any processes in OnBase at all. The only difference in processing is that documents will be able to be imported into OnBase without a value for these three keywords. Butch Loncar in Engineering has requested that this be done in RITM0018377.</p> <p>The second change does not impact any process in OnBase either. The only integration existing for the Utility Crossing document type is the CRM Utility Crossing application. This application accesses documents in OnBase using the Route and Start Milepost keywords. Changing the name of the Utility Keyword to Utility Name does not impact this functionality.</p> <p>The changes allow the imaged copies of Engineering Utility Crossing documents to be placed into OnBase where PTC staff can access them for review and for other business purposes.</p>															
2	<p>Request for additional HR Document Names</p> <p>Four new Document Names are to be added to OnBase and SAP for attachments to Personnel in SAP.</p> <table border="1"> <thead> <tr> <th>Document Name</th> <th>Infotype</th> <th>SAP Document Name</th> </tr> </thead> <tbody> <tr> <td>Company Car Fringe</td> <td>15</td> <td>ZHRCOMPCAR</td> </tr> <tr> <td>Uniform Fringe/Allowance</td> <td>15</td> <td>ZHRUNIFORM</td> </tr> <tr> <td>Mobile Device Reimbursement</td> <td>14</td> <td>ZHRMOBLDEV</td> </tr> <tr> <td>Company Property Related</td> <td>40</td> <td>ZHRCOMPPRP</td> </tr> </tbody> </table>	Document Name	Infotype	SAP Document Name	Company Car Fringe	15	ZHRCOMPCAR	Uniform Fringe/Allowance	15	ZHRUNIFORM	Mobile Device Reimbursement	14	ZHRMOBLDEV	Company Property Related	40	ZHRCOMPPRP
Document Name	Infotype	SAP Document Name														
Company Car Fringe	15	ZHRCOMPCAR														
Uniform Fringe/Allowance	15	ZHRUNIFORM														
Mobile Device Reimbursement	14	ZHRMOBLDEV														
Company Property Related	40	ZHRCOMPPRP														
3	<p>HR Document reassignment of category</p> <p>HR Documents in OnBase and attached to SAP are group by category to enable setting of permissions in the OnBase system. HR has requested that the Sick/Vacation Leave document type which is currently in the Benefits Category be moved to the Payroll Category.</p> <p>In SAP, transport ED2K901386 moves the SAP Global Document Type for Sick/Vacation Leave from the Benefits Group into the Payroll Group.</p>															
4	Full Text Search functionality testing															

#	OnBase Enhancements
	OnBase supports the ability to enable selected document types to be indexed using the full text search functionality of the Autonomy Search product. This test ensures that the full text search function works for PTC Policy Letters.
5	<p>Vendor Attachment Process</p> <p>Documents in OnBase are attached to Vendor Records in SAP. A recent update to this process provided a mechanism for attaching the same document in OnBase to multiple vendor records in SAP during the initial document import.</p> <p>A problem was discovered where documents in OnBase were being attached to SAP vendors that were not selected for this. Analysis of the scenario when the documents were scanned and brought into OnBase showed that there was a flaw in the workflow script.</p>

Figure 17. OnBase Enhancements.

4. Release Metrics

4.1. Quarterly Patching and Associated Releases/Year:

- Releases: four (4)

4.2. Yearly Number of Upgrades

- Upgrades: one (1)

4.3. Yearly Number of Releases

- Releases: five (5)

5. Miscellaneous

5.1. Service Levels

Currently there are no Service Level Agreements or Service Level Objectives in place between the IT department and the Commission’s business units for OnBase.

5.2. User Application Security Management (User ID, Passwords, Profile)

5.3. Miscellaneous – Supplementary Equipment

Nine (9) workstations utilizing licenses (unidentified) Scanners with Kofax Scanning Software.

6. Using the Document Import Processor

The PTC uses an OnBase component named Document Import Processor (DIP) to provide a mechanism where documents created by or received from external applications and sources can be batch imported and indexed into OnBase.

This document describes the requirements for using DIP with the PTC.

6.1. DIP Text File

The DIP text file is how OnBase locates files that are to be imported and receives information to be used as Keywords for each document. At the PTC, we use a Tagged file format. The image below is an example of a DIP text file to import a Property Management document.

```

BEGIN:
OBDOCTYPE: PRMA - Property Management
OBFILETYPE: 16
OBFULLPATH: G:\Property Management\Test.pdf
ROUTE: A
STARTMP: 0.45
ENDMP: 0.45
DIRECTION: NB
DESCRIPTION: Surplus Parcel 639
DESCRIPTION: Thomas Ostroski Land Purchase Request
CATEGORY: Correspondence
STARTYEAR: 1992
ENDYEAR: 1992
DOCDATE: 12/31/1992
ROWNO: 640A
SURPLUSPARCEL: 639

```

The first entry on each line is in capital letters and ends with a colon (:). This entry is a Tag. It tells OnBase what the purpose of each line is. The remainder of the line is the value associated with the Tag. The first four Tags shown in the image above are used with all DIP text files at the PTC.

The BEGIN: tag indicates that a new document is to be processed into OnBase. There is no value for a BEGIN: tag.

The OBDOCTYPE: Tag tells OnBase which document type is to be imported into OnBase. The value for this Tag MUST be entered using the exact name that is configured into OnBase. This value will be provided by an OnBase Administrator. For Property Management Documents, this value must be PRMA - Property Management.

The OBFILETYPE: Tag tells OnBase which file format is to be used when importing documents into OnBase. The value for this Tag MUST be entered as a number value for each document and should be set based on the file format. The most common file types used at the PTC for documents being imported into OnBase are shown below. Looking at the sample DIP Text data shown above, the tag OBFILETYPE: has a value of 16 which means that the document will be imported as a PDF document.

File Type #	File Type Description	File Extensions
1	Text Report Format	.txt
2	Image File Format	.tif, .jpg, .gif, .bmp
15	Rich Text Format	.rtf
16	PDF	.pdf

The OBFULLPATH: Tag tells OnBase where the file to be imported is located. This can be formatted using a

drive letter reference or a UNC filepath reference to the share name. Keep in mind that the maximum length for a path reference is 260 characters. In the example shown above, the document to be imported is named Test.pdf and will be in the Property Management folder on the G drive of the OnBase server. See the next section on File location for more information about this value.

The remainder of the Tags in the DIP Text file are specific to the document type being processed. Documentation of the specific Tags used for a given document type will be provided in another section of this document.

The DIP Text file **MUST** be located in the root of the Import Folder on the OnBase server. See the next section of this document for more information about this folder. The filename of a DIP Text file must follow a set format. For a DIP Text file for Property Management documents, the name of the DIP text file must be in the following format:

PRMA_???.txt

Where: PRMA_ is a prefix used for all DIP text files

??? can be replaced with any unique value that would distinguish it from other DIP text files.

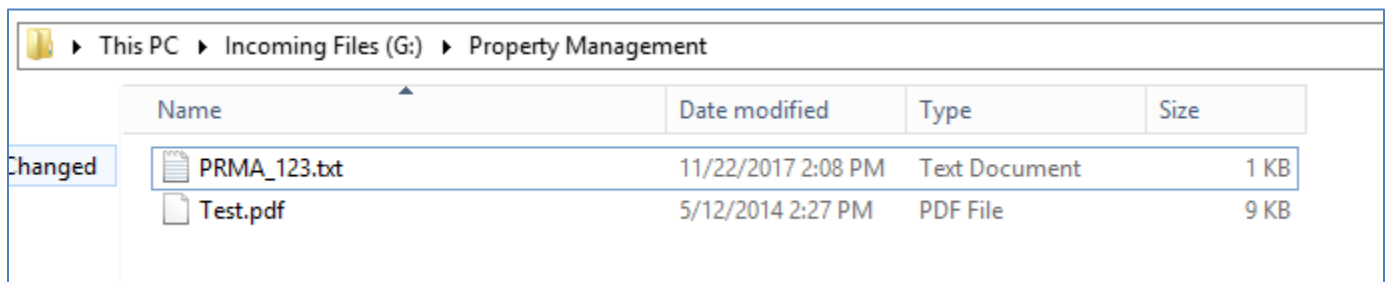
Examples that might be used for this are processing batch numbers or date and timestamps.

.txt is the suffix that must be used for all DIP Text files.

File Location

For each type of document processed into OnBase using the DIP, a shared folder is created on the G Drive of the OnBase application server. This is the Base folder for a DIP Process.

In the image below, the Property Management folder on the G Drive has been accessed. In this case, the DIP text file (PRMA_123.txt) and the document to be imported into OnBase (Test.pdf) are both located in the root folder.



The OBFULLPATH: Tag for this structure would look something like this.

```
BEGIN:  
OBDOCTYPE: PRMA - Property Management  
OBFILETYPE: 16  
OBFULLPATH: G:\Property Management\Test.pdf
```

An alternative structure for the import folder could look like the image below. The documents to be imported into OnBase are in subfolders tagged with a Batch name. The DIP text files for these documents use the Batch name as part of the file name. Note that all DIP Text files **MUST** be in the root of the import base folder so that OnBase can find and process them. OnBase does not parse subfolders to locate DIP text files.

Name	Date modified	Type	Size
Batch1	11/22/2017 2:47 PM	File folder	
Batch2	11/22/2017 2:47 PM	File folder	
PRMA_Batch1.txt	11/22/2017 2:08 PM	Text Document	1 KB
PRMA_Batch2.txt	11/22/2017 2:08 PM	Text Document	1 KB

Using this structure, the OBFULLPATH: Tag would look something like the image below. While you can use additional layers of subfolders, there is a limitation of 260 characters for the full path reference.

```
BEGIN:
OBDOCTYPE: PRMA - Property Management
OBFILETYPE: 16
OBFULLPATH: G:\Property Management\Batch1\Test.pdf
```

6.2. Transferring Data to the PTC

The most common method for transferring scanned documents and DIP Text files to the PTC is to place all files into a folder and then compress that folder into a ZIP file. Keep in mind that the structure of the folders within the resulting ZIP file should follow one of the formats in the previous section. The DIP Text files MUST extract to the root folder of the target import folder.

To transfer the ZIP file to the PTC, we can use one of two options.

- 1) If your organization has an SFTP Server, you can place the ZIP file there and provide the PTC with the address of your service and credentials to access the file.
- 2) If your organization does not have an SFTP server, the PTC can set up an account on BOX.COM using the PTC's subscription. A request for access will need to be submitted to PTC Security and access credentials will be provided to you.

6.3. Transferring Revised Data to the PTC

Once the initial data is received by the PTC, we will import the data into a staging environment and conduct Quality checks before importing into our production OnBase instance. The vendor will be notified of any documents that need attention. When uploading revised data sets, please replace the entire set of batches of zipped documents on the SFTP server rather than just uploading the revised files, to facilitate easier updates in our staging environment.

Document Type Specific Tags

The following image of a DIP Text file displays the Tags for importing Property Management documents into OnBase.

```
BEGIN:  
OBDOCTYPE: PRMA - Property Management  
OBFILETYPE: 16  
OBFULLPATH: G:\Property Management\Test.pdf  
ROUTE: A  
STARTMP: 0.45  
ENDMP: 0.45  
DIRECTION: NB  
DESCRIPTION: Surplus Parcel 639  
DESCRIPTION: Thomas Ostroski Land Purchase Request  
CATEGORY: Correspondence  
STARTYEAR: 1992  
ENDYEAR: 1992  
DOCDATE: 12/31/1992  
ROWNO: 640A  
SURPLUSPARCEL: 639
```

First, here are a couple of general guidelines for using Tags in a DIP Text file.

If a given document does not have a value for one of the Tags, that Tag does not need to be included. Alternatively, the Tag can be included with no value provided. This makes the two following examples functionally the same.

```
DOCDATE: 12/31/1992  
ROWNO: |  
SURPLUSPARCEL: 639
```

```
DOCDATE: 12/31/1992|  
SURPLUSPARCEL: 639
```

If you have multiple values for a given Tag, you can replicate that tag multiple times with a single value for each instance of the Tag. In the following example, the document is related to two Right of Way Numbers. Each ROW# should be entered on a separate line as shown below. Do not enter them as comma separated values in a single line (640A, 641A). Doing so will make it harder to search for documents by ROW#.

```
DOCDATE: 12/31/1992  
ROWNO: 640A  
ROWNO: 641A  
SURPLUSPARCEL: 639
```

If you have a text string that is too long to fit into the Keyword defined by a Tag, that string can be split into two or more strings that can each be placed into an instance of that Tag. In the following example, the description is split across two instances of the Description Keyword. For Property Management documents, the Description keyword is limited to 250 characters in length for each instance.

```
DIRECTION: NB  
DESCRIPTION: Surplus Parcel 639  
DESCRIPTION: Thomas Ostroski Land Purchase Request  
CATEGORY: Correspondence
```

Some Tags may have a specific format that must be used for the value. An example of this is a date. The standard configuration for an OnBase DIP is to use the mm/dd/yyyy format. Use of a four-digit year is required

to ensure proper indexing of the document.

ENDYEAR: 1992
DOCDATE: 12/31/1992
ROWNO: 640A

The following are the specific DIP Tags for a Property Management document.

ROUTE:

The Route is a single character designator used to indicate which PTC controlled roadway the document relates to. Examples of valid routes for Property Management documents are:

- T – Mainline
- A – Northeast extension
- G – Greensburg Extension – Amos K Hutchinson
- M – Mon-Fayette
- B – Beaver Valley
- S – Southern Beltway

STARTMP:
ENDMP:

For Engineering documents related to objects on the roadway, both a start and end milepost are used. If a document relates to an object that only needs one milepost, use the same value for both the start and end milepost Tags. The format of a Milepost is 123.45.

DIRECTION:

The Direction Tag indicates which compass directions the travel lanes associated with the Property are moving in. Valid Directions for Property Management documents are:

- NB
- SB
- EB
- WB

DESCRIPTION:

The Description Tag provides a non-structured way to document the purpose of the document being brought into OnBase. The Description keyword is limited to a length of 250 characters. If the description for a document exceeds this length, the description can be split into two or more strings (preferably on a word boundary) with each substring entered with its own DESCRIPTION: Tag.

CATEGORY:

The Category is a text value that is limited to a predetermined list of valid values. For Property Management documents, valid values for Category are:

- Appraisals
- Contracts
- Correspondence
- Court Decisions
- Deeds
- Drawings
- Lease Agreements
- Photos
- Takings

STARTYEAR:
ENDYEAR:

Backfile documents for Property Management will be imaged by folder with all pages within the folder being included in a single file. Since these documents can span a period of years, we need to capture the time period for retrieval and for Document Retention purposes. It has been decided that for backfile processing, the year of the oldest (STARTYEAR) and the most recent (ENDYEAR) will be captured. The year should be represented as a four-digit number such as 1997 or 2017.

DOCDATE:

The DOCDATE Tag is used to provide OnBase with a date value from the document that can be used for Records Retention purposes. The required format for this keyword is mm/dd/yyyy. For backfile documents where the actual document date of the most recent document in a file is not known, use December 31st of the ENDYEAR tag. For example, if the ENDYEAR tag for a document is 1997, make the DOCDATE tag value 12/31/1997.

ROWNO:

A Value assigned by the PTC on acquisition of a property. The value for this keyword is alphanumeric and up to 10 characters in length.

SURPLUSPARCEL:

A Value assigned by the PTC on acquisition of a property. The value for this keyword is alphanumeric and up to 10 characters in length.

7. Requirements for Scanned Image Import into OnBase Engineering Drawings

This document outlines the requirements for importing externally scanned images into the PTC OnBase system.

Media Requirements:

Submissions of scanned images will be on CDR media. Each CDR will be labeled with the following:

1. The name of the organization who scanned the images
2. The date that the CDR was created for submission to the PTC
3. A unique batch number that will be agreed on between the organization who performs the scanning and the PTC Engineering Department.

The format of the CDR should be as follows:

- A folder will be created on the CDR called **Images**. This folder will contain all scanned images that are being submitted to the PTC for import into the OnBase system.
- An Import Text File will be created in the root directory of the CDR and should be named “**IMPORT.TXT**”. This file will contain the required information for importing and indexing the scanned images into the OnBase system. The contents and format of this text file are described below.

Image Format:

All scanned images will be saved as Group 4TIFFs.

Import Text File Format:

The text file has a specific format that must be followed in order for the images to be successfully imported into the OnBase system with the correct indexing information. The text file will contain a series of comma separated strings that represent the values listed below:

Column	Value
Document Type	“Engineering Drawings”
Document FilePath	“E:\Images\” + the actual filename
Contract Number	Value supplied by the PTC
Route	Value supplied by the PTC
Start Milepost	Value supplied by the PTC
End Milepost	Value supplied by the PTC
Description	Value supplied by the PTC
Bridge Number	Value supplied by the PTC
Sheet Number	Value supplied by the PTC
Type of Drawing	Value supplied by the PTC

The Document Type column MUST be hard coded exactly as shown.

The Document Filepath is the fully qualified filepath to the associated image.

The remaining items are supplied by the PTC Engineering Department of a worksheet when the documents are submitted for scanning.

Based on the above requirements, the following document demonstrates the correct format:

<Start of text file>

```
"Engineering Drawings","E:\Images\Image1.tif","123", "T","123.45", "123.99","This is a test document","NB-123","1","A"
```

<End of text file>

Note that ALL values in the text record are treated as string values with double quotes. This includes numeric values.

Testing the Import Process:

As with any new process, it is very important to test as early as possible. Therefore, it is required that a Test CDR be created that contains up to 100 scanned images as well as the associated text file be submitted before final approval for batch scanning takes place.

8. Requirements for Scanned Image Import into OnBase Right- Of-Way Drawings

This document outlines the requirements for importing externally scanned images into the PTC OnBase system.

Media Requirements:

Submissions of scanned images will be on CDR media. Each CDR will be labeled with the following:

1. The name of the organization who scanned the images
2. The date that the CDR was created for submission to the PTC
3. A unique batch number that will be agreed on between the organization who performs the scanning and the PTC Engineering Department.

The format of the CDR should be as follows:

- A folder will be created on the CDR called **Images**. This folder will contain all scanned images that are being submitted to the PTC for import into the OnBase system.

- An Import Text File will be created in the root directory of the CDR and should be named “**IMPORT.TXT**”. This file will contain the required information for importing and indexing the scanned images into the OnBase system. The contents and format of this text file are described below.

Image Format:

All scanned images will be saved as Group 4TIFFs.

Import Text File Format:

The text file has a specific format that must be followed in order for the images to be successfully imported into the OnBase system with the correct indexing information. The text file will contain a series of comma separated strings that represent the values listed below:

Column	Value
Document Type	“Right-Of-Way Drawings”
Document FilePath	“E:\Images\” + the actual filename
Route	Value supplied by the PTC
Start Milepost	Value supplied by the PTC
End Milepost	Value supplied by the PTC
Right Of Way #	Value supplied by the PTC
Description	Value supplied by the PTC
Contract Number	Value supplied by the PTC
Sheet Number	Value supplied by the PTC
Type of Drawing	Value supplied by the PTC
Section	Value supplied by the PTC
Original Station to Station	Value supplied by the PTC
Reconstruction Station to Station	Value supplied by the PTC
County	Value supplied by the PTC
Township	Value supplied by the PTC
Deed	Value supplied by the PTC
R/W Monumentation	Value supplied by the PTC
Plan Date	Value supplied by the PTC

The Document Type column MUST be hard coded exactly as shown.

The Document Filepath is the fully qualified filepath to the associated image.

The remaining items are supplied by the PTC Engineering Department of a worksheet when the documents are submitted for scanning.

Based on the above requirements, the following document demonstrates the correct format:

<Start of text file>

“Right Of Way Drawings”,”E:\Images\Image1.tif”;“T”,”123.45”, “123.99”,”123456”,”This is a test

document”, “999”, “1”, “A”, “11”, “888”, “777”, “Dauphin”, “Derry”, “666”, “MMMM”, “12/23/2002”

<End of text file>

Note that ALL values in the text record are treated as string values with double quotes. This includes numeric values. Dates are in MM/DD/CCYY format.

Testing the Import Process:

As with any new process, it is very important to test as early as possible. Therefore, it is required that a Test CDR be created that contains up to 100 scanned images as well as the associated text file be submitted before final approval for batch scanning takes place.

9. The IT Standards Archiving Application for ServiceNow

The IT Standards Archiving Application for ServiceNow is an executable Windows console application written in C# using the Microsoft .NET Framework 4.5.2. This application is used to access IT Standards & Procedures Knowledge Base articles for archiving purposes with the OnBase CMS.

Features

- Configurable user credentials and URLs
- Configurable file paths for saved files
- Deserialization of KB articles
- Application logging and error handling
- RunInfo.xml control file
- Creation of DIP file for OnBase after each run
- Fetching of PDF files for KB articles (Published and Retired)

Installation & Execution

1. Ensure application requirements are met as described below under Configuration.
2. Copy the files located in ITStandardsArchivingDeploy.zip to the installation directory of your choosing.
3. Configure ITStandardsArchiving.exe.config according to the described below under Configuration.
4. Execute the “App.config Encryption Process” described below.
5. Run ITStandardsArchiving.exe by either double clicking the file or executing it from the command prompt.
 - a. Can be used in conjunction with Windows Task Scheduler to run on a set interval... daily for example.

App.config Encryption Process

This process must be executed on the target server after deployment of the application files. This will encrypt the App.config section named secureAppSettings.

1. Ensure Microsoft .NET Framework 4.5.6+ is installed
 - This process uses aspnet_regiis.exe and it must be registered as a valid command in your environment variables.
2. Navigate to your deployment folder.
3. Open a command prompt at this location.
4. Run SecureAppSettings.bat.
5. Ensure no errors are reported in the console / command prompt window.
6. Locate ITStandardsArchiving.exe.config.original in your deployment folder.
7. Delete or move this file to a secure location.

Configuration

Application

- Microsoft .NET Framework 4.5.2 is required.
- The user account running the application must have read/write access to the paths you define in the config file described below.
- Any necessary firewall settings need to be opened to allow for the HTTP/HTTPS communication to ServiceNow.

ServiceNow

- User account with the Knowledge REST User, Knowledge User, and Knowledge Policy Manager roles is required.

RunInfo.xml

- Used to control date times for query batches for only picking up deltas from a specified date.
- This file is updated automatically by the application.
- These dates are used in conjunction with the ServiceNow sys_updated_on field for each KB article.
- <FirstRunDate>
 - The date the application was ran first.

- If this is empty the application will return everything from the REST API.
- <LastRunDate>
 - The date the application was ran last.
 - If this is empty the application will use FirstRunDate and return anything from FirstRunDate to now (current application run time).
 - Otherwise it will return anything from LastRunDate to now (current application run time).

App.config (ITStandardsArchiving.exe.config)

<log4net>

This application uses log4net for its logging functionality, which can be configured within the <log4net> config section. More information can be found at <https://logging.apache.org/log4net/>.

- <appender name="RollingFile" type="log4net.Appender.RollingFileAppender">
<file value="ITStandardsArchiving.log" />

</appender>

- Set file value to the file path and filename of where you would like the log file to be saved to.

<secureAppSettings>

This is where any secure data should be stored (username, password, base instance url). This configuration section will be encrypted once the Encryption Process described above is completed.

- <add key="ServiceNowCredentials" value="user:password"/>
 - The username and password used to access the ServiceNow REST API
- <add key="ServiceNowBaseUrl" value="https://paturnpike.service-now.com"/>
 - The url used to access the instance of ServiceNow.

<appSettings>

This is the main configuration section for the application.

- <add key="GetKBResultPath"
value="/api/now/table/kb_knowledge?sysparm_query={OptionalRunInfoParameter}workflow_state=published^ORworkflow_state=retired^kb_knowledge_base.title=IT Standards Knowledge Base&sysparm_fields=sys_id,number,u_parent_standard,short_description,published,sys_updated_o

n,u_synopsis,u_document_type,text,u_last_reviewed_date,u_scheduled_review_date,u_version_number"/>

- The URL used to query the REST API. This will filter the results returned. Should not be changed unless absolutely necessary.
- <add key="GetKBArticlePDFPath" value="/kb_knowledge.do?sysparm_view=Archive_PDF&PDF"/>
 - The URL used to get an article in PDF format. This uses a custom view (Archive PDF) for reducing the number of fields available on the PDF.
- <add key="SaveFolderPath" value="C:\YourDir\"
 - The local file path used to save the results of the application.
- <add key="DIPFolderPath" value="YourDir\"/>
 - The local file path used to save the DIP file for the OnBase CMS.
- <add key="RunInfoPath" value="RunInfo.xml"/>
 - The local file path and filename of RunInfo.xml. This file used to save information pertaining to when the application was last run and when it first ran.

10. OnBase Document Types Mapped to AD Groups

There are over 500 Active Directory (AD) groups that are mapped to OnBase. This mapping is how the Commission manages access and permissions to the content within OnBase. The following is an example of these mapping. Please note: Mappings like these below are changed from time to time and this is a point in time snapshot provided as an example only and the Selected Proposer must support the mappings active at any time during this contract.

OnBase Document Types		AD Groups
1. Access Security	AS - Key Agreement	App_Onbase_Admin
2. Access Security	AS - Key Agreement	APP_OnBase_AdminSvcs
3. Access Security	AS - Key Agreement	APP_OnBase_AccessSecurity_M
4. Agreements	ENG - Agreements	APP_OnBase_AllDocs_Audit_R
5. Agreements	ENG - Agreements	APP_OnBase_ENG_Review_Group
6. Agreements	ENG - Agreements	Testing
7. Agreements	ENG - Agreements	APP_OnBaseDev_IT_Test
8. Agreements	ENG - Agreements	APP_OnBase_IT_Management
9. Agreements	ENG - Agreements	APP_OnBase_ENG_R
10. Agreements	ENG - Agreements	App_Onbase_Admin

11. Integration Diagram

OnBase Infrastructure Overview

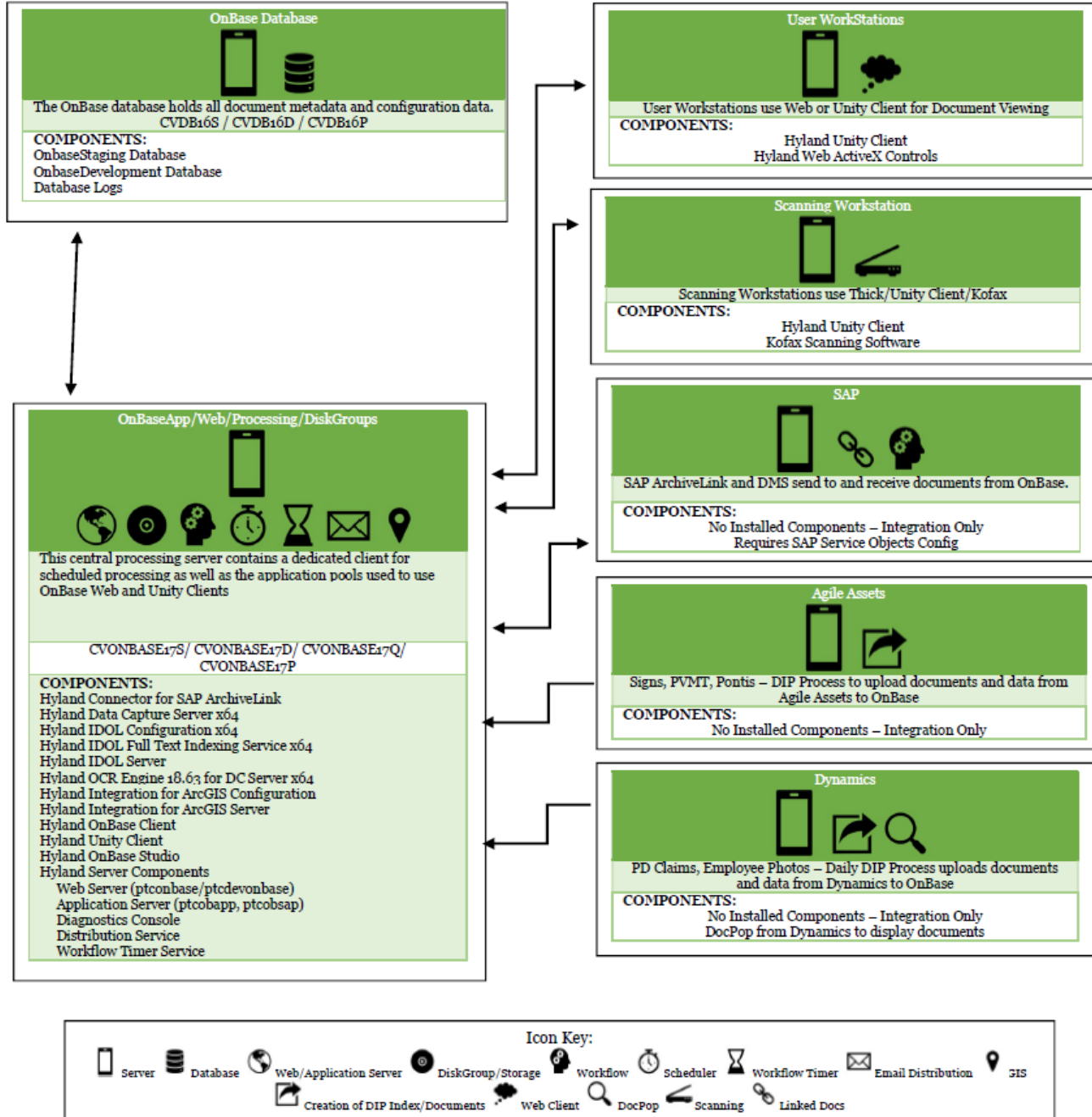


Figure 18. OnBase Infrastructure Overview.

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Summary

The PTC IT department is pleased to announce that the PTC has a new integration tool, Informatica Cloud. Informatica Cloud, categorized as an *Integration as a Platform Service (iPaaS)*, provides the capability of connecting various software applications deployed across cloud-based and on-premise systems and/or databases. Prior to this integration tool, the PTC lacked the ability to perform efficient, real-time integration, did not have an Electronic Data Interchange (EDI) tool, lacked complete and efficient Application Programming Interface (API) management, while lacking scalability and reusability of interface objects.

Informatica Cloud will provide a secure way to integrate cloud-based applications with on-premise ones. It provides the capability of real-time processing, maintainability, scalability, high-performing bulk data synchronization and replication, support of high-volume workloads and reusable assets. Secure Shell (SSH) File Transfer Protocol (SFTP) and data encryption are supported. Informatica Cloud provides full API Lifecycle where APIs can be developed, published, monitored, deprecated and consumed, and stored in an API repository. Outside vendor APIs can be stored in the API repository. System monitoring through alerts is available as well as the ability to create data masks for sensitive data.

Informatica Cloud provides the capability to connect between various on-premise and cloud-based systems as well as databases. These connections are currently available:

- SAP
- Microsoft SQL /GIS
- ServiceNow
- Microsoft Dynamics CRM 365

Informatica Cloud connections can be created as required:

- QLIK
- LDAP / Active Directory
- Oracle / Agile Assets

Examples where this can be used in planned projects, that were not possible before this new integration tool are:

- 1) Real-time processing of sending employee information updates from SAP to Microsoft Dynamics.
- 2) Creating an API that reads SIGNS data from Oracle databases in Agile Assets and sending it to SQL databases used by GIS.
- 3) Pulling a file over SFTP and placing it in a PTC directory.

Simply put, with the introduction of Informatica Cloud, the PTC will now be able to integrate between more systems, in different ways, efficiently and in “real time”.

Learn more from the video...

<https://www.youtube.com/watch?v=K1NX5IIL9j0&feature=youtu.be>

The attached matrix shows a list of available and upcoming connectors.

Technical Details

Informatica Cloud Version Level and OS Platform: TBD

Informatica Cloud Environments – Planned

- Production (PROD): one (1)
- Sandbox 1/Test: one (1)
- Sandbox 2/Development: one (1)

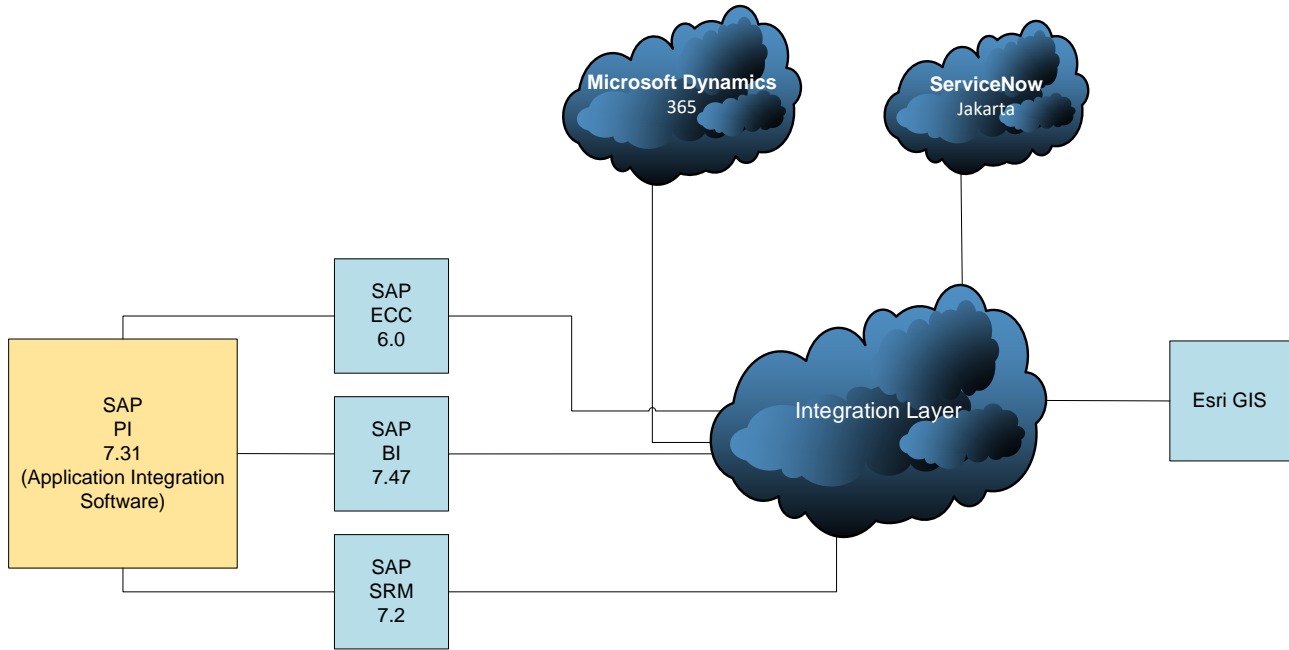
Informatica Cloud Total of Six (6) Endpoints – Planned

1. MS Dynamics CRM 365
2. SAP
3. ServiceNow
4. MS SQL
5. SOAP APIs
6. REST APIs

Informatica Cloud Data Integration Types – Planned

- Batch
- Real-time
- API Management

To-be Interface Setup with iPaaS



Yearly Upgrade Frequency

- **End of Fiscal Year Upgrade:** annually near June 1
- **Enhancement Pack Upgrade:** As needed

Yearly Number of Releases

- **Releases:** Annually

Service Levels

The Informatica Cloud Provider commits that the solution will be operational on a 24 x 7 basis with a minimum of 99.5% availability (3.6 hours per month) including both planned and unplanned downtime. Maximum unplanned downtime shall not exceed .1%.

System Availability Constraints

The I.T. department has an established maintenance/support window with the business, for planned and recurring maintenance activities, each week between the hours of 6:00pm on Thursday through 6:00am on Friday. Major implementations (cutovers) are typically scheduled during holiday weekends so as to minimize the impact on user availability of the system during normal work hours.

Informatica Cloud Interfaces

Active and Planned

PTC INFORMATICA CONNECTORS

Name	Available Now	Planned By June 2019	Available But Not Requested
Sap - RFC/BAPI	X		
Sap - IDOC	X		
Microsoft Dynamics CRM 365	X		
Microsoft SQL - GIS	X		
Service Now	X		
Restful Services		X	
Signs/ Agile Assets - Flat File		X	
Sftp (With Or Without PGP Encryption)		X	
API		X	
Oracle			X
Qlik			X
LDAP			X
Edi Files			X
Csv Files			X
Microsoft Access			X
MySQL			X
Salesforce			X

Link to Complete List of Informatica Connectors:

<https://www.informatica.com/products/cloud-integration/connectivity/connectors.html#fbid=VDam4grIHbb>

Overview Presentation



INFORMATICA CLOUD

New Integration Tool at the PTC

INFORMATICA FEATURES:



The ability to perform efficient, real-time integration



An Electronic Data Interchange (EDI) tool



Complete and efficient Application Programming Interface (API) management

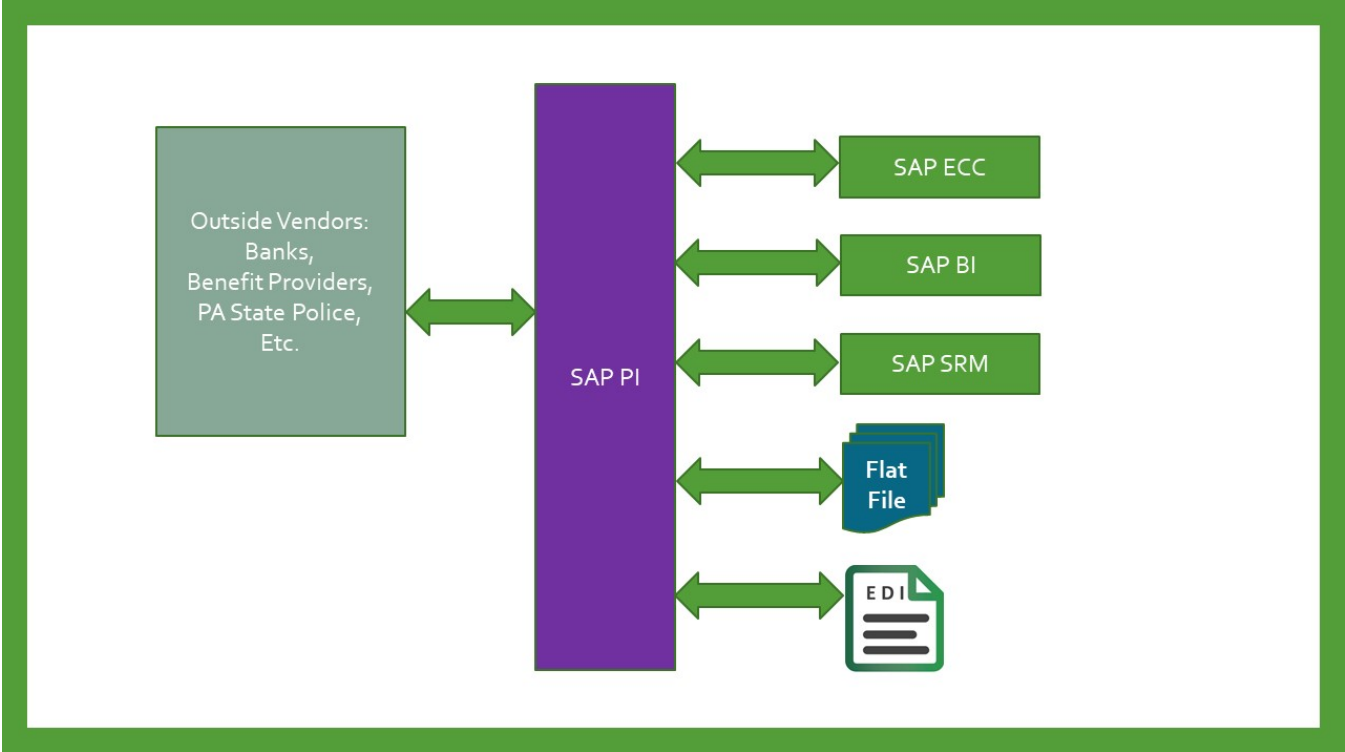


Scalability and reusability of interface objects

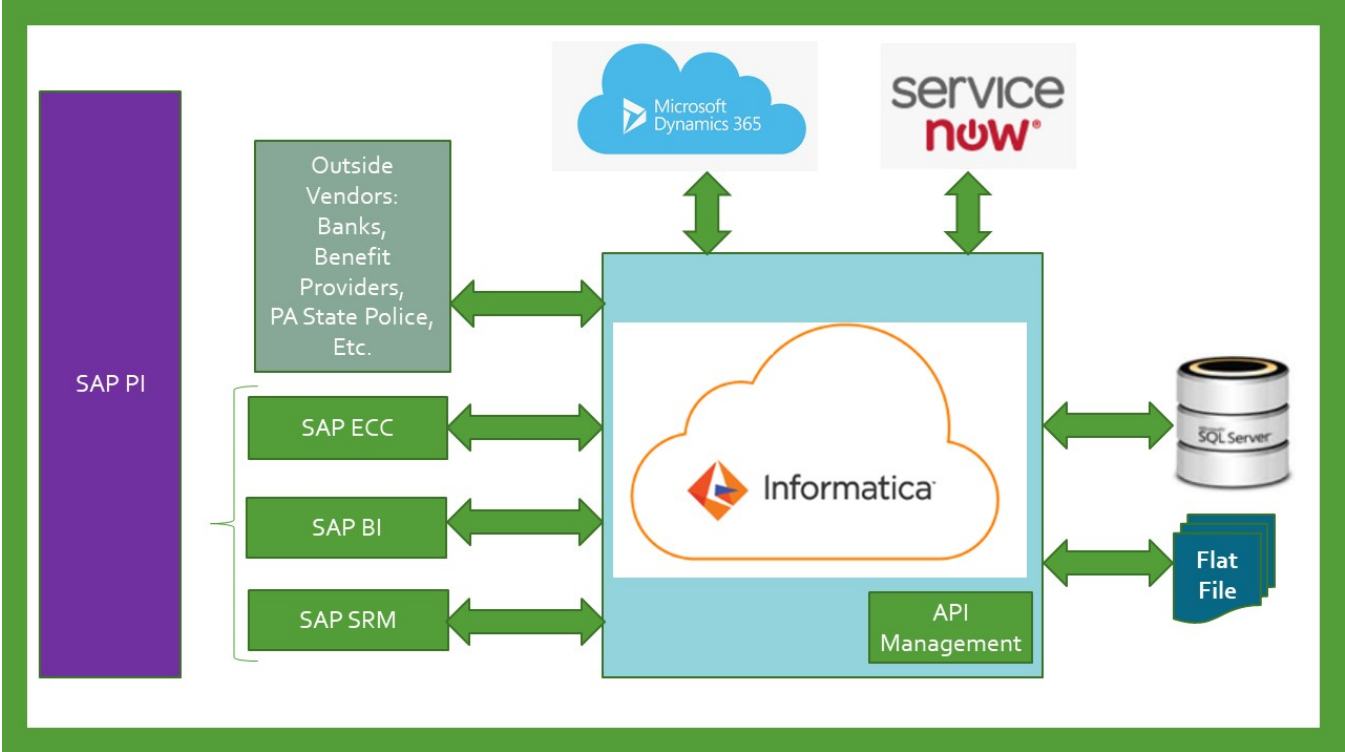
Currently, our Informatica Cloud solution provides the capability of exchanging data between the following systems and databases:

- SAP – ECC, SRM and BI
- Microsoft SQL / GIS
- ServiceNow
- Microsoft Dynamics CRM 365

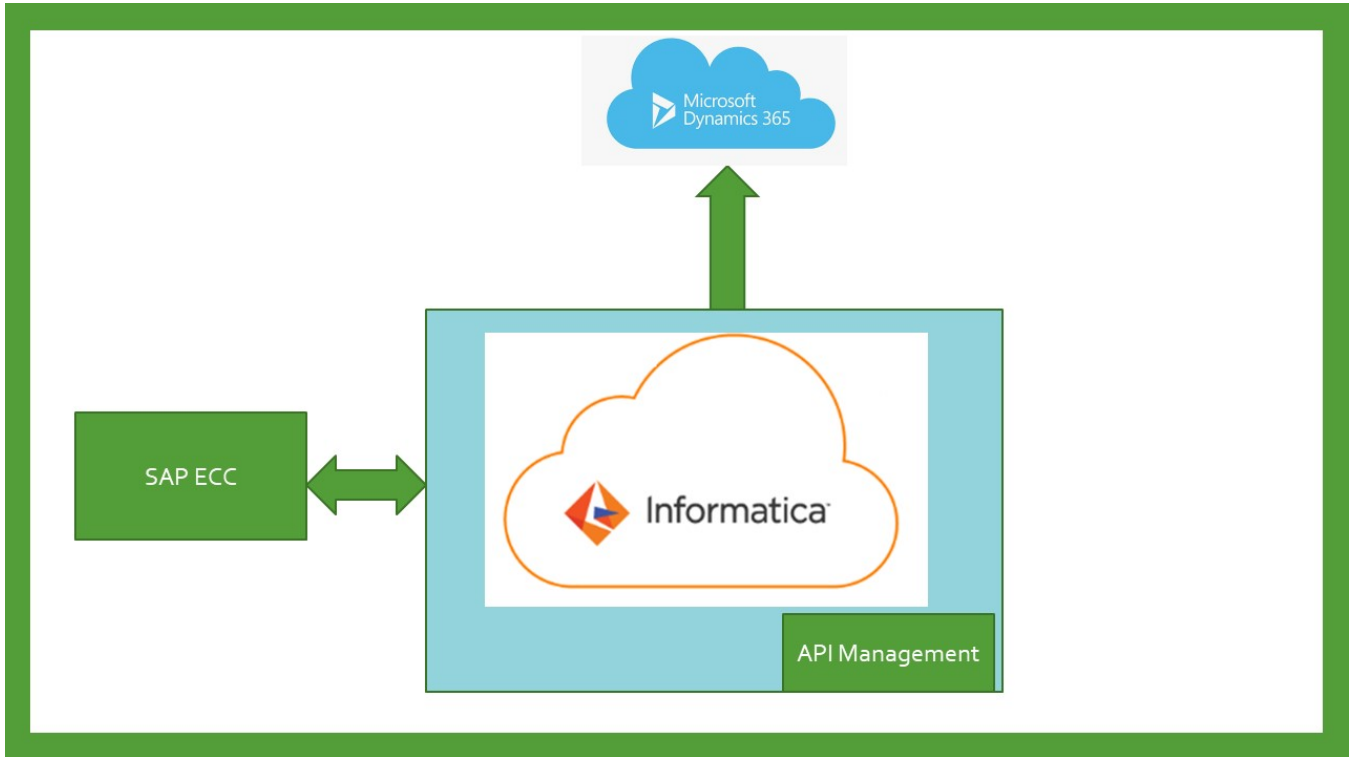
**PTC
ENVIRONMENT
BEFORE
INFORMATICA**



PTC ENVIRONMENT WITH INFORMATICA



EXAMPLE INTERFACE



Informatica Connections

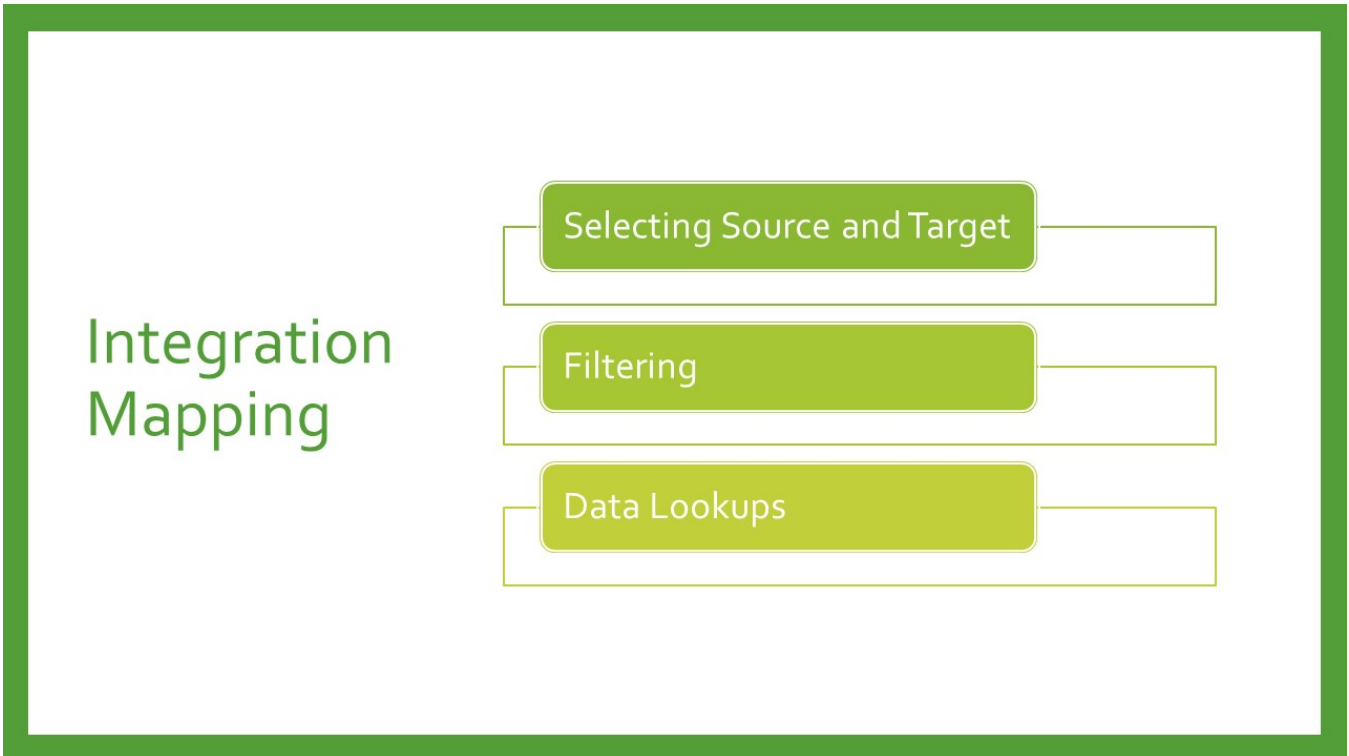
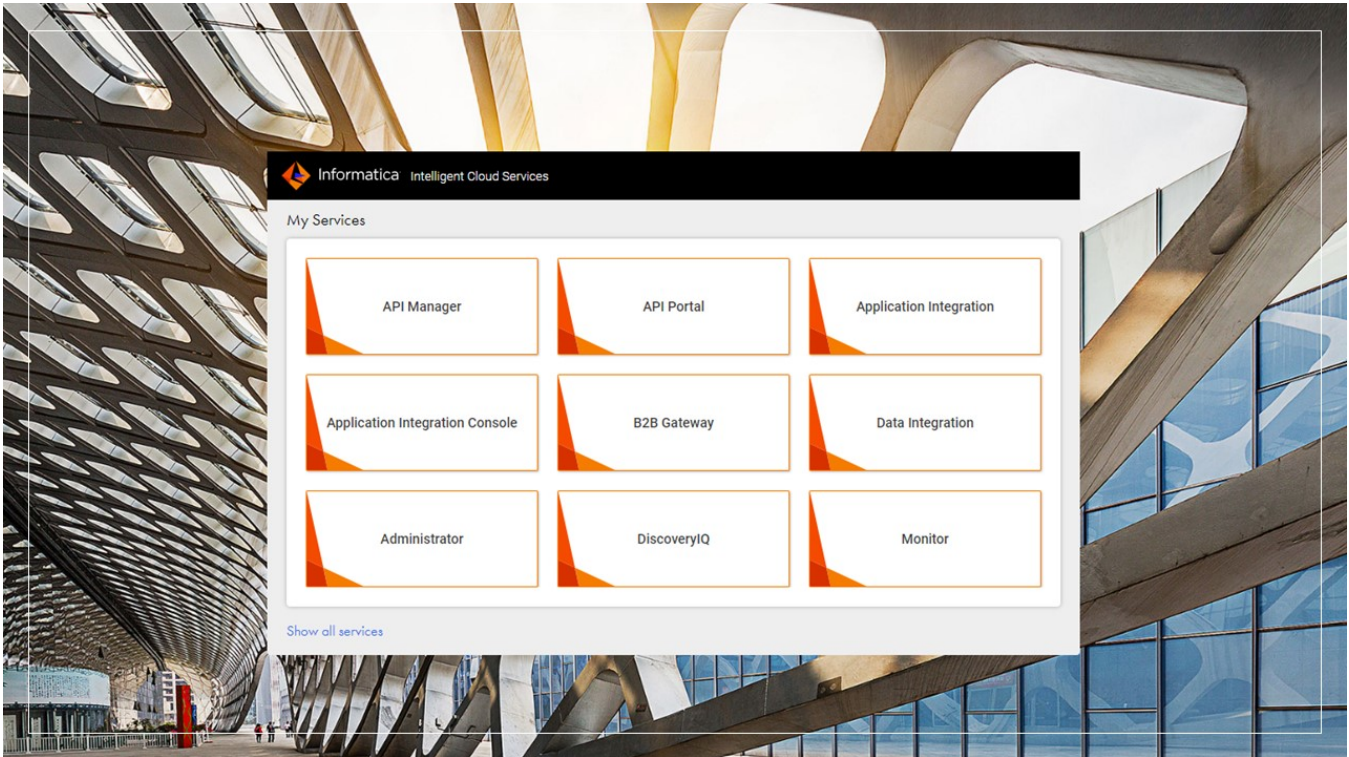
Informatica Administrator ▾

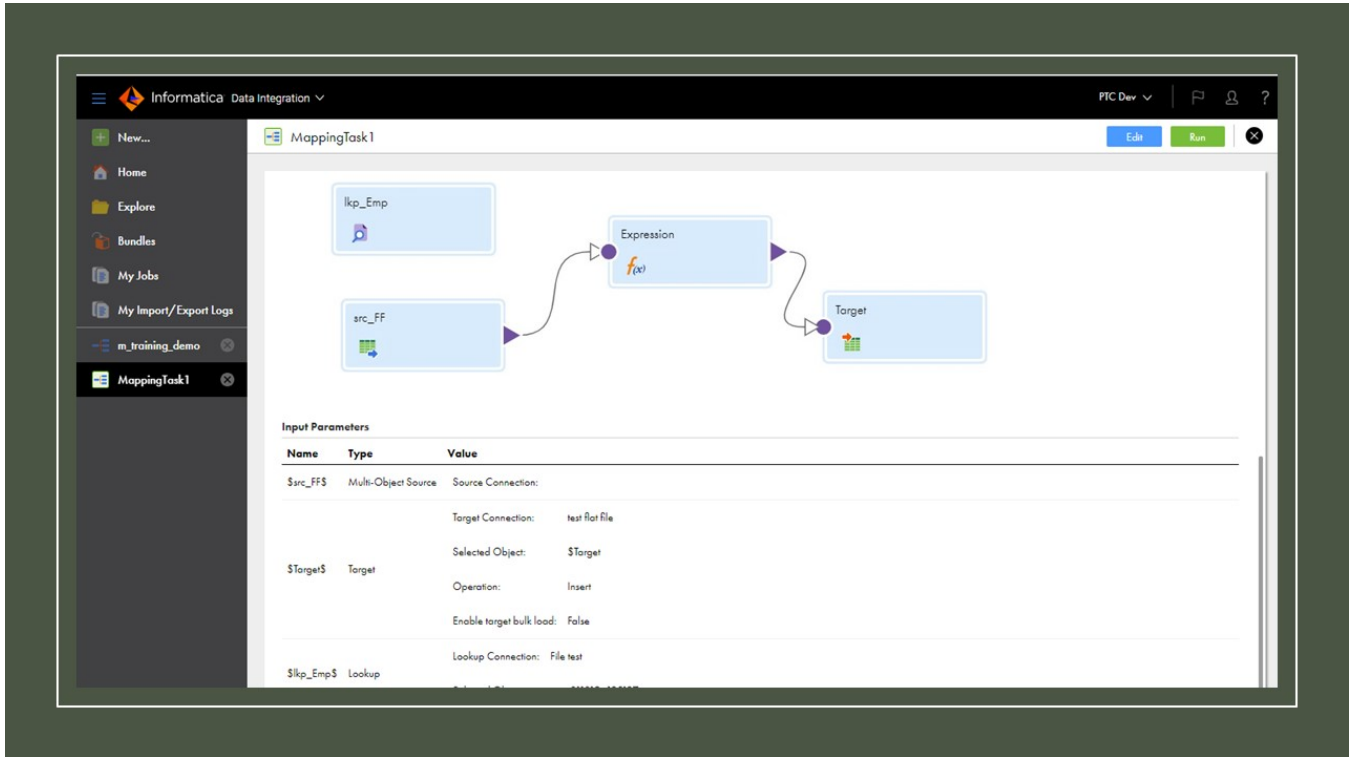
- Organization
- SAML Setup
- Licenses
- Users
- User Groups
- User Roles
- Runtime Environments
- Connections
- Add-On Connectors

Connections

Configure connections to work with applications, databases, and files.

Actions	Name	Type	Runtime Environment
	Dynamics CRM Prod	Microsoft Dynamics 365 for Sales (Informatica Cloud)	Informatica Cloud Hosted Agent
	GIS SQL	SQL Server 2014	CVIPASSOPP
	SAP BP2	SAP RFC/BAPI Interface	CVIPASSOPP
	SAP EP2	SAP RFC/BAPI Interface	CVIPASSOPP
	SAP SP2	SAP RFC/BAPI Interface	CVIPASSOPP
	SNow Prod	ServiceNow (SynQ)	Informatica Cloud Hosted Agent





Input Fields		
Group	Info	Name
SCALAR_INPUT	<input type="checkbox"/>	SI_Integration_Id
	<input type="checkbox"/>	SI_EMPLOYEE_ID
	<input type="checkbox"/>	SI_LASTNAME_M
	<input type="checkbox"/>	SI_FSTNAME_M
	<input type="checkbox"/>	SI_FST_NAME_K
	<input type="checkbox"/>	SI_LST_NAME_K
	<input type="checkbox"/>	SI_FST_NAME_R
	<input type="checkbox"/>	SI_LST_NAME_R
	<input type="checkbox"/>	SI_ORGTX
	<input type="checkbox"/>	SI_JOBTX
	<input type="checkbox"/>	SI_POSTTX
	<input type="checkbox"/>	SI_COSTCENTER
	<input type="checkbox"/>	SI_BLDING_NO

Output Fields		
Group	Info	Name
SCALAR_OUTPUT	<input type="checkbox"/>	SO_Integration_Id
	<input type="checkbox"/>	SO_RETURN_TYPE
	<input type="checkbox"/>	SO_RETURN_CODE
	<input type="checkbox"/>	SO_RETURN_MESSAGE
	<input type="checkbox"/>	SO_RETURN_LOG_NO
	<input type="checkbox"/>	SO_RETURN_LOG_MSG_NO
	<input type="checkbox"/>	SO_RETURN_MESSAGE_V1
	<input type="checkbox"/>	SO_RETURN_MESSAGE_V2
	<input type="checkbox"/>	SO_RETURN_MESSAGE_V3
	<input type="checkbox"/>	SO_RETURN_MESSAGE_V4
ERROR_OUTPUT	<input type="checkbox"/>	ErrorBapiData

DISPLAY INPUT AND OUTPUT FIELDS FOR MAPPING

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1. Notice

The information contained within this document is a point in time snapshot of the GeoAnalytics systems and applications. This information is intended to provide knowledge on the Commission's GeoAnalytics world, however, be aware that the GeoAnalytics systems are in a constant state of change, as upgrades and projects occur. The Selected Proposer must support the GeoAnalytics systems for the duration of this agreement with the understanding that the configuration may not be completely documented in this Appendix P.

2. Overview

This document is a high-level source of reference for the ServiceNow system, which has been implemented at the Pennsylvania Turnpike Commission.

3. GeoAnalytics Program Overview

The Commission's GeoAnalytics Program (combined GIS and BI/DA programs) grew out of the Commission selecting SAP Business Warehouse (SAP BW) as its Enterprise Reporting System, with the first reports implemented in 2008. In 2015, the Commission's IT Department began its search for the next generation of reporting systems. By that time, over 200 SAP BW reports had been implemented. The same year, the Commission dedicated funding to GIS efforts for the first time, providing for a GIS Manager and contracted resources. The program purpose can be summarized in the seven items below:

1. Assist with digital transformation of the Commission:
 - Examples include: e911 program, NPDES Storm Water project, Mon-Fayette parcel status viewer, toll violations, General Assembly viewer;
2. Improve safety by shifting from reactive to predictive analytics;
3. Create a common language for understanding multiple types of data through maps;
4. Integrate many forms of digital information using location as the unifying framework:
 - Examples include: Geo-enablement of project status and utility crossings;
5. Drive more informed and effective decisions using insights highlighted by data visualization;
6. Use data visualization to identify data issues that cannot be distinguished in tabular displays:
 - Map-plotted data can quickly identify issues that must be addressed;
7. Leverage the use of location data innate to the Commission's business;

- Examples include: Where are the assets? What is the quickest way to get there? Where are the best locations for Fiber?

The Business Intelligence and Data Analytics (BI/DA) Program mission is to enhance Commission decision-making capabilities by providing a unified dataset and the means for its deep analysis to support the Commission’s mission, vision, and values.

The BI/DA program seeks to facilitate self-service information analytics and visualization capabilities across the Commission. It also strives to provide data homogenization from its multiple data sources through comprehensive governance and provide a platform for enabling:

- Deep operational analytics
- Baseline for predictive capabilities
- Information discovery via metadata exploration

It is the vision of the BI/DA Program to predict operational outcomes and provide automated recommendations to achieve desired results. While Program is in its infancy, several tools for data visualization and analysis have been deployed.

In FY18, ten GIS projects were completed and four in the Business Intelligence/Data Analytics area.

FY18 Projects Completed	
Geographic Information Systems	Business Intelligence/Data Analytics
P3 Broadband Data Layers	Operating Budget Dashboard
Esri™ Roads and Highways Linear Referencing System (LRS) - continued in FY19	Capital Plan Dashboard
Property Management App	Automate Strategic Performance Report
Utility Crossing: Geo-enablement	Traffic Engineering and Operations (TEO) Approved Service Provider Dashboard (Viewer)
Project Status: Geo-enablement	
Document Scanning (Commission Meeting Minutes & Property Management documentation)	
Storm Water Data Compilation	
Field Tool Configuration/Implementation	
Straight Line Diagram Implementation (Transcend Spatial Solutions Road Analyzer™) - continued in FY19	
Open Data Portal (Default Capabilities)	

Figure 1. FY18 GIS & BI/DA Projects Completed.

Upcoming Projects and Proofs of Concept (POC):

Geographic Information Systems	Business Intelligence/Data Analytics
TEO Viewer Update	Early Warning Detection POC
Legislative Viewer POC	FMLA Calendar

Geographic Information Systems	Business Intelligence/Data Analytics
MS4 (Storm Sewer location) Viewer POC	Executive Dashboard
Diversity & Inclusion Demographic Tool App	TEO Incident Timeline Dashboard
Toll Violators by Zip Code	TEO Highway Safety Dashboard
DMP SmartParcels	TEO Mobility Dashboard
Access Gates Mobile App FY19	Big Data/Analytics
Field Data Collection Strategy and SOPs	Customer Service Dashboard
Property Management App FY19	Construction Analytics Dashboards
GIS OnBase Integration	Open Data Portal
Roads and Highways (LRS)	Fleet Telematics Solution
Straight Line Diagram FY19	
Geo Projects – Requirements	
Geo Utility Crossings - Requirements	

Figure 2. FY19 Upcoming GIS & BI/DA Projects.

The Commission has defined a Five-Year Plan with the following goals:

1. Create self-service GIS/Analytics tools;
2. Work on linear referencing data with Engineering;
3. Establish a Commission data lake;
4. Leverage geospatial artificial intelligence and machine learning to uncover patterns, increase efficiency, and make sense of the vast Commission data holdings;
5. Establish standards and guidelines for the increased use of sensors to gain value from the data, rather than being overwhelmed by it;
6. Shift from reactive to predictive, and, ultimately, prescriptive analytics for more informed decision making;
7. Create more mobile solutions.

4. GeoAnalytics Environments and Architecture

4.1. GeoAnalytics Environment

The Pennsylvania Turnpike Commission has implemented a GeoAnalytics enterprise using Environmental Systems Research Institute (Esri™) technology as its core architectural foundation. Esri is the primary supplier of the foundational geographic information system (GIS) software in use at the PTC. ArcGIS Desktop, ArcGIS Server, ArcGIS Online, Portal for ArcGIS, and Esri Roads and Highways, and many others, are all products installed and in use at the PTC. The PTC currently has multiple vendors performing custom programming and developing GIS applications to support their business operations. The objective of this section is to describe the systems and business characteristics of the architecture

from the Commission users' perspective. It explains how the spatially-enabled GeoAnalytics enterprise looks and functions.

The Commission GeoAnalytics architecture uses a combination of Esri™ and other software solutions for data storage, design, mapping, web applications, and mobile solutions. CAD software remains the primary system for creating new roadway assets, while ArcGIS is used to maintain the Commission's location information.

The high-level component view shown in Figure 5 is also defined and described in the table below (Figure 6). The architecture shown is in place for the Development, Stage, and the Production environments. The overview is not intended to provide a detailed design, but rather a short description of the solution and how the components relate to each other.

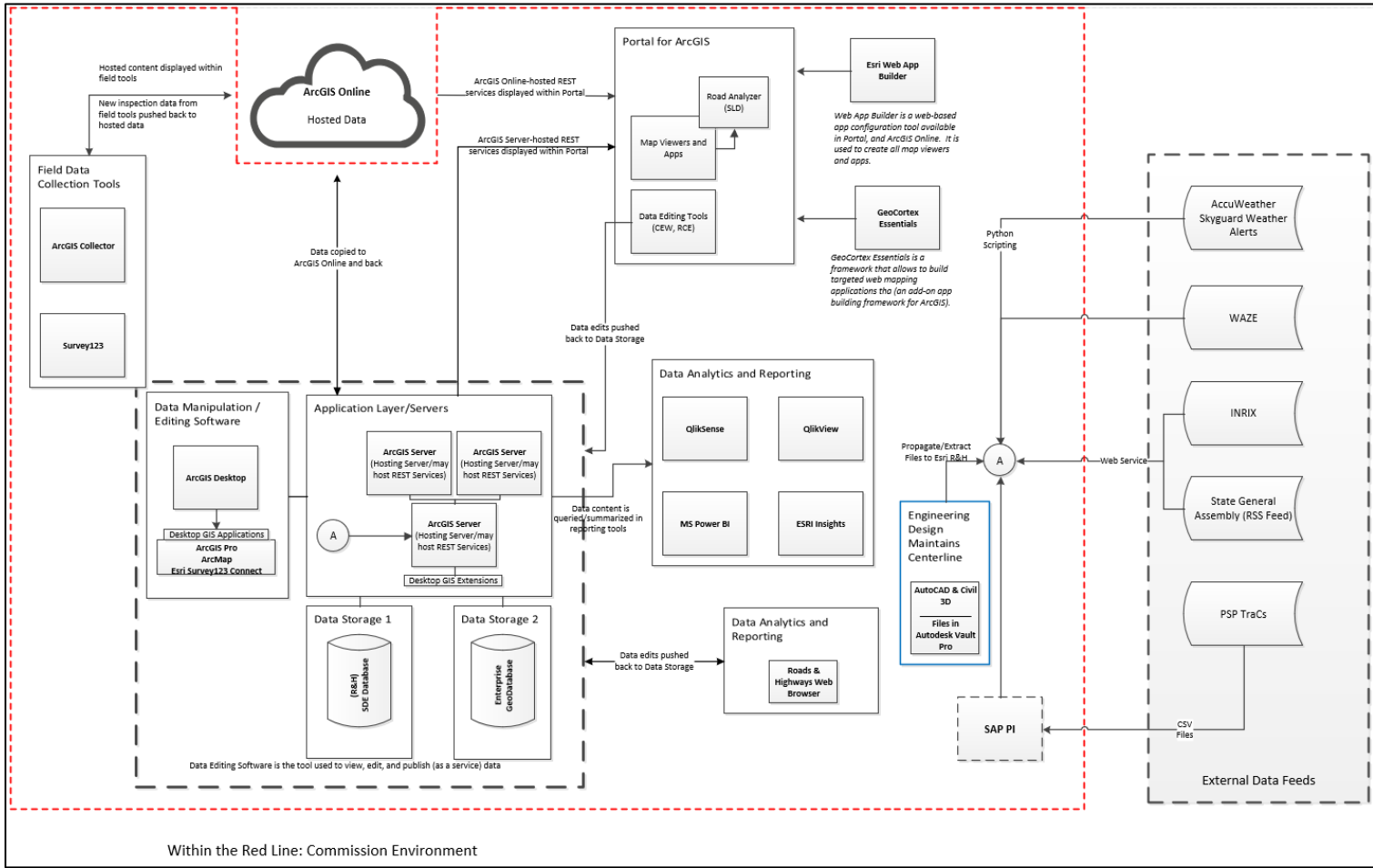


Figure 3. High-level Commission GeoAnalytics Component View (Current Snapshot – Subject to Change).

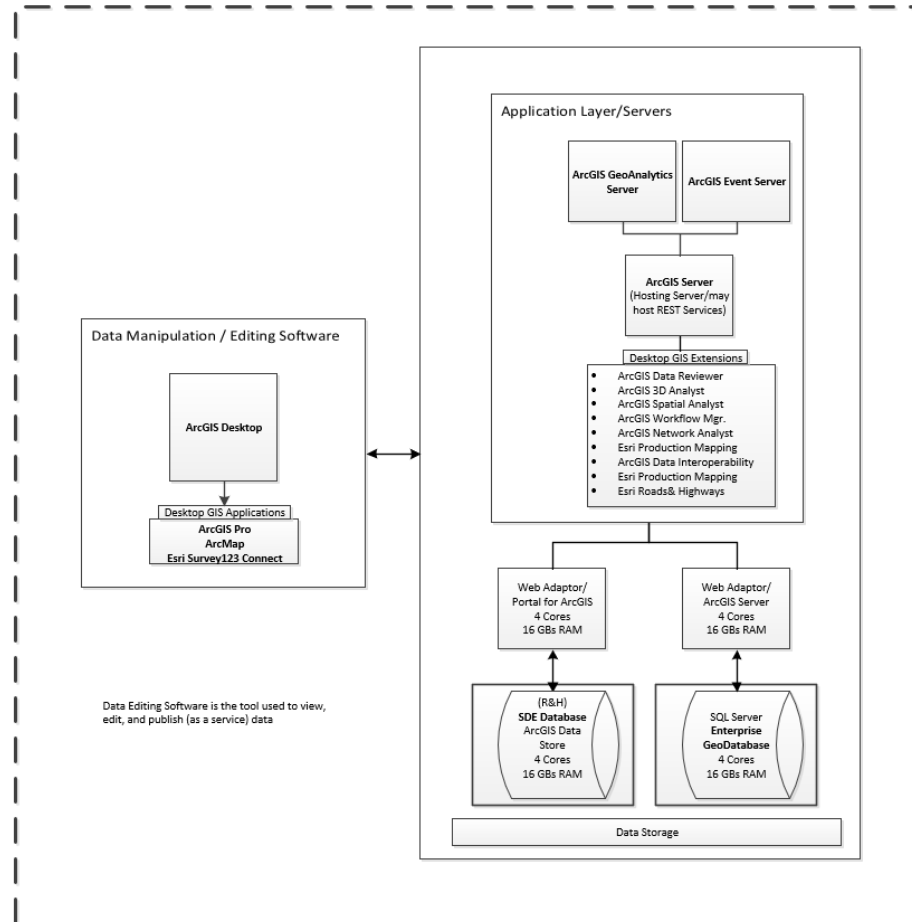


Figure 4. High-level Commission GeoAnalytics Component Detail View.

4.1.1. System Components

The following table (Figure 5) breaks out components in Figure 4 and provides version number and a detailed description of the component, its function and relationship to other components.

Component Name	Type of Component	Version	Tier	Description
ArcGIS Enterprise - Data Store	OEM File-based and NoSQL databases	10.5.1	Data	The Data Store is a component of ArcGIS Enterprise - it is an application that enables data storage for the hosting GIS server. It creates the following types of data stores as needed: Relational data store to host feature layer data. A tile cache data store for hosted 3D web scene layers, and a spatiotemporal big data store that archives real-time observational data.
Aerial Photo Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Web application to view historical satellite imagery covering the Turnpike, with the ability to compare two time periods of imagery.
ArcGIS Enterprise - ArcGIS Server	Application Server	10.5.1	Application	ArcGIS Server is a GIS Server provides fundamental mapping, analytics, and data management capabilities. It is used to publish GIS web services and host GIS-based layers. It is the engine that powers Web GIS behind the firewall of an organization. ArcGIS Server is one of the components that make up ArcGIS Enterprise which is at the core of both the PTC GIS and BI/DA architecture.
ArcGIS Enterprise - Web Adaptor	Web Application	10.5.1	Web	The ArcGIS Web Adaptor allows ArcGIS Server to integrate with existing web servers. It is compatible with IIS and Java EE servers such as WebSphere and WebLogic. The Web Adaptor is an application that runs in an existing website and forwards requests to the ArcGIS Server machines. It polls the site at a regular interval to learn which machines have been added or removed. It then forwards traffic to only the currently participating machines.
ArcGIS Enterprise - Portal for ArcGIS	Web-based GIS portal	10.5.1	Web	Portal for ArcGIS is a component of ArcGIS Enterprise that enables sharing of maps, scenes, apps, and other geographic information. The front-end ArcGIS Enterprise portal is powered by the back-end infrastructure of Portal for ArcGIS. It provides the ability to create, save, and share web maps, create and host web mapping apps, search for GIS content, create groups to share GIS information, and share links to GIS apps.
ArcGIS GeoAnalytics Server	GIS Server extension for distributed spatial analysis of big data. Requires ArcGIS Enterprise	10.5.1	Application	ArcGIS GeoAnalytics Server provides distributed computing to vector-based feature data and can be used to analyze big data or accelerate traditional ArcGIS Desktop analysis workflows through ArcGIS Pro and Portal for ArcGIS. The GeoAnalytics Server capability can also be used from within the Insights for ArcGIS app.

Component Name	Type of Component	Version	Tier	Description
ArcGIS GeoEvent Server	GIS Server extension for processing real-time events. Requires ArcGIS Enterprise.	10.5.1	Application	ArcGIS GeoEvent Server enables real-time event-based data streams to be integrated as data sources in an enterprise GIS. Event data can be filtered, processed, and sent to multiple destinations. GeoEvent Server provides the ability to stream (push) event data to your client applications via WebSockets, direct event data to Esri feature services, filter GeoEvents using spatial or attribute conditions, geofence areas of interest to detect the spatial proximity of events, and archive event data in the spatiotemporal big data store
ArcGIS Online	Software as a Service (SaaS) mapping platform	Not Applicable	Web	ArcGIS Online is a complete cloud-based mapping platform that allows users to create and share maps and apps. ArcGIS Online is scalable and secure software-as-a-service (SaaS) that features ready-to-use maps, data, and apps.
Capital Plan Dashboard	Web Application	QlikView 12.1	Web	QlikView dashboard application to show the expenditures along with the location of projects in the PTC capital plan
Communication Tower Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Web application to view communication towers along the Turnpike, which has documentation linked to each tower which is viewable in the app.
Deer Kills and Bear Encounters App	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Web application that uses data from CADS showing deer vehicular collisions and bear encounters between 2014 to 2017 along the Pennsylvania Turnpike.
Diversity and Inclusion	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	A web application that displays statewide census data compiled into targeted themes of data, such as age, ethnicity, gender, occupation, and income, among others. These census data groups can be viewed at several different geographic levels – including census blocks, census tracts, zip codes, municipalities, counties, and congressional districts.
ELINS Editing App	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Edit and add ELIN locations and attributes reflected in the e911 application
Engineering Data Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Web application that provides a GIS view to various Engineering group data holdings.
Enterprise Geodatabase using SQL Server	Relational Database Management System (RDBMS)	10.5.1	Data	Geodatabases are used to store spatial data in a central location for easy access and management. A geodatabase provides a comprehensive information model for representing and managing geographic information and spatial relationships. Geodatabases can reside in a file system folder for single-user access, or in a RDBMS for multi-user access. In the case of PTC, the geodatabase resides in SQL Server

Component Name	Type of Component	Version	Tier	Description
Esri ArcGIS 3D Analyst	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	ArcGIS 3D Analyst is an ArcGIS extension that enables creation, analysis, visualization, and editing of data in 3D.
Esri ArcGIS Data Reviewer extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	ArcGIS Data Reviewer is an ArcGIS Desktop extension that provides a complete system for automating and simplifying data quality control to improve the integrity data. It consists of a series of tools that support both automated and visual analysis data. It can be used to detect anomalies with features, attributes, and relationships. Data checks contain the analysis rules and can be scheduled to run automatically or as necessary.
Esri ArcGIS Desktop - ArcGIS Pro	Desktop GIS application	10.4 to 10.6	Application	ArcGIS Pro is a 64-bit desktop GIS application to create 2D and 3D maps, perform spatial analysis, integrate and manage data, and process imagery. It also enables connecting to a distributed Web GIS, allowing users to access, publish, and share maps and other hosted services, both behind the firewall and online.
Esri ArcGIS Desktop - ArcMap	Desktop GIS application	10.4 to 10.6	Application	ArcMap is a 32-bit desktop GIS application that provides a collection of tools allow users to visualize, analyze, manage, and publish spatial data and imagery.
Esri ArcGIS Spatial Analyst extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	ArcGIS Spatial Analyst extends the spatial modeling and analysis capabilities of ArcGIS. These enhanced analytic tools can identify clusters and hot spots, model suitability and risk, find the most efficient paths, analyze the characteristics of surfaces, and more.
Esri ArcGIS Workflow Manager extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	The ArcGIS Workflow Manager extension adds job management and tracking tools to ArcGIS to help users streamline tasks. It provides enhanced workflow management tools that enforce standardized and repeatable workflows.
Esri ArcGIS Network Analyst extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	ArcGIS Network Analyst provides network-based spatial analysis tools for solving complex routing problems. It uses a configurable transportation network data model, allowing organizations to accurately represent their unique network requirements. It can plan routes for an entire fleet, calculate drive-times, locate facilities and solve other network related problems.
Esri Collector for ArcGIS	Native mobile application (Windows, iOS, Android)	18.0.1	Application	Collector for ArcGIS is an iOS, Android, and Windows 10 app designed for field data collection. It enables the capture and update of spatial and tabular information directly from their mobile devices, including working off-line without a data connection.
Esri ArcGIS Data Interoperability extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	ArcGIS Data Interoperability is an ArcGIS extension that embeds Safe Software's FME for spatial ETL processes.

Component Name	Type of Component	Version	Tier	Description
Esri Insights for ArcGIS	Web-based Spatial Business Intelligence	TBD	Web	Insights for ArcGIS provides powerful data discovery and exploratory data analysis. It enables dragging and dropping both spatial and non-spatial data into dynamic maps, charts, and tables. Once the required data is added, guided workflows help apply the right analytic tools to answer questions.
Esri Production Mapping extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	The Esri Production Mapping extension streamlines GIS data and map production by providing tools that facilitate data creation, maintenance, and validation, as well as tools for producing high-quality cartographic products. It provides tools for managing data production from beginning to end.
Esri Roads & Highways extension	Desktop GIS extension (requires ArcGIS Desktop or Pro)	10.4 to 10.6	Application	Esri Roads and Highways is an ArcGIS extension that provides a GIS solution for managing road networks. By integrating data from multiple linear reference systems (LRS) to produce and analyze network maps, it provides a comprehensive view of roadways. This unified framework helps better manage road assets, respond to incidents, and coordinate work resources. Roads and Highways enables integration of enterprise data across multiple disparate systems, maintaining a Linear Referencing System (LRS), generating reports and maps, editing roadway characteristics from a web browser.
Esri Roads & Highways Server	GIS Server extension for working with linear reference systems (LRS)	10.4 to 10.6	Application	Esri Roads and Highways for Server extends the existing ArcGIS for Server map service with an additional REST service capability for linear referencing. These additional REST services provide capabilities such as LRS-based network and event layer information, translating coordinate locations to routes and measures, translating routes and measures to coordinates or polylines, validating route and/or measure values, converting measures from one LRM to another, and others.
Esri Survey123 Connect for ArcGIS	Desktop Application	2.8.4		Survey123 Connect for ArcGIS is a desktop tool that allows users to create and publish survey forms to ArcGIS.
Esri Survey123 for ArcGIS	Native mobile application (Windows, iOS, Android)	2.8.2	Application	Survey123 is a native mobile application that provides a form-centric data gathering solution to quickly and easily create, collect, and analyze surveys with a location element. Once the survey data is captured, it also allows users to visualize, analyze, and share survey results in ArcGIS to support decision making.
General Assembly Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	General Assembly Web Application provides the most current information regarding the Pennsylvania State Legislative boundaries and their associated representatives. The Senate and House Legislative district layers are updated daily by an RSS feed.

Component Name	Type of Component	Version	Tier	Description
Latitude Geographics Geocortex Essentials	Application Builder	TBD	Web	GeoCortex Essentials is a versatile framework that allows users to build targeted web mapping applications built on top of the Esri ArcGIS platform.
Microsoft PowerBI	Business Intelligence	June 2018 Update (2.59.51 35.101)	Application	Power BI is a business analytics service provided by Microsoft. It provides interactive visualizations with self-service business intelligence capabilities for creating reports and dashboards.
Mon-Fayette Parcel Status	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Parcel viewer for the Mon-Fayette area of the "to be" constructed portion of the highway. The app is a parcel viewer that shows the history and status of parcels along the potential right of way.
Municipal Separate Sanitary Sewer Systems (MS4) Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	The MS4 Viewer provides a consolidated view of the PTC's MS4-related data, including stormwater structures and conveyances, stormwater control measures, and critical hydrology datasets such as streams and drainage areas. A key element of the MS4 program is identifying potential sites for future stormwater control measures, to help meet the pending permit requirements. To support this, the Viewer also displays utility crossings, and utility lines and projects, that helps staff select the best sites for future stormwater features.
Esri Operations Dashboard for ArcGIS	Web Application	April 2018	Web	Operations Dashboard for ArcGIS is a configurable web application that provides location-aware data visualization and analytics for a real-time operational view of people, services, assets, and events via dynamic dashboards.
Property Management Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Web application to view parcel data provided from the Digital Map Products quarterly deliverable.
PSP TraCS QC	Web Application (uses Web AppBuilder for ArcGIS)	2.7	Web	The PA State Police (PSP) TraCS data captures citations, warnings, inspection reports, and crashes. This data is brought into the GIS by an Extract, Transform, and Load (ETL) process which then needs the incident locations to be QA/QC'd. This web application facilitates the QA/QC process since the users who perform this task are not GIS experts. Once the records are verified, another ETL process loads them into the enterprise geodatabase as an authoritative feature class of PSP incidents.
PSP TraCS Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.7	Web	The PA State Police (PSP) TraCS data captures citations, warnings, inspection reports, and crashes. Once the data is loaded to the GIS through an Extract, Transform, and Load (ETL) process they are considered an authoritative feature class of PSP incidents. This web application provides an easy to use viewer which shows the incident data symbolized and allows the user to view them in different ways including a heat map.

Component Name	Type of Component	Version	Tier	Description
PTC 3D Campus Viewer	Custom JavaScript Web Application	ArcGIS JavaScript API v4.1	Web	The PTC Campus Viewer is web application that shows the floorplans of the CAB and TIP buildings in 3D. The app displays the buildings and interiors in three dimensions and provides interior routing between floors and the walking paths between the buildings. It also allows the user to search the building to find PTC staff or office numbers.
PTC Configurable Editing Widget (CEW)	Web Application (uses Web AppBuilder for ArcGIS)	2.3	Web	The CEW App is a browser-based application designed for editing GIS. The goal is to provide an editing environment through a browser, which reduces the need for Desktop-based GIS applications for users that perform light-weight editing. It provides a robust user management interface along with managing permissions to data layers.
PTC Configurable Editing Widget (CEW) WCF	Web Service	N.A.	Web	An application which contains a service which works as the traffic controller between other applications and the CEW SQL Server database tables; it supplies data to be written to the tables and conversely it retrieves data from the CEW tables.
PTC Smart Map	Web Application (uses Web AppBuilder for ArcGIS)	2.5	Web	Smart Map functions as a general viewer web application that allows PTC users to view a variety of the content available in the enterprise GIS.
Qlik Sense	Business Intelligence	12.16	Application	Qlik Sense is a business intelligence application for self-service data discovery and visualizations. It has yet to be installed.
QlikView	Business Intelligence	12.1	Application	QlikView is a guided analytics business intelligence tool.
Safe Software Feature Manipulation Engine (FME)	Desktop Spatial Extract, Transform, Load (ETL) application	2016.0.1 Build 16174	Application	FME is a spatial ETL tool that enables the conversion and integration of hundreds of geospatial and non-GIS data formats.
SAP PI (Process Integration)	Enterprise Application Integration	PI NetWeaver 7.3 EHP1 (PI) SP17	Application	SAP PI serves as an interface, managing incoming csv files (TraCs data which includes Traffic Accidents & Criminal data) from the Pennsylvania State Police.
Esri Story Maps	Web Application	Varies, see GitHub repository	Web	Esri Story Maps combine maps with narrative text, images, and multimedia content to create compelling, user-friendly web apps used for education, outreach, briefings, and tell stories.
Toll Violations Viewer	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Web application to visualize the distribution of Pennsylvania Turnpike toll violations by zip codes and states where owners incur the most or fewest Turnpike toll violations to help identify trends.

Component Name	Type of Component	Version	Tier	Description
Traffic and Engineering Operations (TEO) Viewer v1	Web Application (uses Web AppBuilder for ArcGIS)	2.5	Web	The TEO Viewer allows Traffic Operations to quickly view data about fire stations, EMS providers, accidents on a map in a web application. The viewer includes real-time Waze alerts that show jams and other traffic incidents that may impact roadway conditions. Other layers include barrier locations, long-term construction areas, camera locations, state police zones, and many others. The app allows the Turnpike to quickly view critical operational resources which enables better decision making and ultimately will improve response to emergency and hazardous situations.
Traffic and Engineering Operations (TEO) Viewer v2	Web Application (uses Web AppBuilder for ArcGIS)	2.7	Web	Version 2 of the TEO viewer enhances the apps usability and provides additional functionality and data layers to support end users. The app now includes a traffic speed data layer provided by INRIX that provides live information about current travel speeds. The update also includes a live continuous-loop of the AccuWeather radar feed. SkyGuard is another data feed that is provided which delivers weather warnings and statements that are specific to individual segments or areas along the Turnpike.
Traffic and Engineering Operations (TEO) Viewer v3	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	Version 3 of the TEO web application provides additional data layers and functionality that better supports the TEO group. Specifically, INRIX Incidents data has been added to the application. In addition, the INRIX data has been updated to better follow the roadway centerlines, to provide a more accurate view of roadway conditions. Lastly, a link has been provided within the Waze data layers popups, to provide a link to the incident on the Waze website.
Transcend Spatial Solutions Road Analyzer	Web Application	3.11.0	Web	Road Analyzer is straight-line diagramming app to help visualize and interact with LRS data.
Utility Crossing and Project Status Application	Web Application (uses Web AppBuilder for ArcGIS)	2.8	Web	This application geo-enables the Project Status & Utility Crossings locations that are stored in Microsoft Dynamics. The app displays all phases of projects with other data layers (e.g. county and legislative districts) to show the impacts on these locations over time. Additionally, the application improves the capabilities of PTC Utility Coordinators and other departments to visualize Utility Crossings that cross or exist within the Turnpike Right-Of-Way by geo-spatially displaying the existing utility crossings.

Component Name	Type of Component	Version	Tier	Description
Web AppBuilder (WAB) for ArcGIS (Developer Edition)	Application Builder	2.3 to 2.8 (varies by app)	Web	Web AppBuilder for ArcGIS is a ready-to-use app that lets you create custom ArcGIS apps using intuitive widgets and tools. The resulting apps can be created with a simple configuration builder experience (WYSIWYG) and are HTML/JavaScript that run on any device. It is also extensible enabling developers to build custom widgets and themes.

Figure 5: High-level Commission GeoAnalytics Components and Descriptions.

4.1.2. Associated Licensing of Esri Products

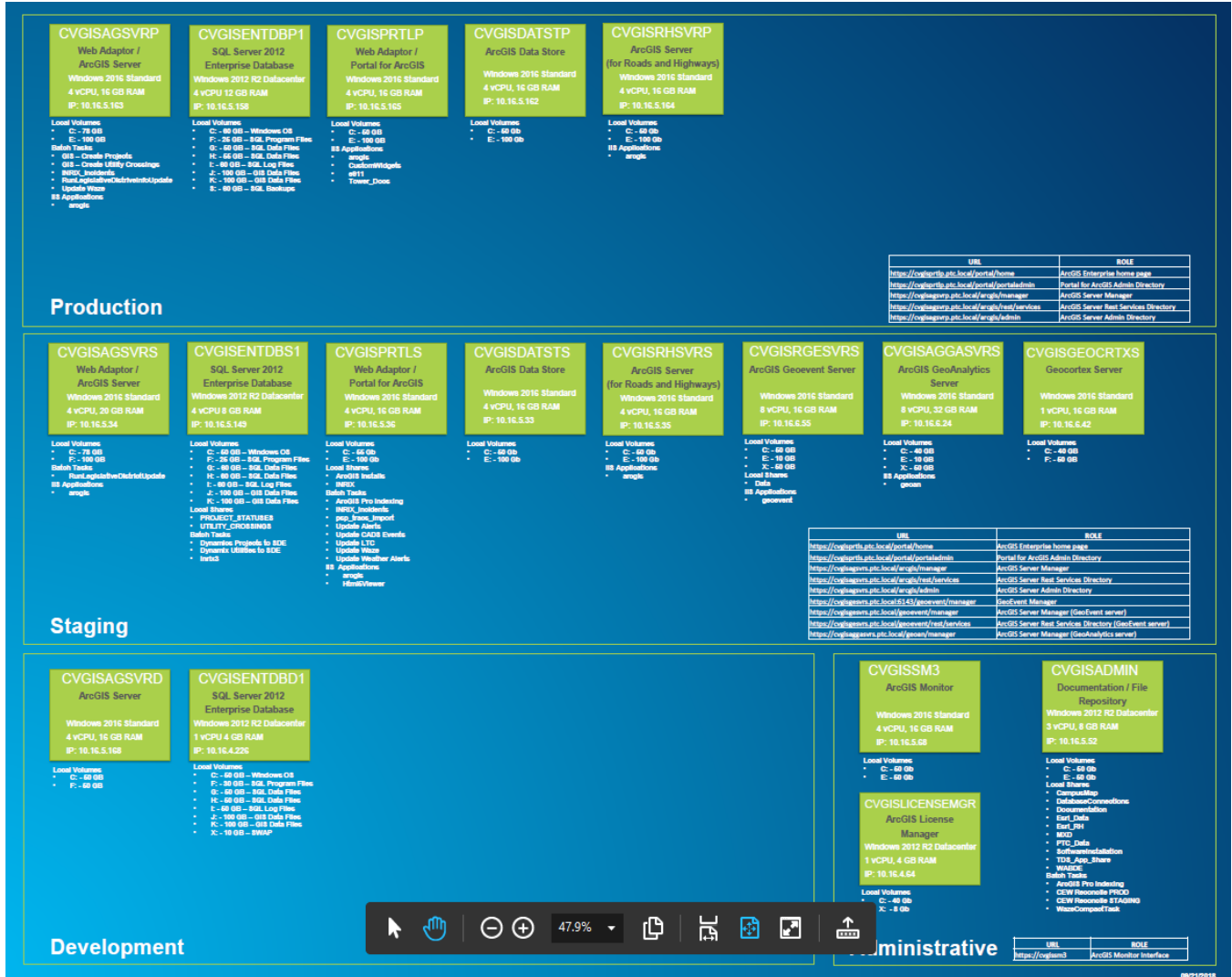
Product Name	Version	License Type	License Group	Total
Level 2 Named Users	10.5	Portal for ArcGIS		1
Esri Roads and Highways for AG Server	10.5	ArcGIS Server		1
Esri Roads and Highways for AG Server	10.5	ArcGIS Server		1
ArcGIS Network Analyst for Server	10.5	ArcGIS Server	COMMERCIAL LICENSE	1
ArcGIS Network Analyst for Server	10.5	ArcGIS Server		1
ArcGIS GIS Server Standard	10.5	ArcGIS Server	COMMERCIAL LICENSE	1
ArcGIS GIS Server Standard	10.5	ArcGIS Server	COMMERCIAL LICENSE	1
ArcGIS GIS Server Standard	10.5	ArcGIS Server	COMMERCIAL LICENSE	1
ArcGIS GIS Server Standard	10.5	ArcGIS Server	COMMERCIAL LICENSE	1
ArcGIS GIS Server Standard	10.5	ArcGIS Server	COMMERCIAL LICENSE	1
ArcGIS GIS Server Standard	10.5	Staging ArcGIS Server	Staging License	1
ArcGIS GIS Server Standard	10.5	Staging ArcGIS Server	Staging License	1
ArcGIS GIS Server Standard	10.5	Staging ArcGIS Server	Staging License	1
Workflow Manager	10.1 - 10.5	Concurrent Use		2
Spatial Analyst	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	4
Geostatistical Analyst	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	1
Esri Roads and Highways	10.1 - 10.5	Concurrent Use		2
Esri Production Mapping	10.1 - 10.5	Concurrent Use		2
Data Interoperability	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	2
ArcGIS Pro Advanced	10.1 - 10.5	Concurrent Use		2
ArcGIS Desktop Standard	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	4
ArcGIS Desktop Standard	10.1 - 10.5	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10.1 - 10.5	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10.1 - 10.5	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10.1 - 10.5	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10.1 - 10.5	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Basic	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	10
ArcGIS Desktop Advanced	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	4
ArcGIS Data Reviewer	10.1 - 10.5	Concurrent Use		2
ArcGIS 3D Analyst	10.1 - 10.5	Concurrent Use	COMMERCIAL LICENSE	4
Portal for ArcGIS	10.1 - 10.4.1	Server		1
Portal for ArcGIS	10.1 - 10.4.1	Server		1
Esri Roads and Highways for AG Server	10.1 - 10.4.1	Server		1
Esri Roads and Highways for AG Server	10.1 - 10.4.1	Server		1
ArcGIS Server Image Extension	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1
ArcGIS Network Analyst for Server	10.1 - 10.4.1	Server		1
ArcGIS GeoEvent Extension for Server	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Server	COMMERCIAL LICENSE	1

Product Name	Version	License Type	License Group	Total
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Staging ArcGIS Server	Staging License	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Staging ArcGIS Server	Staging License	1
ArcGIS for Server Standard Enterprise	10.1 - 10.4.1	Staging ArcGIS Server	Staging License	1
Workflow Manager	10	Concurrent Use		2
Spatial Analyst	10	Concurrent Use	COMMERCIAL LICENSE	4
Geostatistical Analyst	10	Concurrent Use	COMMERCIAL LICENSE	1
Esri Roads and Highways	10	Concurrent Use		2
Esri Production Mapping	10	Concurrent Use		2
Data Interoperability	10	Concurrent Use	COMMERCIAL LICENSE	2
ArcGIS Desktop Standard	10	Concurrent Use	COMMERCIAL LICENSE	4
ArcGIS Desktop Standard	10	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Standard	10	Single Use	COMMERCIAL LICENSE	1
ArcGIS Desktop Basic	10	Concurrent Use	COMMERCIAL LICENSE	10
ArcGIS Desktop Advanced	10	Concurrent Use	COMMERCIAL LICENSE	4
ArcGIS Data Reviewer	10	Concurrent Use		2
ArcGIS 3D Analyst	10	Concurrent Use	COMMERCIAL LICENSE	4

Figure 6: Current Commission Licensing of Esri Products.

4.2. ArcGIS Network Diagrams

Overview



Basic ArcGIS Enterprise Network Diagram – Production

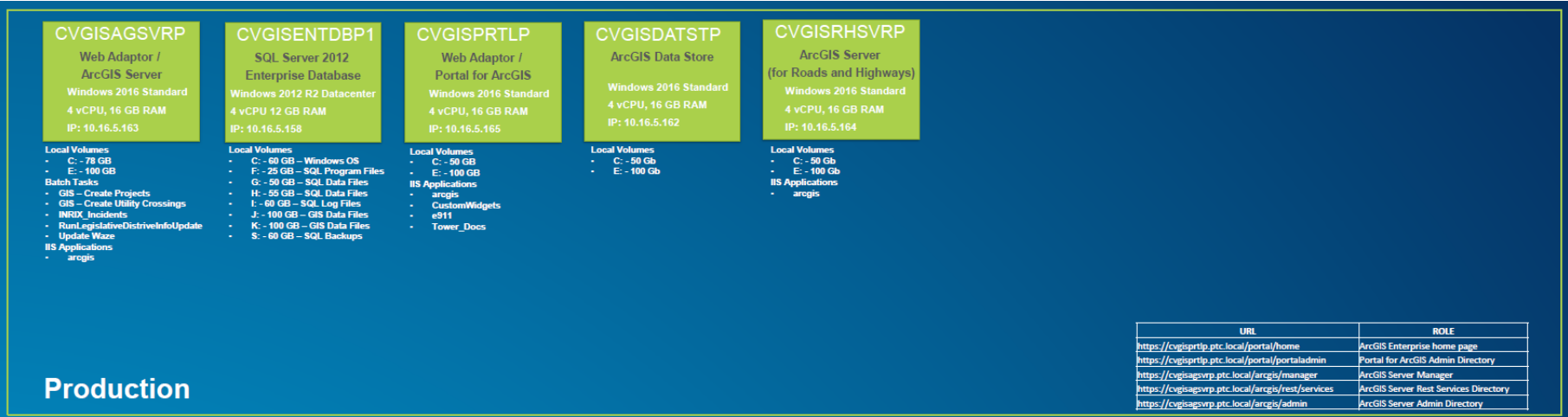


Figure 7: Basic ArcGIS Enterprise Network Diagram – Production.

Enlarged:

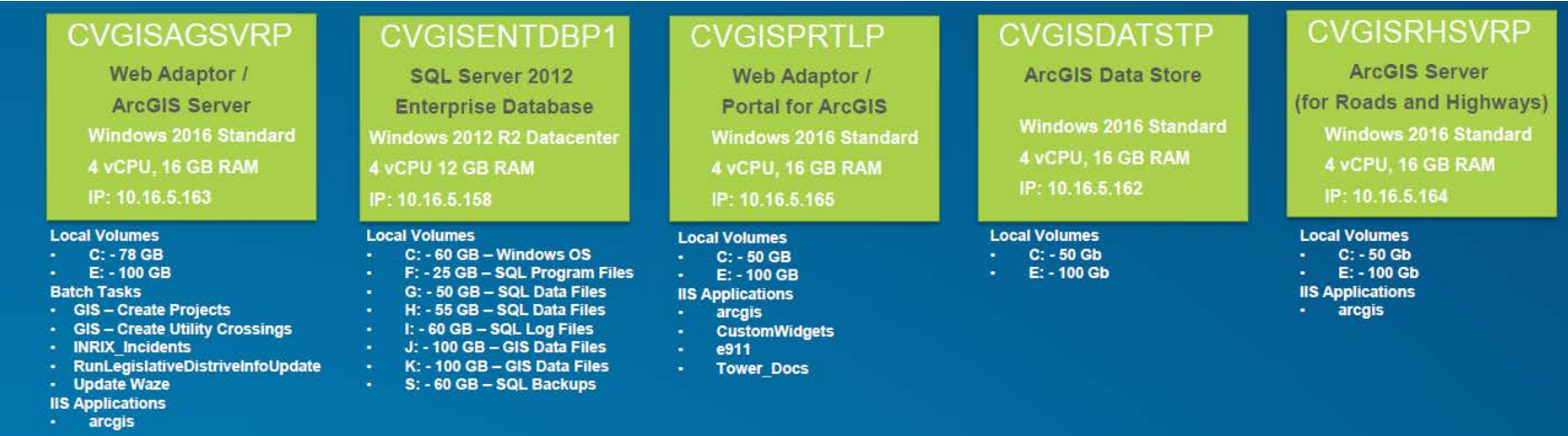


Figure 8: Basic ArcGIS Enterprise Network Diagram – Production – 1

URL	ROLE
https://cvgisprtlp.ptc.local/portal/home	ArcGIS Enterprise home page
https://cvgisprtlp.ptc.local/portal/portaladmin	Portal for ArcGIS Admin Directory
https://cvgisagsvrp.ptc.local/arcgis/manager	ArcGIS Server Manager
https://cvgisagsvrp.ptc.local/arcgis/rest/services	ArcGIS Server Rest Services Directory
https://cvgisagsvrp.ptc.local/arcgis/admin	ArcGIS Server Admin Directory

Figure 9: Basic ArcGIS Enterprise Network Diagram – Production – 2

Basic ArcGIS Enterprise Network Diagram – Staging

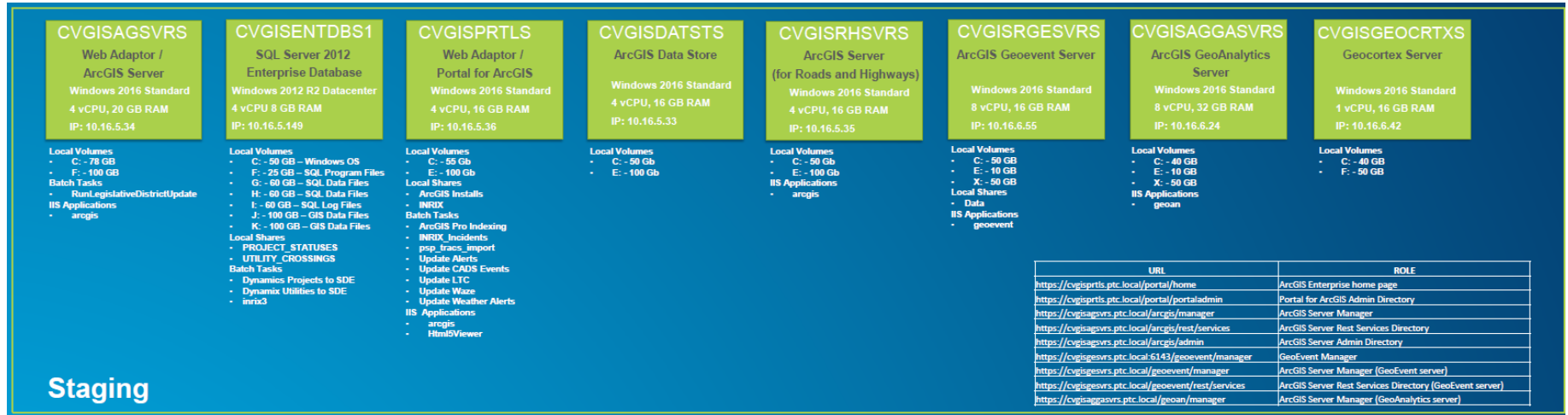


Figure 10. Basic ArcGIS Enterprise Network Diagram – Staging.

Enlarged:

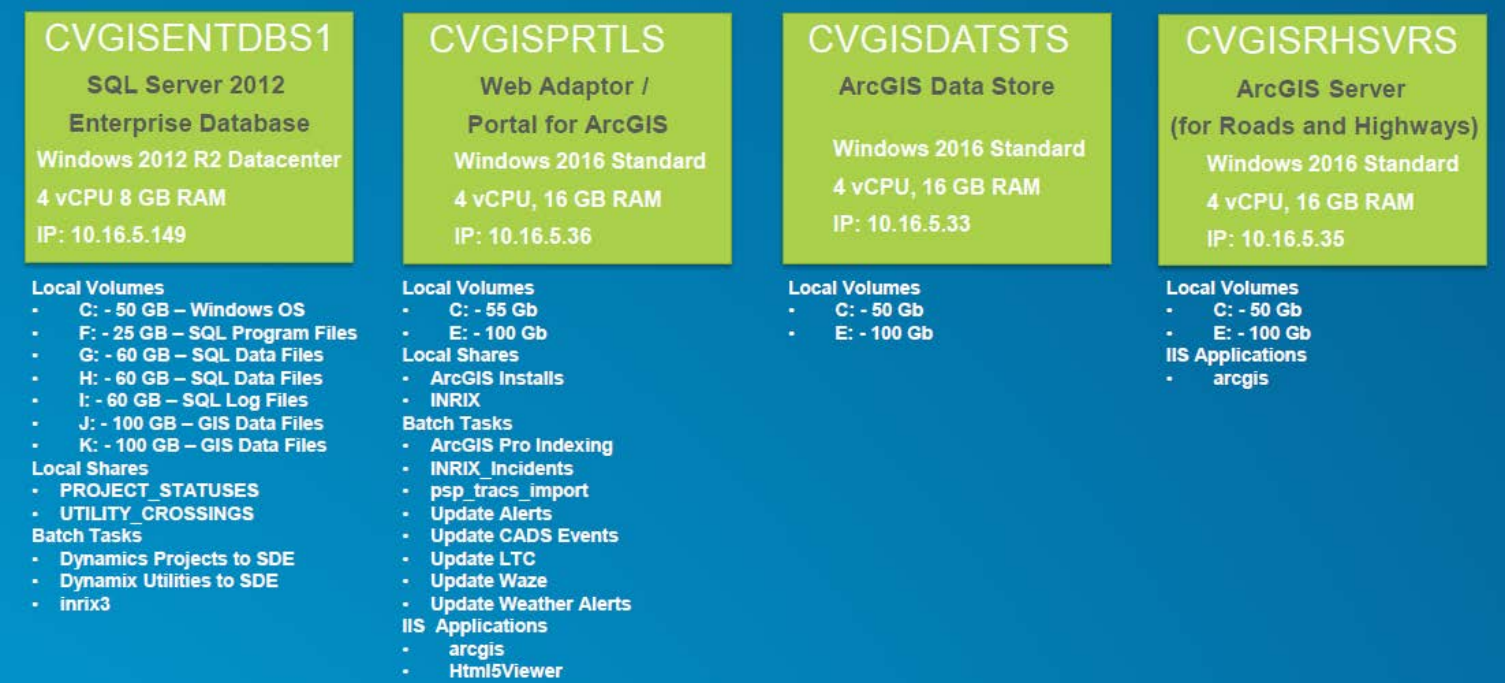


Figure 11. Basic ArcGIS Enterprise Network Diagram – Staging - 1.

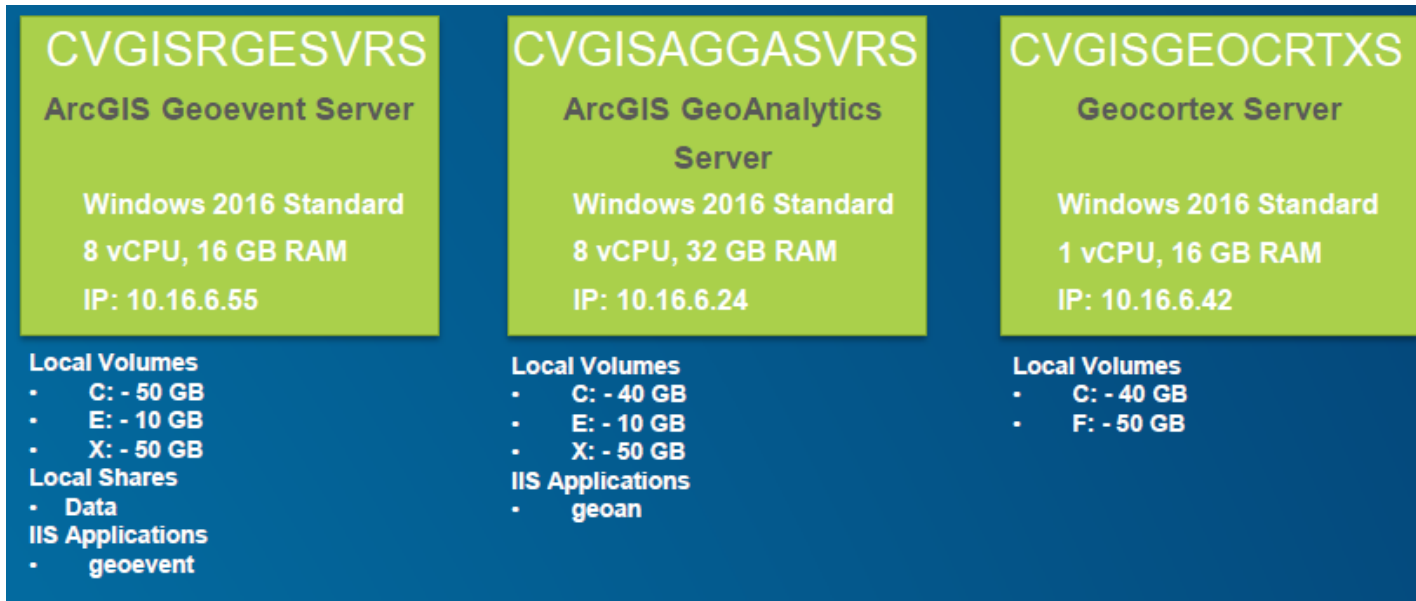


Figure 12. Basic ArcGIS Enterprise Network Diagram – Staging - 2.

URL	ROLE
https://cvgisprtls.ptc.local/portal/home	ArcGIS Enterprise home page
https://cvgisprtls.ptc.local/portal/portaladmin	Portal for ArcGIS Admin Directory
https://cvgisagsvrs.ptc.local/arcgis/manager	ArcGIS Server Manager
https://cvgisagsvrs.ptc.local/arcgis/rest/services	ArcGIS Server Rest Services Directory
https://cvgisagsvrs.ptc.local/arcgis/admin	ArcGIS Server Admin Directory
https://cvgisgesvrs.ptc.local:6143/geoevent/manager	GeoEvent Manager
https://cvgisgesvrs.ptc.local/geoevent/manager	ArcGIS Server Manager (GeoEvent server)
https://cvgisgesvrs.ptc.local/geoevent/rest/services	ArcGIS Server Rest Services Directory (GeoEvent server)
https://cvgisaggasvrs.ptc.local/geoa/manager	ArcGIS Server Manager (GeoAnalytics server)

Figure 13. Basic ArcGIS Enterprise Network Diagram – Staging - 3.

Basic ArcGIS Enterprise Network Diagram – Development

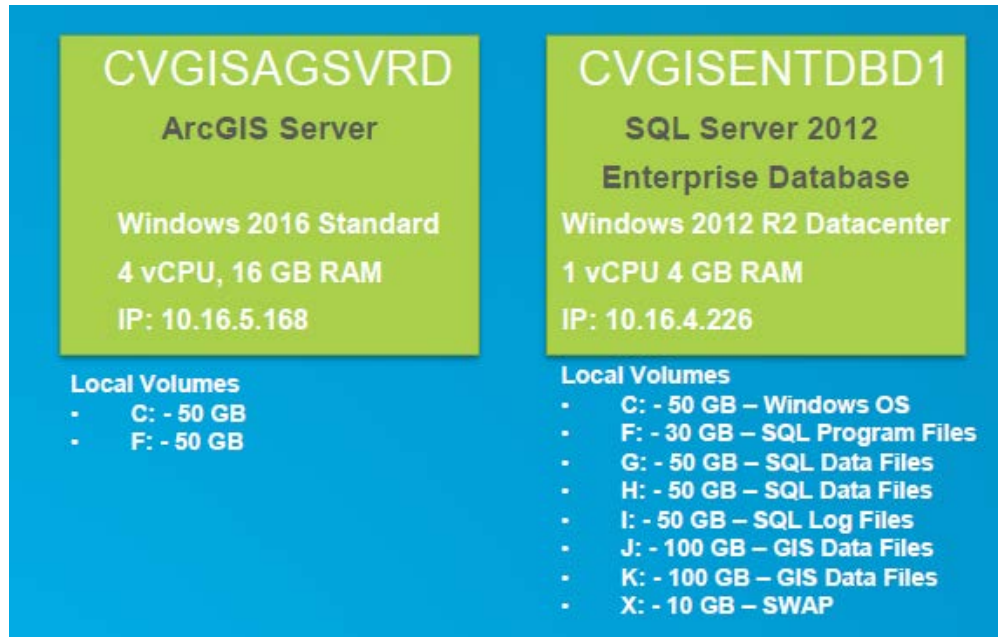


Figure 14. Basic ArcGIS Enterprise Network Diagram – Development - 1

Basic ArcGIS Enterprise Network Diagram – Administrative

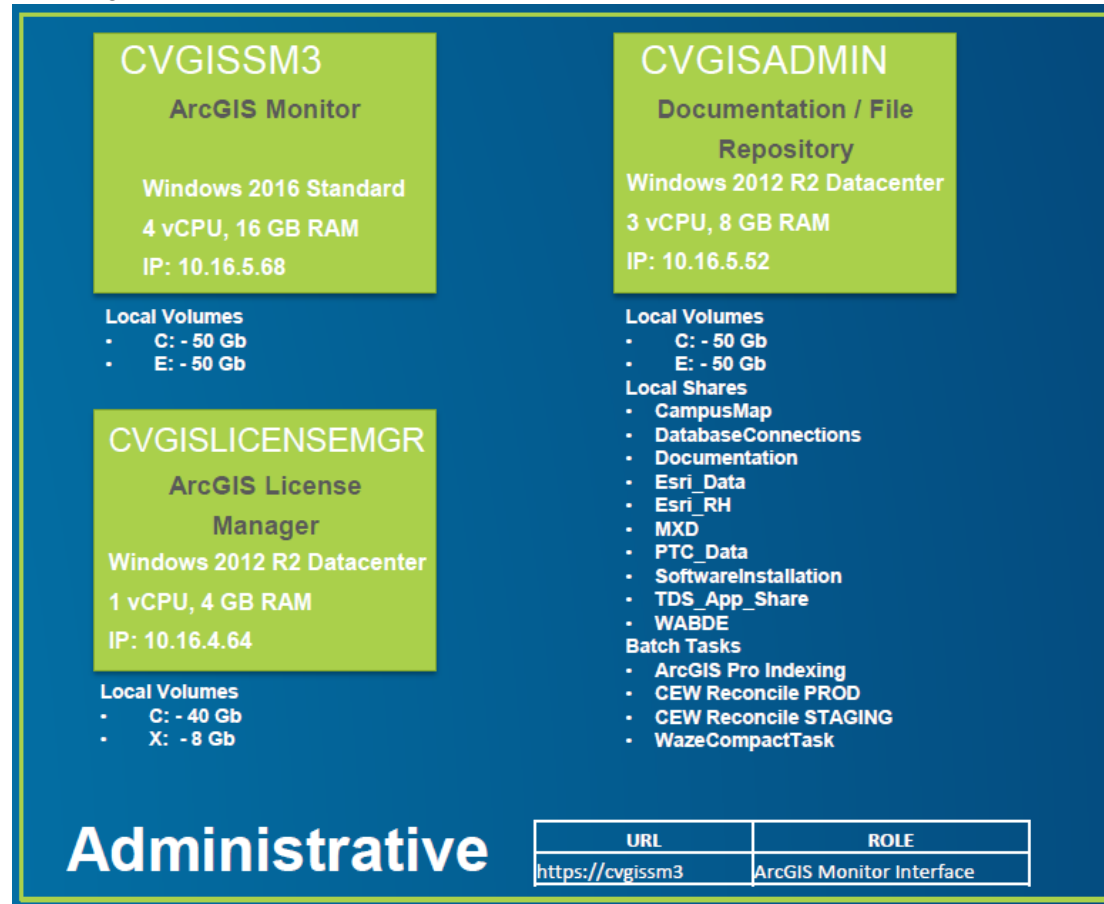


Figure 15. Basic ArcGIS Enterprise Network Diagram – Administrative

4.3. Hosting Server/Data Store

As part of the Commission’s Big Data initiative, there are plans to federate ArcGIS server as a “hosting server” (coupled with the installation of Data Store) if one of the following requirements exist for the PTC users (list below can be found at <http://server.arcgis.com/en/portal/latest/administer/windows/configure-hosting-server-for-portal.htm>):

- Publish hosted tile layers to the portal.
- Publish hosted feature layers to the portal.
- Publish hosted WFS layers to the portal.
- Publish scene layers to the portal (ArcGIS Data Store tile cache data store required).
- Share layers and maps from ArcGIS Maps for Office (ArcGIS Data Store relational data store required).
- Add a zipped shapefile, CSV file, or GPS Exchange Format file to the portal map viewer.
- Batch geocode addresses from a CSV file.
- Perform feature analysis or big data analytics in the portal map viewer or through Insights for ArcGIS or ArcGIS Pro (ArcGIS Data Store required).
- Perform raster analysis from the portal map viewer or ArcGIS Pro (ArcGIS Data Store relational data store required)

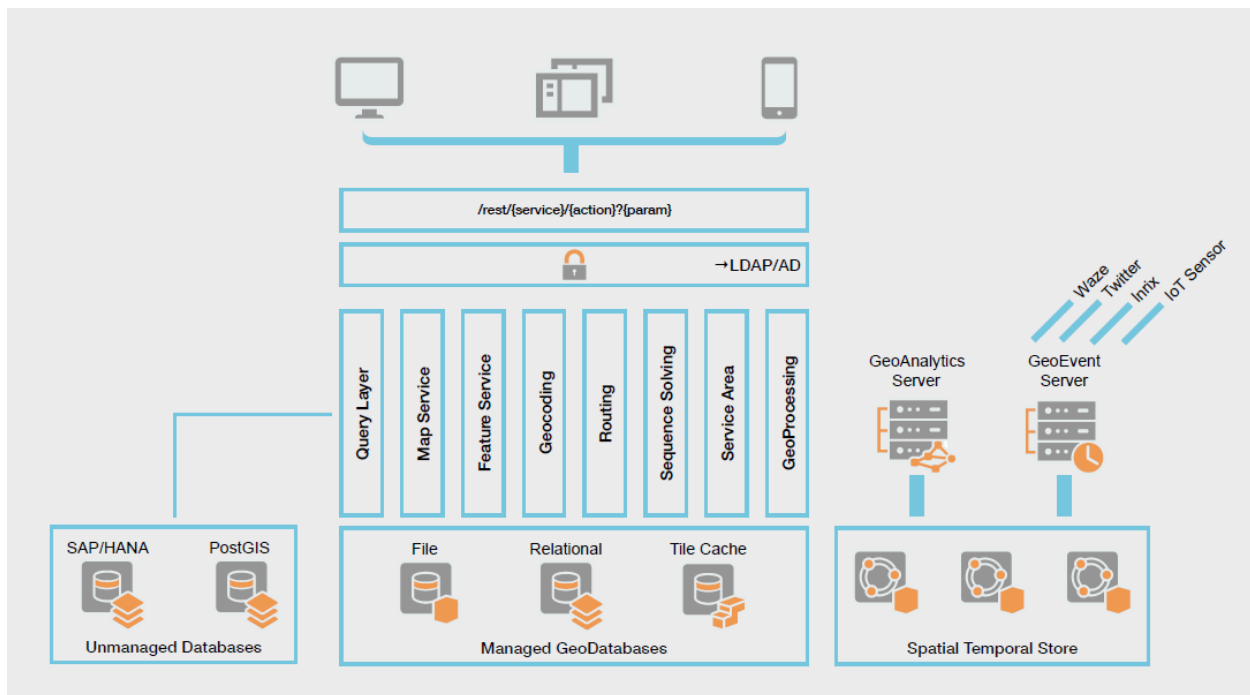


Figure 16. PTC Big Data Solution Design.

One of the most likely requirements above is “Publish hosted feature layers to the portal.” This is since hosted feature layers are required to support certain external mobile applications such as Survey123.

Many of above requirements depend on the level of work and analysis that will be done by users within the Portal Map Viewer (as opposed to configurable apps).

It is likely that one or more of the above requirements exist, therefore it is recommended that the Commission configure an ArcGIS Server (only one can be configured) as a hosting server and installs the “ArcGIS Data Store” product as the “relational data store”. This essentially results in two data repositories being available within Portal: the enterprise geodatabase (in addition to the data residing within the enterprise geodatabase in SQL Server).

4.4. ArcGIS for Portal Business Processes and Sub-Processes (General Use Cases)

The following are specific examples of the Portal for Commission staff.

Deploying Configurable Applications – The Commission deploys geospatial technology to a significant number of users within the organization via configurable applications based on either Web AppBuilder (WAB), GeoCortex Essentials or Esri configurable templates. The developer version of WAB is also used to develop custom widgets that can be deployed within any WAB application. Examples of these custom WAB implementations already developed include:

- Automated Vehicle Locator (AVL)
 - Smart Map
 - Configurable Edit Widget (CEW)
-
- Roads and Highways (R&H) Implementation – The Commission maintains an Esri R&H implementation consisting of one or more Linear Referencing Systems (LRS) calibrated to a road centerline layer. Additionally, a significant number of data sets are managed as “event” data which are located based on the R&H LRS routes.
 - Data Editing/Maintenance Using Configurable Edit Widget (CEW) and Esri Roadways Characteristics Editor (RCE) – The Commission edits and maintains as much enterprise data as possible using the CEW and Esri RCE to allow as many staff as possible to participate in the maintenance of geospatial data without the need for GIS professional training or software (e.g., ArcGIS Desktop/Pro). Also, the CEW provides the PTC with a comprehensive workflow for Editing, QA and Publishing data, including event data within R&H.
 - Power GIS Users – A small percentage of Commission users are GIS Professionals and are required to perform high-level data maintenance/management, spatial analysis, and cartography using ArcGIS Desktop/Pro software.
 - Basic Mapping using WebMaps – A significant number of Portal users simply require the ability to map, visualize and output data using the default Map Viewer within Portal for ArcGIS. This

simple map viewer will allow users to construct and save web maps within Portal without a formal “app” and with very little background in GIS.

- Mobile Applications Accessing Portal – Currently, the Portal implementation is not accessible outside of the PTC network. The use of mobile applications such as Survey123 and ArcGIS Collector are only able to transmit field data to ArcGIS Online (which subsequently must be extracted for subsequent long-term storage and use). However, it is desired by the Commission to allow mobile applications to transmit data directly to the Portal environment for immediate use in the future.

4.5. GIS Workflows

4.5.1. Esri Suite

1. Migration of Production apps to CVGISPRTL
2. Application User Acceptance Testing and Deployment to Production Portal
3. Obtaining a User Account and Network Permissions
4. Obtaining Permissions for Application Deployment
5. Requesting a New SQL Server Database
6. Obtaining AGOL (ArcGIS Online) Account
7. Obtaining Portal Account

4.5.2. Map Viewers/Dashboards - Deployment and Backout Process for:

- | | |
|--|---|
| 1. Access Gates Comparison Viewer | 12. Property Management Viewer – Planned |
| 2. Aerial Photo Viewer | 13. PSP TraCs Viewer |
| 3. Automated Vehicle Locator (AVL) Tracking Viewer | 14. PTC Smart Map |
| 4. Capital Plan Dashboard | 15. State General Assembly |
| 5. Communication Towers Viewer | 16. TEO Authorized Service Providers (ASP; Tow Trucks, Fire and EMS contracted by the Commission) Dashboard |
| 6. Deer Kills and Bear Encounters Viewer | 17. TEO Crash Analytics |
| 7. Diversity & Inclusion Demographics Viewer | 18. Toll Violations Viewer |
| 8. Engineering Data Viewer | 19. Traffic and Engineering Operations (TEO) Viewer |
| 9. Interactive Travel Map | 20. Utility Lines and Projects Viewer |
| 10. Municipal Separate Sanitary Sewer Systems (MS4) Viewer | |
| 11. Operating Budget | |

5. Release, Upgrade, Patching Frequency

5.1. Yearly Number of Releases

- Esri products: One (1) every other year
- Transcend Spatial Road Analyzer: TBD

5.2. Yearly Patching Frequency

- Esri products: Ad hoc; not following a defined schedule
- Transcend Spatial Road Analyzer: Ad hoc; not following a defined schedule

5.3. Yearly Number of Upgrades:

- **Esri products:** Not defined
- **Transcend Spatial Road Analyzer:** Not defined
- **Qlik Product Stack:** Quarterly review planned for:
 - Major Upgrades: Includes major usability/functionality changes to the existing product. The implementation of these patches requires extensive regression testing of the existing solution. Impacts are analyzed and subsequently an upgrade calendar is developed, which includes implementation, test and deployment timelines. Major upgrades may require extensive development and testing, far exceeding the capacity of the ongoing support team. If such a situation arises, the contractor will work with PTC to identify a viable approach and capacity requirements to achieve the resulting upgrade.
 - Minor Upgrades: Includes patches which resolve targeted issues. The deployment lifecycle for these fixes are typically faster. Business applicability of such patches is determined and subsequently findings presented during periodic meetings to finalize timelines for deployment.

5.4. Service Levels

Currently there are no Service Level Agreements or Service Level Objectives in place for GIS and BI/DA programs.

6. User Administration

6.1. Identity Management

Identity is as a central component of the ArcGIS and Portal environments. Services exposed within the Commission via Portal are configured to limit access to users with appropriate permissions. There are two levels of authentication within Portal: Enterprise logins and ArcGIS identity. The Commission configured

Portal to allow *only* Enterprise Logins. That is, ArcGIS Identity and Anonymous logins are disabled (since the public is not a consumer of internal Portal content at this point, there is no need for anonymous logins to be enabled).

6.2. User Levels/Accounts

Esri has two different “Levels” of membership for all user accounts in Portal and ArcGIS Online (Level 1 and Level 2). Level 1 accounts implicitly are limited to viewing only (they cannot create, edit or share content). Level 2 accounts can be assigned virtually any privilege from allowing the user to create/edit/share content, all the way up to administrative privileges for the Portal. The setting which allows automatic registration of enterprise accounts is disabled, which allows the Commission much greater control over users, especially given the licensing constraints.

6.3. Roles/Privileges

The specific privileges of each user within Portal is based upon their membership level and “role.” Each user account is assigned as either a Level 1 or Level 2 membership and a “role” when their account is created.

Portal comes with four predefined roles including:

- Viewer – View content only (and join groups);
- User – Viewer privileges plus can create/share content and groups;
- Publisher – User privileges plus can publish hosted tile/feature layers and perform analysis; and,
- Administrator – Publisher privileges plus all administrative privileges for Portal.

The roles/privileges within Portal, by design, limits those that can create, edit, share, and publish content and groups, especially content that will be viewed and used as “authoritative” content throughout the organization.

It is important to note that the privileges associated with the Esri provided default roles cannot be modified. However, Portal allows the creation of custom roles, which allows the administrator to customize the specific privileges for each role. Therefore, except for the Administrator role, it is recommended that the Commission ignore the remaining default roles and create a series of custom roles as described below.

In order of increasing privileges, it is recommended that the following roles be configured within Portal. It should be noted that each role below should have a PTC version and Contractor version of the role (e.g., PTC Viewer, Contractor Viewer, PTC User, Contractor User, etc.). Initially, the privileges can be identical between each corresponding PTC and Contractor roles, with any required changes between the two evolving over time depending on the specific use and role of various Contractors. Note that since the Portal is for internal PTC use only (not public access), none of the roles should include the privileges to “Share with Public” or “Make Groups Visible to Public”. While the configuration and security described

later would not permit this anyways, to be clear and consistent, these privileges should not be allowed within Portal (however, they WILL in fact be needed in AGOL).

Level 1 Roles

- PTC/Contractor Viewer – These two roles can be inherited directly from the default Viewer role privileges with no further changes.

Level 2 Roles

- PTC/Contractor User
- PTC/Contractor Editor
- PTC/Contractor Publisher
- PTC/Contractor Power User
- Administrator – This is the default Administrator role with all privileges which can be used for the site administrator. Note: There should be at least two users within the organization that have an administrator role (one as the lead and the other as a backup in case the administrator is not available, or the account is unable to be accessed).

Each of the Level 2 custom roles listed are presented below with a brief description and screenshot of the specific privileges granted to each.

6.4. System Usage

Usage logs are employed to measure system usage for both GIS and Data Analytics.

7. Roadmaps

7.1. Applications

#	Application Name	Application Type	Application Status	Current Version	Department
1	Operating Budget	Dashboard	In Production	Version 1	Enterprise
2	Capital Planning	Dashboard	In Production	Version 1	Infrastructure
3	Family and Medical Leave Act Calendar	Dashboard	In Production	Version 1	Human Resources
4	Early Warning Detection	Dashboard	In Production	Version 1	Traffic Engineering & Operations
5	Authorized Service Provider	Dashboard	In Production	Version 1	Traffic Engineering & Operations
6	Incident Timeline	Dashboard	In Production	Version 1	Traffic Engineering & Operations
7	Highway Safety	Dashboard	In Production	Version 1	Traffic Engineering & Operations

#	Application Name	Application Type	Application Status	Current Version	Department
8	Construction	Dashboard	In Development	Version 1	Engineering
9	Customer Service	Dashboard	Planned	Version 1	
10	Procurement	Dashboard	Planned	Version 1	
11	Executive Safety	Dashboard	Planned	Version 1	Multiple
12	Executive Infrastructure	Dashboard	Planned	Version 1	
13	Executive Mobility	Dashboard	Planned	Version 1	
14	Executive Finance	Dashboard	Planned	Version 1	
15	TEO Data capable	GIS	In Development	Version 1	Traffic Engineering & Operations
16	Storm Water Data Compilation	GIS	In Production	Version 1	Engineering
17	GeoEnable Utility Crossing App	GIS	Planned	Version 1	
18	Property Management App	GIS	In Production	Version 1	
19	Fleet Telematics Solution	GIS	Planned	Version 1	Maintenance
20	GIS Application Development	GIS	In Development	Version 1	GeoAnalytics
21	Field Data Collection Strategy and SOPs	GIS	In Production	Version 1	Engineering
22	Roads and Highways LRS	GIS	In Development	Version 1	GeoAnalytics
23	Straight Line Diagram / Road Analyzer	GIS	In Development	Version 1	GeoAnalytics
24	GIS Program Support	GIS	In Development	Version 1	GeoAnalytics
25	Storm Water Data Compilation and Field Tool	GIS	Planned	Version 2	Engineering
26	Field Data Collection Strategy and SOPs	GIS	Planned	Version 2	Engineering
27	TIMS Enhancements	GIS	In Development	Version 4	GeoAnalytics
28	TraCS Enhancements	GIS	Planned	Version 2	GeoAnalytics
29	TOCSA Mobile App	GIS	Planned	Version 1	GeoAnalytics
30	IT Dashboard	Dashboard	Planned	Version 1	GeoAnalytics
31	Human Resources	Dashboard	Planned	Version 2	GeoAnalytics
32	Facilities Operations	Dashboard	Planned	Version 3	GeoAnalytics

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1. Notice

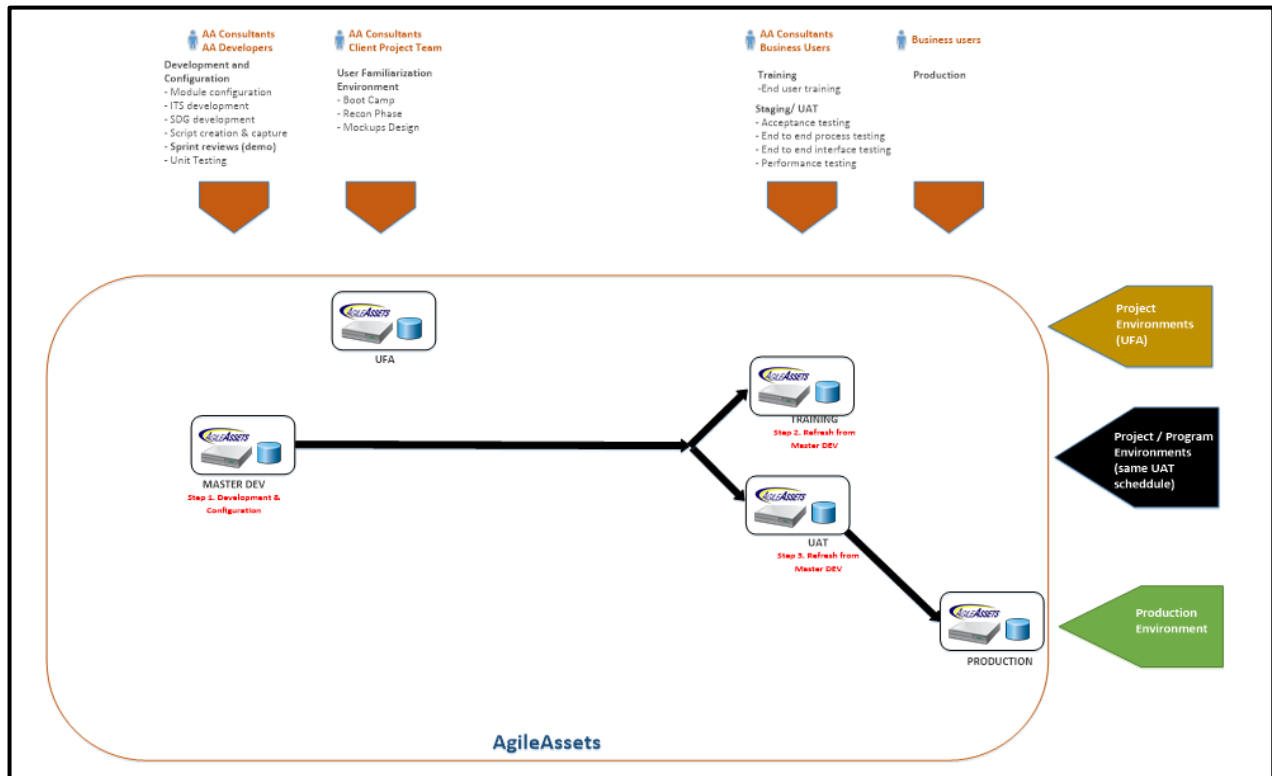
The information contained within this document is a point in time snapshot of the AgileAssets systems and applications. This information is intended to provide knowledge on the Commission’s AgileAssets world, however, be aware that the AgileAssets systems are in a constant state of change, as upgrades and projects occur. The Selected Proposer must support the AgileAssets systems for the duration of this agreement with the understanding that the configuration may not be completely documented in this Appendix Q.

2. Overview

AgileAssets is a Cloud Based Software as a Service physical asset management system used by the Commission to manage the assets needed to operate their core business of operating the Pennsylvania Turnpike. The Commission tracks assets such as signs, bridges, stormwater mitigation, and others. This system was initially deployed during 2017, and there are several ongoing projects in flight or planned to expand the use of AgileAssets.

This document is a high-level source of reference for the Agile Assets system, which has been implemented at the Pennsylvania Turnpike Commission.

3. Production Architecture



4. Version & OS platform where applicable

Application Name	Current Version Level	Operating System Platform & Version
Agile Assets	7.3.2.9-AMS_PTC-Release	(Cloud Based)
Foundation Server	7.3.2.9-AMS_PTC-Release	(Cloud Based)
Pavement analyst	7.3.2.9-AMS_PTC-Release	(Cloud Based)
Signs Manager	7.3.2.9-AMS_PTC-Release	(Cloud Based)

5. Licensing

Name	Type	Quantity	Status
Signs	Software as a service Agreement	40	Active
PAMS	Software as a service Agreement	10	Active
Foundation server	Software as a service Agreement	50	Active

6. Documentation Reference

<https://docs.agileassets.com/display/PD10/AgileAssets+Product+Documentation>

7. Sign Management System

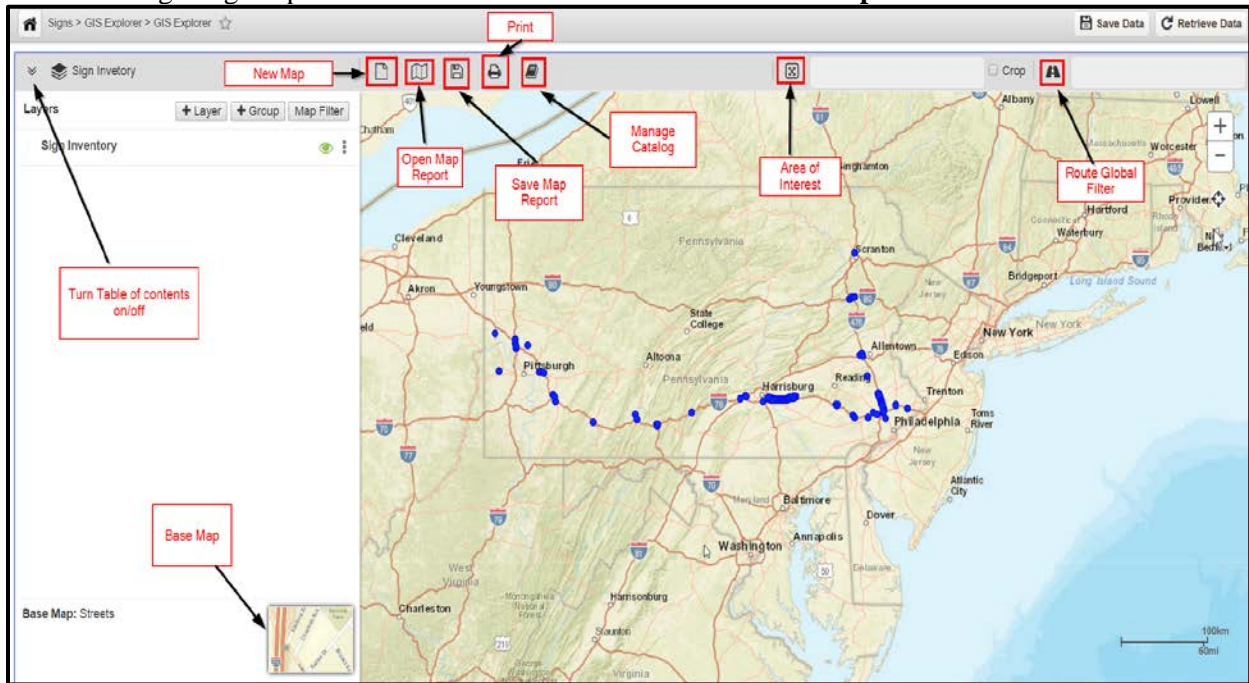
7.1. GIS Explorer Overview

The GIS Explorer is a sub-module of the AgileAssets Sign Management System application in which a user can map data and display it graphically. The GIS Explorer enables the user to perform various functions, such as making, displaying, and filtering layers. Sections 1-3 are applicable for any GIS User in the Sign Management System. Sections 4-7 are designed for GIS Administrator reference.

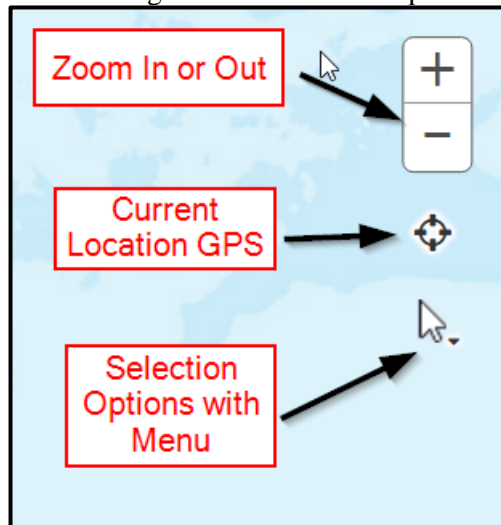
7.1.1. GIS Explorer Window

To display the **GIS Explorer** window, click on the **GIS Explorer** menu in the Signs Manager module and click on **GIS Explorer** (Signs Manager > GIS Explorer > GIS Explorer).




The following image depicts the buttons that are available in the **GIS Explorer** window:






The following buttons are available on the right side of the GIS Explorer window:



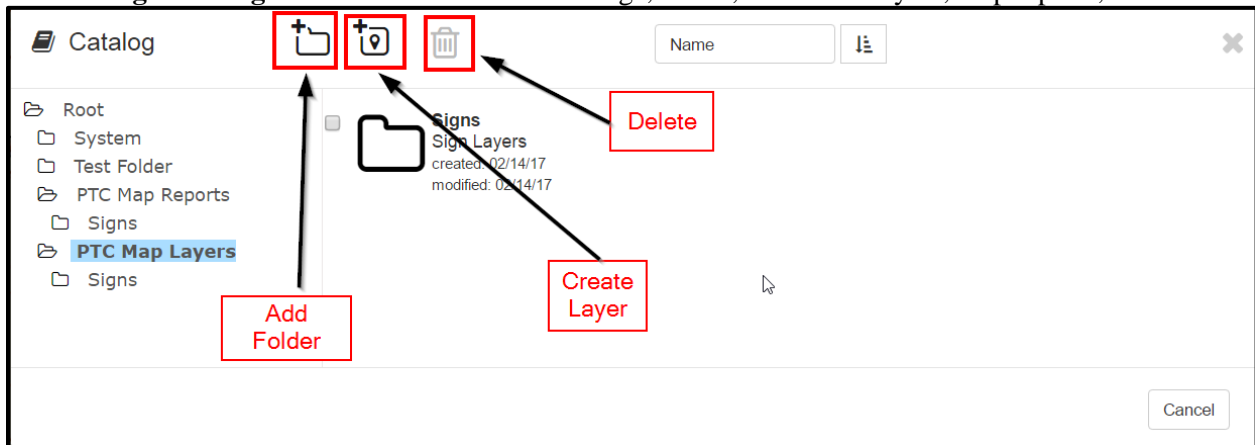
The following table explains some of the main commands used in the GIS Explorer window:

<p>New </p>	<p>Clear out the map or start a new map.</p>
<p>Open Map Report </p>	<p>Open an already saved Map Report.</p>
<p>Print </p>	<p>Print a map and choose a Print-Template.</p>

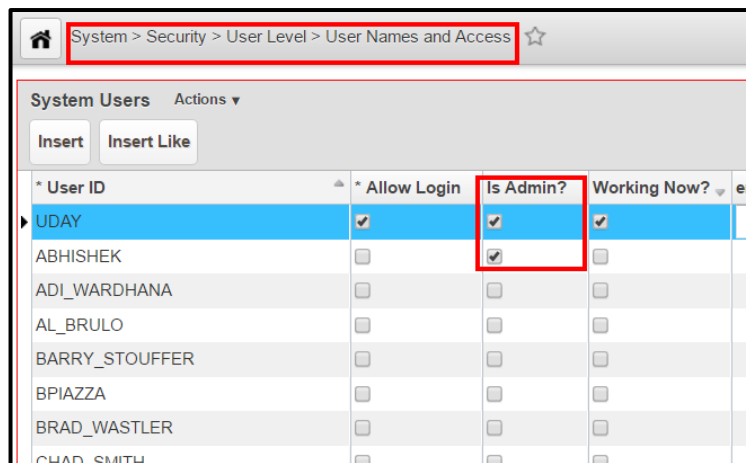
	Save a map report.
	Open and close the table of contents, this is where layers reside in a user’s maps.
	Manage and create all layers, map reports, and folders.

7.1.2. Manage Catalog

The **Manage Catalog** icon enables the user to manage, create, and delete layers, map reports, and folders.



Note: The catalog icon is visible to only those users who are identified as Admin in User Names and Access window (System > Security > User Level > User Names and Access). Admin’s will have the ability to delete layers and map reports, users will not.



7.1.3. Rules and Guidelines for Administrators

- All official PTC layers come from one view in the Sign Management System.

- When creating a new layer, the application will notify you if a source view or table is not supported when you hover on the table name with your mouse. In addition, the source view or table will be grayed out and not selectable.
- Must have a primary key on the view or table.
- Geometry or Shape must be in the WGS 1984 projection or 4326 SRID.

7.2. Interfaces

7.2.1.Interface A - Technical Specification – AgileAssets Create Signs

Date	8/9/2017
Description	An Asset will be created/modified in AgileAssets and documents may be attached or detached. Nightly an AgileAssets program will run and put the new/modified assets (XML file) and the attachments (JPG or PDF) on the AgileAssets SFTP server. Two SAP PI processes will run. First an SAP PI SFTP adapter will pull the attachments and place them on the PI server within PTC network. Second, an SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server, archive a copy of the file on the AgileAssets server, archive a copy of the file on the PI Server, send a copy of the file to the email process, and then pass the XML file directly to SAP ECC via proxy. The logic of the proxy process is 1) If any documents have been detached in AgileAssets, delete the DMS document in SAP. 2) If the status of the asset is “RETIRED”, then dismantle the functional location and set system status to ‘Inactive.’ 3) If status of asset is NOT “RETIRED” and no SAP Equipment number in XML file, then create new equipment. 4) If status of asset is NOT “RETIRED” and SAP Equipment number exists in XML file, then modify existing equipment. After equipment has been created/modified/dismantled, the proxy uses the SAP DMS process to link attachments.

Technical Name	16Q4 LPM I10210A
Description	A Server Proxy Method is used in ECC to receive the XML file from PI. This method, ZPYII_MI_AASIGNS_IA_PROXY_A~MI_AASIGNS_IA_PROXY_A, will call Function Module ZLPM_AGILEASSETS_EQUIP_CREATE, to create/modify/dismantle the equipment in SAP, detach DMS documents, and link the attachments using SAP DMS functionality. A Z-Table (ZLPM_AGILE_EQUIP) for AASigns equipment is updated in the function module after the equipment is successfully created/modified/dismantled.

<i>Program type</i>
<input checked="" type="checkbox"/> Batch <input type="checkbox"/> Online

<i>Direction of Interface</i>
<input checked="" type="checkbox"/> <i>Inbound</i> <input type="checkbox"/> <i>Outbound</i> <input type="checkbox"/> <i>Both</i>

<i>Process Description</i>
<ol style="list-style-type: none"> 1. AgileAssets – An Asset is created in Agile Assets for each sign tracked in the Sign Management System. An asset can also be retired or modified in the Sign Management System. Documents can be attached to the Asset (Only files named *.jpg, *.JPG, *.pdf, or *.PDF will be processed) or detached from an Asset. 2. AgileAssets – An extract program (SGN-03: Interface A) will read the internal Asset tables, with corresponding attachments, and create a file (XML format). If any documents have been detached from the assets, the filename will be included in the file. This file will be written to the AgileAssets SFTP Server (sftp://ptcuftpv1.agileassets.com). Since Assets can only be created in AgileAssets, the AgileAssets extract program will only include in the XML file the AgileAssets Assets that were created/modified/retired in the Sign Management System since the last run. 3. SAP PI – An SAP PI SFTP channel (CC_SENDER_SFTP_ATTACHMENTS_AASIGNS_B) will transfer the Assets’ attachment files from the AgileAssets server to the PI server (\\cvx21\XP2Interface\Inbound\LO\Signs\InterfaceA) within the PTC firewall. <p>Note: This SAP PI channel, that moves the attachments, should be run first. For attachments to equipment, SAP uses DMS technology. When the XML file is processed and the equipment is created in SAP, DMS links the attachment(s) immediately after creation. So the attachments need to be completely moved to the PI server before the XML file in Step 4 is processed.</p> <ol style="list-style-type: none"> 4. SAP PI – An SAP PI SFTP channel (CC_SENDER_SFTP_XML_AASIGNS_A) will pull the XML file from the AgileAssets SFTP server daily at a specified time. PI will make additional mappings (if necessary), and pass the XML file to an SAP Proxy method, archive a copy to the PI server archive folder, and write a copy to the email process folder. After the file has been successfully passed to the proxy (ZPYCL_MI_AASIGNS_IA_PROXY_A~ZPYII_MI_AASIGNS_IA_PROXY_A), the file will be moved to an archive folder (//data/PRD/Interface/A/archive), on the AgileAssets SFTP server. 5. SAP – The proxy method will receive the XML file into SAP and call function module ZLPM_AGILEASSETS_EQUIP_CREATE to process the XML file. If the asset has had a document detached from it, the corresponding SAP DMS document will be deleted. If the Asset has been retired in AgileAssets, then the functional location will be dismantled from SAP Equipment and the system status set to ‘Inactive.’ If the Asset status is NOT retired and there is no SAP Equipment number for the Asset in the XML file, then an Equipment will be created in SAP. If the Asset status is NOT retired and there is an SAP Equipment number for the Asset in the XML file, then the existing Equipment will be modified in SAP (see Note below for fields that can/will be modified). After the Asset/Equipment has been created/modified/dismantled, if there are any attachments related to the Asset/Equipment, then SAP DMS functionality will be used within the function module to link

the related attachments to the SAP Equipment. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of SAP Equipment created/modified/dismantled will be written to the log file (SLG1).

Note: Fields that will be updated on existing SAP Equipment are: 1) Sortfield (AA Asset ID) 2) Equipment description 3) Linear Data 4) Equipment position at FuncLoc 5) Functional Location (when it has changed) and all attributes of functional location (i.e. planning plant, maintenance plant, cost center, etc.).

Extraction Description

The XML data is extracted in the AgileAssets system via the “SGN-03: Interface A” system job.

The job is scheduled to execute once a day. The XML file and attachments are written to /data/DEV/interface/A/out/ folder on SFTP server ptcuftpv1.agileassets.com.

XML File Format - Extracted From AgileAssets

Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Data Type	Occurrence	Field Description
Record			Node	0..unbound	Record with Work Request info
	AA_Asset_ID		String	1..1	AgileAssets Asset ID
	SAP_Equip_Nbr		String	0..1	SAP Equipment Number
	Asset_Name		String	0..1	AgileAsset Asset Description
	Asset_FLoc		String	0..1	Functional Location assigned in AgileAssets
	Asset_Status		String	0..1	Status of asset in AgileAssets
	Asset_Mile_Marker		String	0..1	Mile marker of asset in AgileAssets
	Asset_Mile_Post		String	0..1	Mile post of asset in AgileAssets
	Attachments		Node	0..1	Work Request Attachments
		Filename	String	1..unbound	Filename of attachments
	Detachments		Node	0..1	Work Request Detachments
		Filename	String	1..unbound	Filename of detachments

Middleware Description – SAP PI Components

Description	INTERFACE A – Daily AgileAsset Asset XML file to ECC Proxy
Direction	Pulling

Method of pulling/pushing	SAP PI SFTP Adapter
Namespace	http://paturnpike.com/LO/AASigns_A
Data Type	DT_AASigns_A
Message Type	MT_AASigns_XML_A (used by source and target)
Message Interfaces	MI_AASigns_IA_Proxy_A MI_AASigns_OA_Proxy_A MI_AASigns_OA_Attachments_A
Message Mappings	MM_AASigns_File_to_Proxy_A
Interface Mappings	IM_AASigns_File_to_Proxy_A
Sender Channel	CC_SENDER_SFTP_XML_AASIGNS_A (BC_AASIGNS_A_XML_SENDER) CC_SENDER_SFTP_ATTACHMENTS_AASIGNS_B (BC_AASIGNS_B_ATTACHMENTS_SENDER)
Receiver Channel	CC_RECEIVER_PROXY (ED2CLNT210) CC_RECEIVER_FILE_XML_COPY_AASIGNS_A (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_A (BC_AASIGNS_XML_MAIL_RECEIVER) CC_RECEIVER_FILE_ATTACHMENTS_AASIGNS_A (INTEGRATION_SERVER_XD2)
Sender Agreement	BC_AASIGNS_A_XML_SENDER / MI_AASigns_OA_Proxy_A Channel: CC_SENDER_SFTP_XML_AASIGNS_A BC_AASIGNS_A_ATTACHMENTS_SENDER / MI_AASigns_OA_Attachments_A Channel: CC_SENDER_SFTP_ATTACHMENTS_AASIGNS_A
Receiver Agreement	BC_AASIGNS_A_XML_SENDER / ED2CLNT210 / MI_AASigns_IA_Proxy_A

	<p>Channel: CC_RECEIVER_PROXY</p> <p>BC_AASIGNS_A_XML_SENDER / INTEGRATION_SERVER_XD2 / MI_AASigns_OA_Proxy_A</p> <p>Channel: CC_RECEIVER_FILE_XML_COPY_AASIGNS_A</p> <p>BC_AASIGNS_A_XML_SENDER / BC_AASIGNS_XML_MAIL_RECEIVER / MI_AASigns_OA_Proxy_A</p> <p>Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_A</p> <p>BC_AASIGNS_A_ATTACHMENTS_SENDER / INTEGRATION_SERVER_XD2 / MI_AASigns_OA_Attachments_A</p> <p>Channel: CC_RECEIVER_FILE_ATTACHMENTS_AASIGNS_A</p>
<p>Interface Determination</p>	<p>BC_AASIGNS_A_XML_SENDER / MI_AASigns_OA_Proxy_A / ED2CLNT210 / IM_AASigns_File_to_Proxy_A</p>
<p>Receiver Determination</p>	<p>BC_AASIGNS_A_XML_SENDER / MI_AASigns_OA_Proxy_A</p> <p>Receiver: ED2CLNT210</p> <p>Receiver: INTEGRATION_SERVER_XD2</p> <p>Receiver: BC_AASIGNS_XML_MAIL_RECEIVER</p> <p>BC_AASIGNS_A_ATTACHMENTS_SENDER / MI_AASigns_OA_Attachments_A</p> <p>Receiver: INTEGRATION_SERVER_XD2</p>

<p><i>Loading Description</i></p> <p>SAP PI passes XML file to Proxy method: ZPYII_MI_AASIGNS_IA_PROXY_A~MI_AASIGNS_IA_PROXY_A</p> <p>ZPYII_MI_AASIGNS_IA_PROXY_A~MI_AASIGNS_IA_PROXY_A</p> <ul style="list-style-type: none"> • Loop through XML file and create 3 temporary tables <ol style="list-style-type: none"> 1. Table with Asset/Equipment info 2. Table with Asset ID and attachment filenames
--

<p>3. Table with Asset ID and detached filenames</p> <ul style="list-style-type: none"> • If XML file has record(s), Call function Module ‘ZLPM_AGILEASSETS_EQUIP_CREATE’ passing 3 temporary tables • If XML file is empty, write message to application log

<i>Load Format</i>
SAP Proxy load format is the same as Extraction Format from AgileAssets.

<i>Failure / Restart Programs</i>
<p>Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.</p> <p>Proxy and Function Module will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:</p> <p>Proxy Method: ZPYII_MI_AASIGNS_IA_PROXY_A~MI_AASIGNS_IA_PROXY_A</p> <ul style="list-style-type: none"> • Empty file message <p>Function Module: ZLPM_AGILEASSETS_NOTIF_CREATE</p> <ul style="list-style-type: none"> • ZPM005 – ERROR LOGIC, sys-host not found (Dev defaulted) RC: & • ZPM012 – ERROR: No XML proxy file created - RC: & • ZPM013 – INFO: Empty AASigns Equipment File - RC= & • ZPM014 – ERROR: User-Status not successfully set to "Available" for Equipment: & • ZPM015 – ERROR: System-Status not successfully set to "Inactive" for Equipment: & • ZPM016 – ERROR: System-Status not successfully set to "Installed" for Equipment: & • ZPM017 – ERROR Inserting data into custom table ZLPM_AGILE_EQUIP => RC: & • ZPM018 – ERROR selecting data from custom table ZLPM_AGILE_EQUIP => RC: &

Function Module	Logic Diagram
ZLPM_AGILEASSETS_EQUIP_CREATE	<ol style="list-style-type: none"> 1. Get timestamp for Interface A run 2. Create Application Log entry 3. LOOP through XML file <ol style="list-style-type: none"> a) IF Document has been detached from Asset <ul style="list-style-type: none"> - Delete DMS Document linked to equipment b) IF SAP Equipment is blank and status NOT retire: <ul style="list-style-type: none"> - Create SAP Equipment - Insert record into ZLPM_AGILE_EQUIP - Change system status to ‘Installed’

	<ul style="list-style-type: none"> - Change user status to ‘Available: not Assignable’ c) IF SAP Equipment NOT blank and status is retire: <ul style="list-style-type: none"> - get functional location from SAP equipment - Dismantle functional location from equipment - Change system status to ‘Inactive’ - Update ZLPM_AGILE_EQUIP record to ‘Inactive’ d) IF SAP Equipment NOT blank & status NOT retire: <ul style="list-style-type: none"> - IF Agile & SAP FuncLoc same, update: <ul style="list-style-type: none"> Sortfield Description Linear Data Equipment position at FuncLoc - IF Agile & SAP FuncLoc different, update: <ul style="list-style-type: none"> - Dismantle current SAP FuncLoc - Install Agile FuncLoc & update above fields - Change system status to ‘Installed’ - Change user status to ‘Available’ - Update status on ZLPM_AGILE_EQUIP e) IF attachment(s) exist for equipment, link via DMS <p>4. Update timestamp on ZLPM_AGILE_IF.</p> <p>5. Write summary info to Application Log</p>
--	--

7.2.2.Interface A - Create Equipment from Agile Assets Interface

Overview	
Custom Dev ID:	17Q3_LPM_I10210
Dev Type:	PI, Proxy, ECC
Interface Name:	SIGNS Interface A Creates/Modifies Equipment
Description:	An Asset is created/modified in AgileAssets and documents may be attached or detached. Nightly an AgileAssets program runs and put the new/modified assets and the attachments on the AgileAssets SFTP server. For documents that are detached in AgileAssets, the detached filename will be added to the XML file. An SAP PI SFTP adapter pulls the attachments and places them on the PI server. then, an SAP PI SFTP Adapter pulls the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. The logic of the proxy process is 1) If document was detached in Agile, use DMS process to delete it from SAP equipment 2) If the asset status is “RETIRED”, then dismantle the functional location and set system status to ‘Inactive.’ 3) If asset status is NOT “RETIRE” and no SAP Equipment number exists, create new equipment. 4) If asset status is NOT “RETIRE” and SAP Equipment number exists, then modify existing equipment. After equipment has been created/modified, the proxy uses DMS process to link attachments.
Released:	4th quarter, 2017

Data Source(s) and Frequency	
In/Out Bound: Inbound.	
Frequency:	Daily, scheduled for 2 AM.
Pull/Push:	Pull.
Method:	Interface file is received via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of Distribution List:	
Additional Info	
Transaction Code:	n/a.
Job Name:	n/a
Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. AgileAssets job runs to extract all assets created/modified since last extract. 2. AgileAssets job places extracted assets on Agile’s SFTP server (sftp://ptcuftpv1.agileassets.com) in directory <u>\\data\PRD\interface\A\out</u> (XML) & <u>\\data\PRD\interface\A\out\attachments</u> (Attachments) 3. PI copies the attachments to PI folder <u>\\cvxp21\XP2Interface\Inbound\LO\Signs\In\InterfaceA\</u> 4. PI pulls .xml file and passes it to the proxy/function module, archives a copy to <u>\\cvxp21\Archive\Inbound\LO\SIGNS\IN\InterfaceA\</u>, and writes copy to email folder <u>\\cvxp21\XP2Interface\Inbound\LO\Signs\IN\InterfaceA\Process\</u> 5. ECC proxy/function module creates/modifies equipment using the .xml file and links attachments via DMS process 6. Use IE03 to view equipment and attachments 	

ABAP Information

Function Module: ZLPM_AGILEASSETS_EQUIP_CREATE

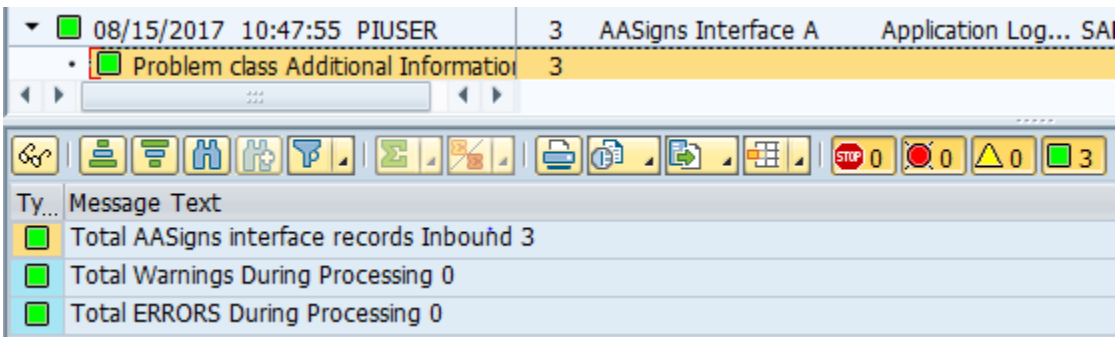
File attachments are sent to PI server in:

\\cvxd2\XD2Interface\Inbound\LO\Signs\InterfaceA\

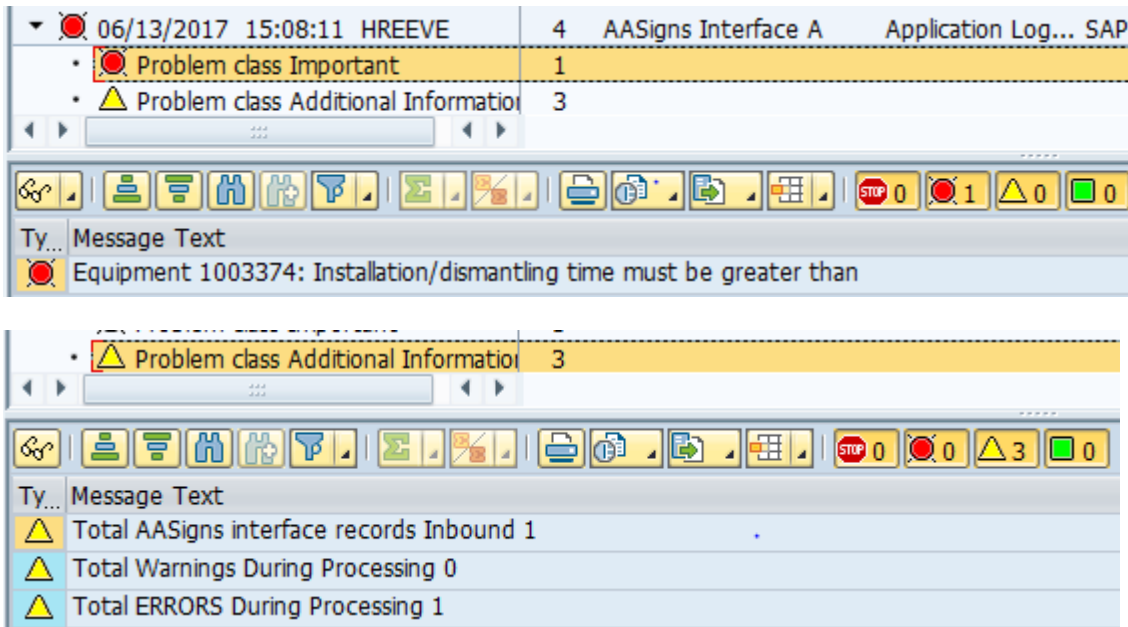
\\cvxq2\XQ2Interface\Inbound\LO\SIGNS\IN\INTERFACEA

\\cvxp21\XP2Interface\Inbound\LO\Signs\InterfaceA\

When the file is processed successfully, there will be an SLG1 entry like this:



When there is an error in processing, there will be an SLG1 entry like this:



When you are testing in Dev, in order to get test data:

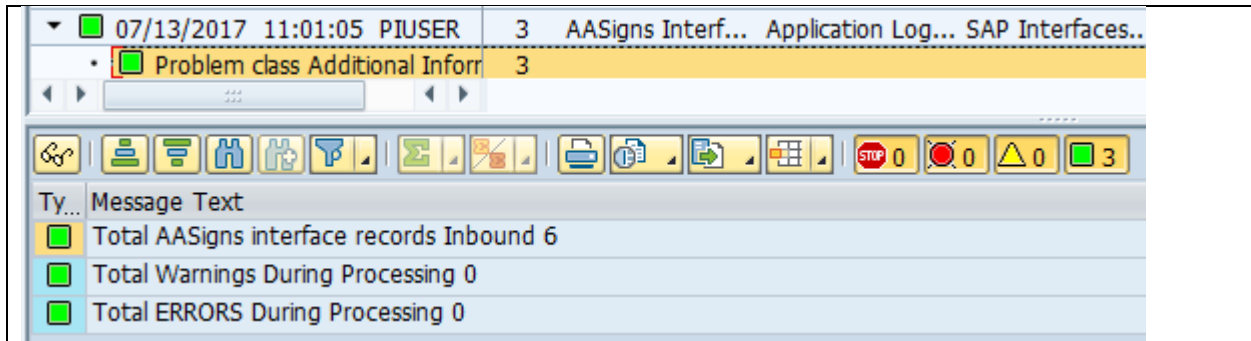
1) Copy attachment files from Prod PI folder to Agile SFTP server (sftp://ptcuftpv1.agileassets.com) \\data\DEV\interface\A\out\attachments\
2) Copy the corresponding day's .xml file from the Prod archive folder to the Agile SFTP server \\data\DEV\interface\A\out\
3) Make sure the attachment file names from the xml match the attachment file names.
PROXY: ZPYII_MI_AASIGNS_IA_PROXY_A~MI_AASIGNS_IA_PROXY_A
PI Scenario: ZPTC_LO_PM_AASIGNS_A

7.2.3.Interface B - Create Notifications from Agile Assets Interface

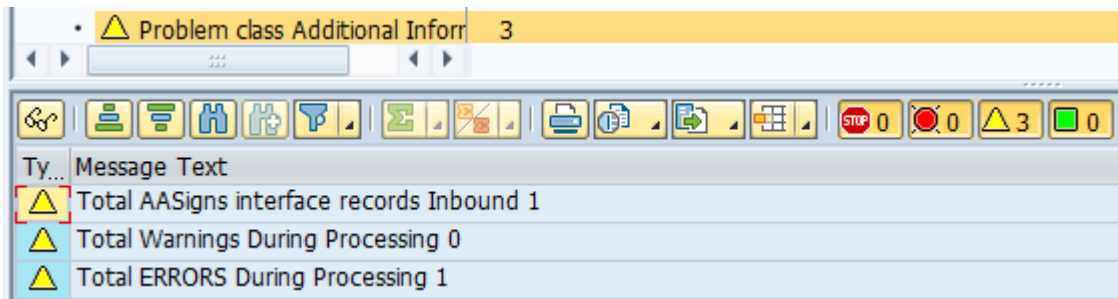
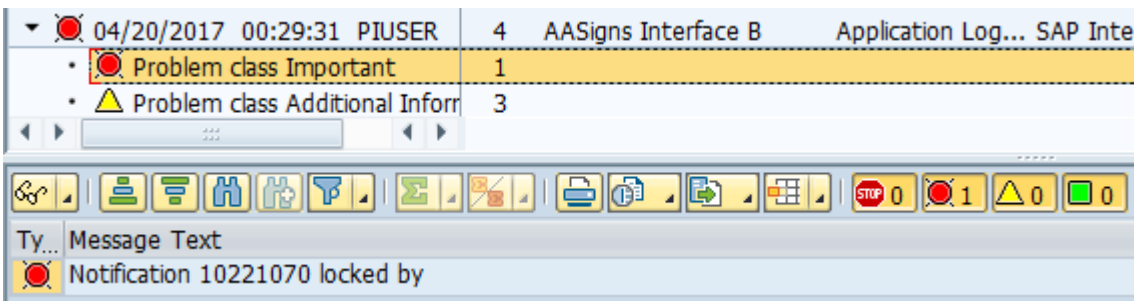
Overview	
Custom Dev ID:	17Q3_LPM_I10210
Dev Type:	PI, Proxy, OnBase, ECC
Interface Name:	SIGNS Interface B Create Notifications
Description:	Work requests will be created/modified in AgileAssets and documents may be attached. Nightly an AgileAssets program will run and put the new/modified work requests (XML file) and the attachments (JPG or PDF) on the AgileAssets SFTP server. Two SAP PI processes will run. First an SAP PI SFTP adapter will pull the attachments and place them in the OnBase directory within PTC network. Second, an SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. If an SAP Notification exists in the XML file, the SAP Notification will be modified. Otherwise a new Notification will be created.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Inbound.
Frequency:	Daily, scheduled for 3 AM.
Pull/Push:	Pull.
Method:	Interface file is received via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files
End of Job/Communication Information	
Email Sent:	yes.

Type:	Application Log entry if errors (SLG1). Application log Success entry if successful?
Members of Distribution List:	
Additional Info	
Transaction Code:	n/a.
Job Name:	n/a
Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. AgileAssets job runs to extract all work requests created/modified since last extract. 2. AgileAssets job places extracted work requests on Agile’s SFTP server (sftp://ptcuftpv1.agileassets.com) in directory <u>\\data\PROD\interface\Signs\B\out\</u> (XML) & <u>\\data\PROD\interface\Signs\B\out\attachments\</u> (Attachments) 3. PI copies the attachments to OnBase folder <u>\\cvonbasep2\pm_agile_assets_signs\</u> 4. PI pulls .xml file and passes it to the proxy/function module, archives a copy to <u>\\cvxp21\Archive\Inbound\LO\SIGNS\IN\InterfaceB\</u>, and writes copy to email folder <u>\\cvxp21\XP2Interface\Inbound\LO\Signs\IN\InterfaceB\Process\</u> 5. ECC proxy/function module creates/modifies notifications using the .xml file and writes DIP file to the OnBase folder 6. The On-Base Import job uses DIP file to link the attachments from the OnBase folder <u>\\cvonbasep2\pm_agile_assets_signs\</u> to ECC notifications 7. Use IW22 to view notifications and attachments (IW29) search created by ‘AASIGNS’ 	

ABAP Information	
Function Module:	ZLPM_AGILEASSETS_NOTIF_CREATE
File attachments are sent to OnBase in:	
<u>\\cvonbased2\pm_agile_assets_signs\</u>	
<u>\\cvonbaseq2\pm_agile_assets_signs\</u>	
<u>\\cvonbasep2\pm_agile_assets_signs\</u>	
When the file is processed successfully, there will be an SLG1 entry like this:	



When there is an error in processing, there will be an SLG1 entry like this:



When you are testing in Dev, in order to get test data:

- 1) If issue is in SAP =>Copy attachment files from Prod OnBase folder to Agile SFTP server (sftp://ptcuftpv1.agileassets.com) \\data\DEV\interface\Signs\B\out\attachments\. Copy the corresponding day's .xml file from the Prod archive folder to the Agile SFTP server \\data\DEV\interface\Signs\B\out\. Make sure the attachment file names from the xml match the attachment file names.
- 2) If the error is in AgileAssets => since this is not an interface issue, the situation will have to be recreated in the test environment of AgileAssets.

PI Information

PROXY: ZPYII_MI_AASIGNS_IA_PROXY_B~MI_AASIGNS_IA_PROXY_B

PI Scenario: ZPTC_LO_PM_AASIGNS_B

7.2.4.Interface B - Create Notifications from Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_PRJ15638
Dev Type:	PI, Proxy, OnBase, ECC
Interface Name:	PaMS Interface B Create Notifications
Description:	Work requests will be created/modified in AgileAssets and documents may be attached. Nightly an AgileAssets program will run and put the new/modified work requests (XML file) and the attachments (JPG or PDF) on the AgileAssets SFTP server. Two SAP PI processes will run. First an SAP PI SFTP adapter will pull the attachments and place them in the OnBase directory within PTC network. Second, an SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. If an SAP Notification exists in the XML file, the SAP Notification will be modified. Otherwise a new Notification will be created.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Inbound.
Frequency:	Daily, scheduled for 3 AM.
Pull/Push:	Pull.
Method:	Interface file is received via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful?
Members of Distribution List:	
Additional Info	
Transaction Code:	n/a.
Job Name:	n/a

Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. AgileAssets job runs to extract all work requests created/modified since last extract. 2. AgileAssets job places extracted work requests on Agile’s SFTP server (sftp://ptcuftpv1.agileassets.com) in directory <u>\\data\PRD\interface\PAMS\B\out\</u> (XML) & <u>\\data\PRD\interface\PAMS\B\out\attachments\</u> (Attachments) 3. PI copies the attachments to OnBase folder <u>\\cvonbasep2\pm_agile_assets_pavement\</u> 4. PI pulls .xml file and passes it to the proxy/function module, archives a copy to <u>\\cvxp21\Archive\Inbound\LO\PAMS\IN\InterfaceB\</u>, and writes copy to email folder <u>\\cvxp21\XP2Interface\Inbound\LO\PAMS\IN\InterfaceB\Process\</u> 5. ECC proxy/function module creates/modifies notifications using the .xml file and writes DIP file to OnBase folder. (If there are no attachments, no DIP file is written) 6. The On-Base Import job uses DIP file to link the attachments from the OnBase folder <u>\\cvonbasepr\pmdocuments\</u> to ECC notifications 7. Use IW22 to view notifications and attachments (IW29) search created by ‘AAPAMS’ 	

ABAP Information

Function Module: ZLPM_AGILEASSETS_NOTIF_PAMS

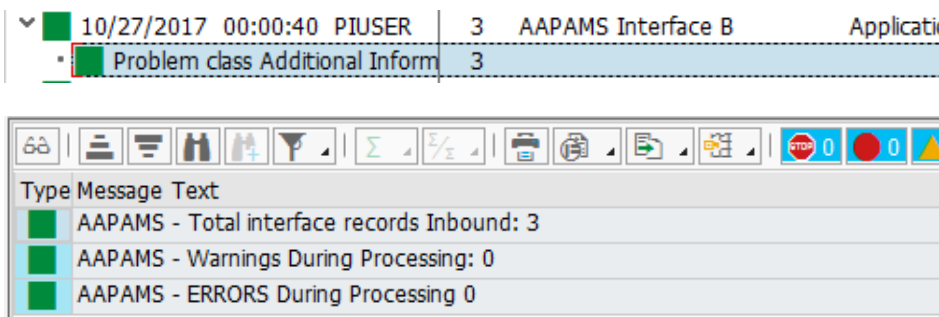
File attachments are sent to OnBase in:

\\cvonbased2\pm_agile_assets_pavement\

\\cvonbaseq2\pm_agile_assets_pavement\

\\cvonbasep2\pm_agile_assets_pavement\

When the file is processed successfully, there will be an SLG1 entry like this:



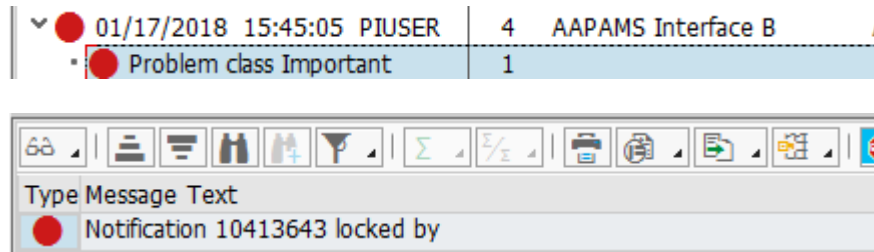
The screenshot shows a table with the following data:

10/27/2017 00:00:40	PIUSER	3	AAPAMS Interface B	Applicati
Problem class Additional Inform		3		

Below the table is a toolbar with various icons and a status bar showing:

- Type: Message
- Text: AAPAMS - Total interface records Inbound: 3
- AAPAMS - Warnings During Processing: 0
- AAPAMS - ERRORS During Processing 0

When there is an error in processing, there will be an SLG1 entry like this:



When you are testing in Dev, in order to get test data:

- 1) Copy attachment files from Prod OnBase folder to Agile SFTP server
(sftp://ptcuftpv1.agileassets.com) \\data\DEV\interface\PAMS\B\out\attachments\
- 2) Copy the corresponding day's .xml file from the Prod archive folder to the Agile SFTP server
\\data\DEV\interface\PAMS\B\out\
- 3) Make sure the attachment file names from the xml match the attachment file names.

PROXY: ZPYII_MI_AAPAMS_IA_PROXY_B~SI_AAPAMS_IA_PROXY_B

PI Scenario: ZPTC_LO_PM_AAPAMS_B

7.2.5.Interface B - Technical Specification –Create Notifications

Date	3/29/2017
Description	Work requests will be created/modified in AgileAssets and documents may be attached. Nightly an AgileAssets program will run and put the new/modified work requests (XML file) and the attachments (JPG or PDF) on the AgileAssets SFTP server. Two SAP PI processes will run. First an SAP PI SFTP adapter will pull the attachments and place them in the OnBase directory within PTC network. Second, an SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. If an SAP Notification exists in the XML file, the SAP Notification will be modified. Otherwise a new Notification will be created. A DIP file (with notification numbers and attachment filenames) will be created and placed in the OnBase directory. An OnBase process will run, which reads the DIP file and links the attachments to the SAP Notifications.

Technical Name	16Q4 LPM I10210B
Description	A Server Proxy Method is needed to receive the XML file from PI. This method, ZPYII_MI_AASIGNS_IA_PROXY_B~MI_AASIGNS_IA_PROXY_B, will call Function Module

	<p>ZLPM_AGILEASSETS_NOTIF_CREATE, to create/modify the notifications and load the attachments. A Z-Table (ZLPM_AGILE_WR) for Work Requests is updated in a user-exit at the time of Notification “SAVE” (EXIT_SAPLMCI1_001), to maintain the notification & work order information relevant to AgileAssets Signs work requests.</p>
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<p><i>Program type</i></p>
<p><input type="checkbox"/> <i>Batch</i> <input checked="" type="checkbox"/> <i>Online</i></p>

<p><i>Direction of Interface</i></p>
<p><input checked="" type="checkbox"/> <i>Inbound</i> <input type="checkbox"/> <i>Outbound</i> <input type="checkbox"/> <i>Both</i></p>

<p><i>Process Description</i></p>
<ol style="list-style-type: none"> 1. AgileAssets – A Work Request referencing a sign or functional location, is created in Agile Assets. Documents can be attached to the Work Request. (Only files named *.jpg, *.JPG, *.pdf, or *.PDF will be processed) 2. AgileAssets – An extract program (SGN-03: Interface B) will read the internal Work Request tables, with corresponding attachments, and create a file (XML format). This file will be written to the AgileAssets SFTP Server (sftp://ptcuftpv1.agileassets.com) directory \\data\PROD\interface\Signs\B\out\. The attachments are written to directory \\data\PROD\interface\Signs\B\out\attachments\. Since Notifications/Work Orders can also be created in SAP, the AgileAssets extract program will include in the XML file the AgileAssets Work Requests that were created from SAP Notifications. 3. SAP PI – An SAP PI SFTP channel (CC_SENDER_SFTP_ATTACHMENTS_AASIGNS_B) will transfer the Work Request attachment files from the AgileAssets server to the OnBase directory (\\CVONBASED2\PM_AGILE_ASSETS_SIGNSS\$) within the PTC firewall. <p>Note: This SAP PI channel, that moves the attachments, should be run first. For attachments to notifications, SAP uses ArchiveLink technology. When the XML file is processed and notifications are created in SAP, a DIP file will be placed on the OnBase server. The DIP file, among other information, has the attachment name and the SAP Notification number it should be linked to. An OnBase process uses this DIP file to link the attachments moved in Step 3, to the notifications created in Step 5. So the attachments need to be moved to the OnBase server before the XML file places the DIP file on the OnBase server and before the OnBase process runs.</p> 4. SAP PI – An SAP PI SFTP channel (CC_SENDER_SFTP_XML_AASIGNS_B) will pull the XML file from the AgileAssets SFTP server daily at a specified time. PI will make additional mappings (if necessary), and pass the XML file to an SAP Proxy method, archive a copy to the PI server archive folder, and write a copy to the email process folder. After the file has been successfully passed to the

- proxy (ZPYCL_MI_AASIGNS_IA_PROXY_B~ZPYII_MI_AASIGNS_IA_PROXY_B), the file will be moved to an archive folder (//data/PRD/Interface/B/archive), on the AgileAssets SFTP server.
- SAP – The proxy method will receive the XML file into SAP and call function module ZLPM_AGILEASSETS_NOTIF_CREATE to process the XML file. If a Work Request has an SAP Notification number, then the SAP Notification will be updated (see Note below for fields that can/will be updated). If the SAP Notification number is blank for the Work Request, an SAP Notification will be created. After the notifications are created, a DIP file will be created with the attachment info. This DIP file will be placed in the OnBase directory (in same directory where the attachments were moved to in step 3). If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of notifications created will be written to the log file (SLG1).
- Note:** Fields that will be updated on existing SAP notifications are: 1) Priority 2) Short text 3) Long text 4) Reference Number (with AgileAssets Work Request number, not displayed) 5) a DIP file will be created for attachments.
- OnBase - OnBase will run a program to look for DIP files in the specified OnBase directory. Using the info in the DIP file, OnBase will attach the documents on the server to their corresponding notifications.

Extraction Description

The XML data is extracted in the AgileAssets system via the “SGN-03: Interface B” system job.

The job is scheduled to execute once a day. The XML file is written to //data/PROD/interface/Signs/B/out/ folder on SFTP server ptcuftpv1.agileassets.com. The attachments are written to the //data/PROD/interface/Signs/B/out/attachments/ folder.

XML File Format - Extracted From AgileAssets

Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Data Type	Occurrence	Field Description
Record			Node	0..unbound	Record with Work Request info
	AA_workReq_nbr		String	1..1	AgileAssets Work Request number
	SAP_FLoc_ID		String	1..1	Functional Location
	SAP_Equip_Nbr		String	0..1	SAP Equipment Number
	SAP_Notif_Nbr		String	0..1	SAP Notification Number
	Priority_ID		String	0..1	Priority of work request/Notification (1, 2, 3)
	wr_short_desc		String	0..1	Work Request short description (40 char)
	wr_long_desc		String	0..1	Work Request long description (4000 char)

Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Data Type	Occurrence	Field Description
	Attachments		Node	0..1	Work Request Attachments
		Filename	String	1..unbound	Filename of attachments

<i>Middleware Description – SAP PI Components</i>	
Description	INTERFACE B – Daily Work Request XML file to ECC Proxy
Direction	Pulling
Method of pulling/pushing	SAP PI SFTP Adapter
Namespace	http://paturnpike.com/LO/AASigns_B
Data Type	DT_AASigns_B
Message Type	MT_AASigns_XML_B (used by source and target)
Message Interfaces	MI_AASigns_IA_Proxy_B MI_AASigns_OA_Proxy_B MI_AASigns_OA_Attachments_B
Message Mappings	MM_AASigns_File_to_Proxy_B
Interface Mappings	IM_AASigns_File_to_Proxy_B
Sender Channel	CC_SENDER_SFTP_XML_AASIGNS_B (BC_AASIGNS_B_XML_SENDER) CC_SENDER_SFTP_ATTACHMENTS_AASIGNS_B (BC_AASIGNS_B_ATTACHMENTS_SENDER)
Receiver Channel	CC_RECEIVER_PROXY (ED2CLNT210) CC_RECEIVER_FILE_XML_COPY_AASIGNS_B (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_B (BC_AASIGNS_XML_MAIL_RECEIVER)

	<p>CC_RECEIVER_FILE_ATTACHMENTS_AASIGNS_B (BC_ONBASE_AASIGNS_B_ATTACHMENTS_RECEIVER)</p>
Sender Agreement	<p>BC_AASIGNS_B_XML_SENDER / MI_AASigns_OA_Proxy_B</p> <p>Channel: CC_SENDER_SFTP_XML_AASIGNS_B</p> <p>BC_AASIGNS_B_ATTACHMENTS_SENDER / MI_AASigns_OA_Attachments_B</p> <p>Channel: CC_SENDER_SFTP_ATTACHMENTS_AASIGNS_B</p>
Receiver Agreement	<p>BC_AASIGNS_B_XML_SENDER / ED2CLNT210 / MI_AASigns_IA_Proxy_B</p> <p>Channel: CC_RECEIVER_PROXY</p> <p>BC_AASIGNS_B_XML_SENDER / INTEGRATION_SERVER_XD2 / MI_AASigns_OA_Proxy_B</p> <p>Channel: CC_RECEIVER_FILE_XML_COPY_AASIGNS_B</p> <p>BC_AASIGNS_B_XML_SENDER / BC_AASIGNS_XML_MAIL_RECEIVER / MI_AASigns_OA_Proxy_B</p> <p>Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_B</p> <p>BC_AASIGNS_B_ATTACHMENTS_SENDER / BC_ONBASE_AASIGNS_B_ATTACHMENTS_RECEIVER / MI_AASigns_OA_Attachments_B</p> <p>Channel: CC_RECEIVER_FILE_ATTACHMENTS_AASIGNS_B</p>
Interface Determination	<p>BC_AASIGNS_B_XML_SENDER / MI_AASigns_OA_Proxy_B / ED2CLNT210 / IM_AASigns_File_to_Proxy_B</p>
Receiver Determination	<p>BC_AASIGNS_B_XML_SENDER / MI_AASigns_OA_Proxy_B</p> <p>Receiver: ED2CLNT210</p> <p>Receiver: INTEGRATION_SERVER_XD2</p> <p>Receiver: BC_AASIGNS_XML_MAIL_RECEIVER</p>

	<p>BC_AASIGNS_B_ATTACHMENTS_SENDER / MI_AASigns_OA_Attachments_B</p> <p>Receiver: BC_ONBASE_AASIGNS_B_ATTACHMENTS_RECEIVER</p>
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Loading Description

SAP PI passes XML file to Proxy method:

ZPYII_MI_AASIGNS_IA_PROXY_B~MI_AASIGNS_IA_PROXY_B

ZPYII_MI_AASIGNS_IA_PROXY_B~MI_AASIGNS_IA_PROXY_B

- Loop through XML file and create 3 tables
 1. Table with Notification/work request info
 2. Table with Work Request# and long text
 3. Table with Work Request# and attachment filenames
- If XML file has record(s), Call function Module 'ZLPM_AGILEASSETS_NOTIF_CREATE' passing 3 tables
- If XML file is empty, write message to application log

Load Format

SAP Proxy load format is the same as Extraction Format from AgileAssets.

Failure / Restart Programs

Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.

Proxy and Function Module will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:

Proxy Method: ZPYII_MI_AASIGNS_IA_PROXY_B~MI_AASIGNS_IA_PROXY_B

- Empty file message

Function Module: ZLPM_AGILEASSETS_NOTIF_CREATE

- ZPM005 – ERROR LOGIC, sys-host not found (Dev defaulted) RC: &
- ZPM006 – ERROR opening DIP file/not created RC: &

- ZPM007 – ERROR writing to DIP file RC: &
- ZPM008 – ERROR Closing dip file RC: &
- ZPM009 – ERROR Locking custom table ZLPM_AGILE_WR => RC: &
- ZPM010 – ERROR selecting data from custom table ZLPM_AGILE_WR => RC: &

Function Module	Logic Diagram
ZLPM_AGILEASSETS_NOTIF_CREATE	<ol style="list-style-type: none"> 1. Create Application Log entry 2. Find DIP file directory from table ZDCA_FILEPARAM 3. LOOP through XML file <ol style="list-style-type: none"> a) Determine if work request was created in AgileAssets or SAP b) IF AgileAssets – Create SAP PM Notification c) IF SAP – Modify existing PM Notification d) Build DIP file – Internal Table 4. Write DIP file to OnBase directory. 5. Write summary info to Application Log 6. The OnBase Document Import Processor will execute ‘format PM Documents’ to load the attachments into OnBase where an OnBase Workflow performs the necessary tasks to create a link between the attachment and the existing SAP Notification. Once that is completed, the user will be able to view the attachments using Services for Objects while using SAP Transaction IW22.

7.2.6.Interface C - Technical Specification – Update AgileAssets Work Request

Date	8/10/2017
Description	<p>Notifications will be created/modified (work orders created, technically completed, etc.) in SAP and documents may be attached to work orders. Nightly, an SAP job will run and extract the new/modified notifications (XML file) and pass this file to an SAP PI proxy to be sent to the AgileAssets SFTP server. The same job will extract documents attached to the related work orders (JPG or PDF) and write them to the SAP PI server. Then an SAP PI FILE adapter will pull the attachments and place them on the AgileAssets SFTP server. An AgileAssets job will run to create/modify work requests in the AgileAssets Signs Management System and link the attachments to the appropriate work request.</p>

Technical Name	16Q4 LPM I10210C
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Description	<p>Nightly, an SAP job (Z_LPM_I10210_AGILE_SIGNS_C) will run that calls an ABAP program (ZLPM_I10210_AGILE_SIGNS_C) which reads a Z-table (ZLPM_AGILE_WR) that tracks all of the active and recently completed SAP signs notifications. The ABAP program extracts the info for these notifications and any documents that have been attached to the related work orders since the last run of this interface. The notification data (XML file) is passed to the AgileAssets SFTP server (sftp://ptcuftpv1.agileassets.com), via an SAP PI proxy, and placed in directory <code>\\data\PROD\interface\Signs\C\in\</code>. The ABAP extract program writes a copy of the work order attachments to the PI server in directory <code>\\cvxp2\XP2interface\Outbound\LO\Signs\OUT\InterfaceC\</code>. A SAP PI file adapter pulls the work order attachments and writes them on the AgileAssets SFTP server in directory <code>\\data\PROD\interface\Signs\C\in\attachments\</code>. Once the XML file and attachments have been moved to the AgileAsset SFTP server, an AgileAssets job is run to create/update work requests and link attachments.</p>
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<i>Program type</i>
<input type="checkbox"/> Batch <input checked="" type="checkbox"/> Online

<i>Direction of Interface</i>
<input type="checkbox"/> Inbound <input checked="" type="checkbox"/> Outbound <input type="checkbox"/> Both

<i>Process Description</i>
<ol style="list-style-type: none"> 1. SAP – A job (Z_LPM_I10210_AGILE_SIGNS_C) is run. This job calls an ABAP extract program (ZLPM_I10210_AGILE_SIGNS_C), which reads a Z-table (ZLPM_AGILE_WR) that tracks all the active and recently closed signs notifications. The ABAP program extracts all the relevant information on these notifications and any documents that have been attached to related work orders since last run of the SAP job (Only files named *.jpg, *.JPG, *.pdf, or *.PDF will be processed). The notification information will be passed to SAP PI via proxy and the attachments will be written to the SAP PI server. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of notifications created will be written to the log file (SLG1). 2. SAP PI – An SAP PI file channel (CC_SENDER_FILE_ATTACHMENTS_AASIGNS_C) will pull the attachments from the PI server and write them onto the AgileAssets SFTP server in directory <code>\\data\PROD\interface\Signs\C\in\attachments\</code>. 3. SAP PI – The SAP PI proxy process will write the notification information (XML file) onto the AgileAssets SFTP server, write a copy of the XML file to the SAP PI server archive folder <code>\\cvxp2\Archive\Outbound\SIGNS\OUT\InterfaceC\</code>, and write another copy to the email process folder (<code>\\cvxd2\XD2Interface\Outbound\LO\Signs\OUT\InterfaceC\PROCESS</code>) on the SAP PI server.

4. AgileAssets – A system job (SGN-03: Interface C) will read the notifications information (XML File) and create/update work requests in AgileAssets. This same job will link any attachments to their related work requests.

Extraction Description

Data is extracted from SAP by running job Z_LPM_I10210_AGILE_SIGNS_C, which calls ABAP program ZLPM_I10210_AGILE_SIGNS_C.

See below for detail logic of extract program.

XML File Format – Proxy Output from SAP

Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Data Type	Occurrence	Field Description
Record			Node	0..unbound	Record with Work Request info
	AA_workReq_nbr		String	1..1	AgileAssets Work Request number
	SAP_FLoc_ID		String	1..1	Functional Location
	SAP_Equip_Nbr		String	0..1	SAP Equipment Number
	SAP_Notif_Nbr		String	0..1	SAP Notification Number
	SAP_Notif_Create_Date		String	0..1	Date notification created in SAP
	SAP_Notif_Created_By		String	0..1	User who created notification
	SAP_Notif_Status		String	0..1	SAP Notification status
	Priority_ID		String	0..1	Priority of work request/Notification (1, 2, 3)
	SAP_WO_Nbr		String	0..1	SAP Work Order number
	SAP_WO_long_desc		String	0..1	SAP Work Order long description
	wr_short_desc		String	0..1	Work Request short description (40 char)
	wr_long_desc		String	0..1	Work Request long description (4000 char)
	Planned_Date		String	0..1	Planned start date
	SAP_Completion_Date		String	0..1	Date notification completed
	Attachments		Node	0..1	Work Request Attachments
		Filename	String	1..unbound	Filename of attachments

Middleware Description – SAP PI Components

Description	INTERFACE C – Daily Notification XML file to AgileAssets Proxy
Direction	Pushing
Method of pulling/pushing	SAP PI Proxy
Namespace	http://paturnpike.com/LO/AASigns_C
Data Type	DT_AASigns_C
Message Type	MT_AASigns_XML_C (used by source and target)
Message Interfaces	MI_AASigns_IA_Proxy_C MI_AASigns_OA_Proxy_C MI_AASigns_IA_Attachments_C
Message Mappings	MM_AASigns_Proxy_to_File_C
Interface Mappings	IM_AASigns_Proxy_to_File_C
Sender Channel	CC_SENDER_PROXY_SAP_2_PI (ED2CLNT210) CC_SENDER_FILE_ATTACHMENTS_AASIGNS_C (INTEGRATION_SERVER_XD2)
Receiver Channel	CC_RECEIVER_SFTP_XML_AASIGNS_C (BC_AASIGNS_C_XML_RECEIVER) CC_RECEIVER_FILE_XML_COPY_AASIGNS_C (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_C (BC_AASIGNS_XML_MAIL_RECEIVER) CC_RECEIVER_SFTP_ATTACHMENTS_AASIGNS_C (BC_AASIGNS_C_ATTACHMENTS_RECEIVER)
Sender Agreement	ED2CLNT210 / MI_AASigns_OA_Proxy_C Channel: CC_SENDER_PROXY_SAP_2_PI INTEGRATION_SERVER_XD2 / MI_AASigns_IA_Attachments_C Channel: CC_SENDER_FILE_ATTACHMENTS_AASIGNS_C

<p>Receiver Agreement</p>	<p>ED2CLNT210 / BC_AASIGNS_C_XML_RECEIVER / MI_AASigns_IA_Proxy_C</p> <p>Channel: CC_RECEIVER_SFTP_XML_AASIGNS_C</p> <p>ED2CLNT210 / INTEGRATION_SERVER_XD2 / MI_AASigns_OA_Proxy_C</p> <p>Channel: CC_RECEIVER_FILE_XML_COPY_AASIGNS_C</p> <p>ED2CLNT210 / BC_AASIGNS_XML_MAIL_RECEIVER / MI_AASigns_OA_Proxy_C</p> <p>Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_C</p> <p>INTEGRATION_SERVER_XD2 / BC_AASIGNS_C_ATTACHMENTS_RECEIVER / MI_AASigns_IA_Attachments_C</p> <p>Channel: CC_RECEIVER_SFTP_ATTACHMENTS_AASIGNS_C</p>
<p>Interface Determination</p>	<p>ED2CLNT210 / MI_AASigns_OA_Proxy_C / BC_AASIGNS_C_XML_RECEIVER / IM_AASigns_Proxy_to_File_C</p>
<p>Receiver Determination</p>	<p>ED2CLNT210 / MI_AASigns_OA_Proxy_C</p> <p>Receiver: BC_AASIGNS_C_XML_RECEIVER</p> <p>Receiver: INTEGRATION_SERVER_XD2</p> <p>Receiver: BC_AASIGNS_XML_MAIL_RECEIVER</p> <p>INTEGRATION_SERVER_XD2 / MI_AASigns_IA_Attachments_C</p> <p>Receiver: BC_AASIGNS_C_ATTACHMENTS_RECEIVER</p>

Loading Description

The XML data is processed in the AgileAssets system via the “SGN-03: Interface C” system job.

The job is scheduled to execute once a day. It reads the XML file from //data/PROD/interface/Signs/C/in/ folder and creates/updates work requests in AgileAssets. The related attachments for these work requests are read from directory /data/PROD/interface/Signs/C/in/attachments/ and linked to associated work request.

Load Format

AgileAssets load format is the same as SAP Proxy extract format.

Failure / Restart Programs

Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.

Proxy and ABAP Extract program will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:

SAP Extract Program: ZLPM_I10210_AGILE_SIGNS_C

- ZPM000 – FM: SCMS_BINARY_TO_XSTRING failed. RC: &
- ZPM005 – ERROR LOGIC, sys-host not found (Dev defaulted) RC: &
- ZPM006 – ERROR opening dataset file not created RC: &
- ZPM007 – ERROR writing to dataset RC: &
- ZPM008 – ERROR Closing dataset RC: &
- ZPM009 – ERROR Locking custom table ZLPM_AGILE_WR => RC: &
- ZPM010 – ERROR selecting data from custom table ZLPM_AGILE_WR => RC: &
- ZPM011 – SUCCESS: & records sent to SAP PI
- ZPM012 – ERROR: No XML proxy file created – RC: &
- ZPROXY009 – Method & is not a valid method for further processing.

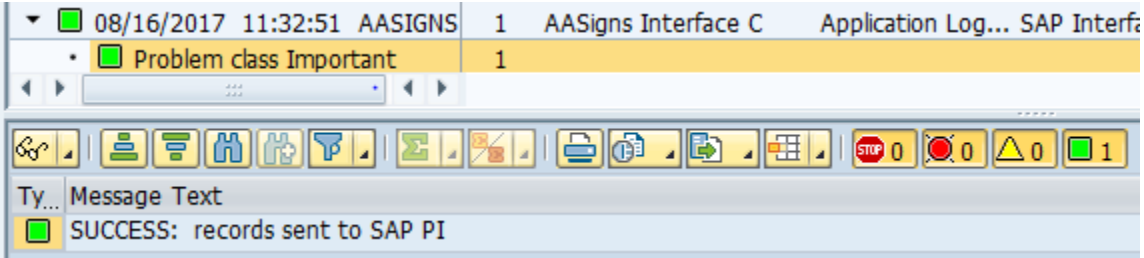
Extract Program	Logic Diagram
ZLPM_I10210_AGILE_SIGNS_C	<ol style="list-style-type: none"> 1. Create Application Log entry 2. Save current timestamp and get timestamp of last run of interface C from ZLPM_AGILE_IF 3. Get all data from table ZLPM_AGILE_WR 4. Remove all notifications from ZLPM_AGILE_WR that have been closed for longer than 14 days 5. Get all relevant SAP data for remaining Notifications/work orders on table ZLPM_AGILE_WR 6. Find directory from table ZDCA_FILEPARAM, to copy work order attachments to 7. Using data from Step 5, update table ZLPM_AGILE_WR, build proxy output for XML file to AgileAssets, and copy any documents that have been attached to work orders, since last interface run, in directory found in Step 6

	<p>8. Send proxy output to SAP PI to create XML file for AgileAssets.</p> <p>9. Update ZLPM_AGILE_IF (interface last run table) with timestamp save in Step 2</p>
--	---

7.2.7.Interface C - PM Notification Info to Agile Assets Interface

Overview	
Custom Dev ID:	17Q3_LPM_I10210
Dev Type:	ECC, Proxy, PI
Interface Name:	SIGNS Interface C Sends Signs PM Notification info to AgileAssets.
Description:	Notifications will be created/modified (work orders created, technically completed, etc.) in SAP and documents may be attached to work orders. Nightly, an SAP job will run and extract the new/modified notifications (XML file) and pass this file to an SAP PI proxy to be sent to the AgileAssets SFTP server. The same job will extract documents attached to the related work orders (JPG or PDF) and write them to the SAP PI server. Then an SAP PI FILE adapter will pull the attachments and place them on the AgileAssets SFTP server. An AgileAssets job will run to create/modify work requests in the AgileAssets Signs Management System.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Outbound.
Frequency:	Daily, scheduled for 3:30 AM.
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of	

Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_I10210_AGILE_SIGNS_C
Variant:	TARGET
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program with variant for Signs. 2. SAP extract program reads current signs PM Notifications from table ZLPM_AGILE_WR. It extracts the data from the notifications and related work orders and any new attachments to work orders. It writes new attachments to <u>\\cvxp21\XP2Interface\Outbound\LO\Signs\OUT\InterfaceC\</u> and passes the Notification/work order info to PI via proxy (XML). 3. PI passes .xml file to AgileAssets SFTP server in directory <u>\\data\PRD\interface\C\in\</u>, archives copy to <u>\\cvxp21\Archive\Outbound\SIGNS\OUT\InterfaceC\</u>, & writes copy email folder <u>\\cvxp21\XP2Interface\Outbound\LO\Signs\OUT\InterfaceC\PROCESS\</u> 4. PI copies attachments to AA SFTP directory <u>\\data\PRD\interface\C\in\attachments\</u> 5. AgileAssets runs a job to update work requests with Notification/Work Order info and attachments. 	

ABAP Information	
Extract Program:	ZLPM_I10210_AGILE_SIGNS_C (Variant: TARGET)
File attachments written to PI server in:	
<u>\\cvxd2\XP2Interface\Outbound\LO\Signs\OUT\InterfaceC\</u>	
<u>\\cvxq2\XP2Interface\Outbound\LO\Signs\OUT\InterfaceC\</u>	
<u>\\cvxp21\XP2Interface\Outbound\LO\Signs\OUT\InterfaceC\</u>	
When the file is processed successfully, there will be an SLG1 entry like this:	
 <p>The screenshot shows a SAP SLG1 log entry. The top row indicates the date and time as 08/16/2017 11:32:51, the program as AASIGNS, and the message class as AASigns Interface C. Below this, a yellow bar highlights the message class 'Problem class Important' with a severity of 1. At the bottom of the log, a green square icon is followed by the text 'SUCCESS: records sent to SAP PI'.</p>	

While it is possible to have errors in the outbound process, it will be very rare, since the data is validated upon Notification/Work Order entry. If there are any issues (i.e. writing attachment to PI server) they will be recorded in the SAP Application log (SLG1).

When you are testing in Dev, in order to get test data:

- 1) User will have to recreate data in DEV environment. The interface reads table ZLPM_AGILE_WR, which is appended as Notifications are created. So data is environment driven.
- 2) It is possible to take prod archived files from interface B and run the data through the B interface to create the same data as in prod.
- 3) After running prod archive data through interface B, user can run interface C. However, the data in AgileAssets DEV environment will not have same work requests.

PROXY: ZPYCO_MI_AASIGNS_OA_PROXY_C~MI_AASIGNS_OA_PROXY_C

PI Scenario: ZPTC_LO_PM_AASIGNS_C

7.2.8.Interface C - PM Notification Info to Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_PRJ15638
Dev Type:	ECC, Proxy, PI
Interface Name:	PAMS Interface C Sends PaMS SAP PM Notification/Work Order info to AgileAssets.
Description:	PaMS Notifications will be modified (work orders created, technically completed, etc.) in SAP and documents may be attached to work orders. Nightly, an SAP job will run and extract the modified notifications (XML file) and pass this file to an SAP PI proxy to be sent to the AgileAssets SFTP server. The same job will extract documents attached to the related work orders (JPG or PDF) and write them to the SAP PI server. Then an SAP PI FILE adapter will pull the attachments and place them on the AgileAssets SFTP server. An AgileAssets job will run to modify work requests in the AgileAssets Pavement Management System. (NOTE: All work requests/Notifications originate from Agile)
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Outbound.
Frequency:	Daily, scheduled for 3:30 AM.
Pull/Push:	Push.

Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files

End of Job/Communication Information

Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of	
Distribution List:	

Additional Info

Transaction Code:	SM37
Job Name:	Z_LPM_PRJ15638_AGILE_PAMS_C
Variant:	AAPAMS_C

Execution / Business Process Flow

1. SAP job runs nightly that executes the extract program with variant for PaMS.
2. SAP extract program reads current PaMS PM Notifications from table ZLPM_AGILE_WR. It extracts the data from the notifications and related work orders and any new attachments to work orders. It writes new attachments to \\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\ and passes the Notification/work order info to PI via proxy (XML).
3. PI passes .xml file to AgileAssets SFTP server in directory \\data\PRD\interface\PAMS\C\in\, archives copy to \\cvxp21\Archive\Outbound\PAMS\OUT\InterfaceC\, & writes copy email folder \\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\PROCESS\
4. PI copies attachments to AA SFTP directory \\data\PRD\interface\PAMSC\in\attachments\
5. AA runs job to update work requests w/Notification/Work Order info and attachments.

ABAP Information

Extract Program: ZLPM_PRJ15638_AGILE_PAMS_C (Variant: AAPAMS_C)

File attachments written to PI server in:

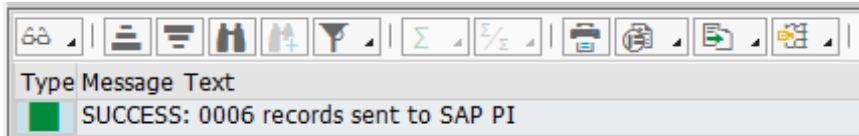
\\cvxd2\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\

\\cvxq2\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\

\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\

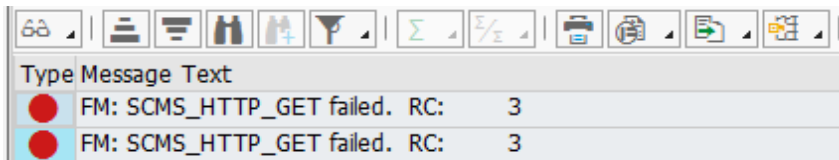
When the file is processed successfully, there will be an SLG1 entry like this:

03/28/2018 15:13:17 HREEVE	1	AAPAMS Interface C
Problem class Important	1	



When there are errors in the extract program, there will be an SLG1 entry like this:

01/24/2018 11:09:19 HREEVE	2	AAPAMS Interface C
Problem class Important	2	



When you are testing in Dev, in order to get test data:

- 1) User will have to recreate data in DEV environment. The interface reads table ZLPM_AGILE_WR, which is appended as Notifications are created. So data is environment driven.
- 2) It is possible to take prod archived files from interface B and run the data through the B interface to create the same data as in prod.
- 3) After running prod archive data through interface B, user can run interface C. However, the data in AgileAssets DEV environment will not have same work requests.

PROXY: ZPYCO_SI_AAPAMS_OA_PROXY_C~SI_AAPAMS_OA_PROXY_C

PI Scenario: ZPTC_LO_PM_AAPAMS_C

7.2.9. Interface D - Technical Specification – Update AgileAssets Asset ID

Date	8/11/2017
Description	All signs are created in AgileAssets as assets, then interface A extracts these assets and sends them to SAP to create a corresponding equipment, with attachments. Interface D runs nightly, after interface A, to create an XML file

	with the corresponding SAP Equipment number for each asset. An AgileAssets job will run and pull the XML file from interface D and update the asset records in AgileAssets with the SAP equipment number.
--	---

Technical Name	16Q4 LPM I10210D
Description	Nightly, an SAP job (Z_LPM_I10210_AGILE_SIGNS_D) will run that calls an ABAP program (ZLPM_I10210_AGILE_SIGNS_D) which reads a Z-table (ZLPM_AGILE_EQUIP) that tracks all of the SAP signs equipment created from Interface A. The last run timestamp of interface A is recorded on a Z-table (ZLPM_AGILE_IF), all signs equipment that has been created since the last run of Interface A, will be sent back to AgileAssets in an XML file and written on the AgileAssets SFTP server in directory <u>\\data\PROD\interface\Signs\D\in</u> . An AgileAssets job will read the XML file and update the assets with the corresponding SAP equipment number.

<i>Program type</i>
<input type="checkbox"/> Batch <input checked="" type="checkbox"/> Online

<i>Direction of Interface</i>
<input type="checkbox"/> Inbound <input checked="" type="checkbox"/> Outbound <input type="checkbox"/> Both

<i>Process Description</i>
<ol style="list-style-type: none"> 1. SAP – A job (Z_LPM_I10210_AGILE_SIGNS_D) is run. This job calls an ABAP extract program (ZLPM_I10210_AGILE_SIGNS_D), which reads a Z-table (ZLPM_AGILE_EQUIP) that tracks all the sign equipment that has been created by interface A. The ABAP program extracts all the sign equipment from the Z-table that has been created since last run of Interface A (last run tracked on table ZLPM_AGILE_IF). The SAP equipment numbers and related AgileAssets Asset ID will be passed to SAP PI via proxy. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of notifications created will be written to the log file (SLG1). 2. SAP PI – The SAP PI proxy process will write the equipment information (XML file) onto the AgileAssets SFTP server, write a copy of the XML file to the SAP PI server archive folder <u>\\cvxp2\Archive\Outbound\SIGNS\OUT\InterfaceC</u>, and write another copy to the email process folder (<u>\\cvxd2\XD2Interface\Outbound\LO\Signs\OUT\InterfaceC\PROCESS</u>) on the SAP PI server. 3. AgileAssets – A system job (SGN-03: Interface D) will read the equipment information (XML File) and update the assets in AgileAssets with the SAP equipment number.

<i>Extraction Description</i>

Data is extracted from SAP by running job Z_LPM_I10210_AGILE_SIGNS_D, which calls ABAP program ZLPM_I10210_AGILE_SIGNS_D.

See below for detail logic of extract program.

XML File Format – Proxy Output from SAP

Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Data Type	Occurrence	Field Description
Record			Node	0..unbound	Record with Work Request info
	aa_asset_id		String	1..1	AgileAssets asset ID
	sap_equip_nbr		String	1..1	SAP Equipment Number
	sap_status		String	0..1	Status of SAP equipment
	Attachments		Node	0..1	Work Request Attachments
		Filename	String	1..unbound	Filename of attachments

Middleware Description – SAP PI Components

Description	INTERFACE D – Daily SAP Equipment XML file to AgileAssets Proxy
Direction	Pushing
Method of pulling/pushing	SAP PI Proxy
Namespace	http://paturnpike.com/LO/AASigns_D
Data Type	DT_AASigns_D
Message Type	MT_AASigns_XML_D (used by source and target)
Message Interfaces	MI_AASigns_IA_Proxy_D MI_AASigns_OA_Proxy_D
Message Mappings	MM_AASigns_Proxy_to_File_D
Interface Mappings	IM_AASigns_Proxy_to_File_D
Sender Channel	CC_SENDER_PROXY_SAP_2_PI (ED2CLNT210)
Receiver Channel	CC_RECEIVER_SFTP_XML_AASIGNS_D (BC_AASIGNS_D_XML_RECEIVER)

	<p>CC_RECEIVER_FILE_XML_COPY_AASIGNS_D (INTEGRATION_SERVER_XD2)</p> <p>CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_D (BC_AASIGNS_XML_MAIL_RECEIVER)</p>
Sender Agreement	<p>ED2CLNT210 / MI_AASigns_OA_Proxy_D</p> <p>Channel: CC_SENDER_PROXY_SAP_2_PI</p>
Receiver Agreement	<p>ED2CLNT210 / BC_AASIGNS_D_XML_RECEIVER / MI_AASigns_IA_Proxy_D</p> <p>Channel: CC_RECEIVER_SFTP_XML_AASIGNS_D</p> <p>ED2CLNT210 / INTEGRATION_SERVER_XD2 / MI_AASigns_OA_Proxy_D</p> <p>Channel: CC_RECEIVER_FILE_XML_COPY_AASIGNS_D</p> <p>ED2CLNT210 / BC_AASIGNS_XML_MAIL_RECEIVER / MI_AASigns_OA_Proxy_D</p> <p>Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AASIGNS_D</p>
Interface Determination	<p>ED2CLNT210 / MI_AASigns_OA_Proxy_D / BC_AASIGNS_D_XML_RECEIVER / IM_AASigns_Proxy_to_File_D</p>
Receiver Determination	<p>ED2CLNT210 / MI_AASigns_OA_Proxy_D</p> <p>Receiver: BC_AASIGNS_C_XML_RECEIVER</p> <p>Receiver: INTEGRATION_SERVER_XD2</p> <p>Receiver: BC_AASIGNS_XML_MAIL_RECEIVER</p>

Loading Description

The XML data is processed in the AgileAssets system via the “SGN-03: Interface D” system job.

The job is scheduled to execute once a day. It reads the XML file from //data/PROD/interface/Signs/D/in/ folder and updates the assets in AgileAssets with the corresponding SAP equipment number.

Load Format

AgileAssets load format is the same as SAP Proxy extract format.

<i>Failure / Restart Programs</i>
<p>Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.</p> <p>Proxy and ABAP Extract program will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:</p> <p>SAP Extract Program: ZLPM_I10210_AGILE_SIGNS_D</p> <ul style="list-style-type: none"> • ZPM000 – Error in selection from table ZLPM_AGILE_IF: RC = & • ZPM011 – SUCCESS: & records sent to SAP PI • ZPM012 – ERROR: No XML proxy file created – RC: & • ZPM018 – ERROR selecting data from custom table ZLPM_AGILE_EQUIP => RC: & • ZPROXY009 – Method & is not a valid method for further processing.

Extract Program	Logic Diagram
ZLPM_I10210_AGILE_SIGNS_D	<ol style="list-style-type: none"> 1. Create Application Log entry 2. Get all data from table ZLPM_AGILE_EQUIP with status 'Active' 3. Get last run timestamp for interface A from ZLPM_AGILE_IF 4. Loop through records from step 2, IF creation date is equal to or after last run of interface A, then write record to proxy output table 5. Send proxy output to SAP PI to create XML file for AgileAssets.

7.2.10. Interface D - Equipment to Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_PRJ15638
Dev Type:	ECC, Proxy, PI
Interface Name:	PaMS Interface D Sends Gate Equipment info to AgileAssets.
Description:	All gate information is created and maintained in SAP. This interface runs nightly to create an XML file with the any SAP Gate Equipment that has been created or modified since last interface run. An AgileAssets job will run and pull the XML file from interface D and update the asset records in AgileAssets with the SAP data.
Released:	4th quarter, 2017
Data Source(s) and Frequency	

In/Out Bound: Outbound.	
Frequency:	Daily, scheduled for 2:30 AM.
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML file
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_PRJ15638_AGILE_PAMS_D
Variant:	AAPAMS_D
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program with variant for PaMS. 2. SAP extract program reads gate equipment from table EQUI. It extracts equipment data for records that have been created/modified since last run of Interface A and passes information to PI via proxy (XML). 3. PI passes .xml file to AgileAssets SFTP server in directory <u>\\data\PRD\interface\PAMS\D\in\</u>, archives copy to <u>\\cvxp21\Archive\Outbound\PAMS\OUT\InterfaceD\</u>, & writes copy email folder <u>\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceD\PROCESS\</u> 4. AgileAssets runs a job to update assets with SAP gate equipment information. 	

ABAP Information	
Extract Program:	ZLPM_PRJ15638_AGILE_PAMS_D (Variant: AAPAMS_D)
Documents that are attached to gate equipment in SAP are not in scope for this interface.	

When the file is processed successfully with records sent, there will be an SLG1 entry like this:

03/28/2018 15:49:27 HREEVE	1	AAPAMS Interface D
Problem class Additional Inform	1	

SUCCESS: 0301 records sent to SAP PI

When the file is processed successfully but no records sent, there will be an SLG1 entry like this:

03/28/2018 20:34:46 HREEVE	1	AAPAMS Interface D
Problem class Additional Inform	1	

Type Message Text
No gate equipment has been created/modified since

When the file is processed and there was an error, there will be an SLG1 entry like this:

01/05/2018 19:32:49 HREEVE	1	AAPAMS Interface D
Problem class Important	1	

Type Message Text
Error in selection from table ZLPM_AGILE_IF: RC =

When you are testing in Dev, in order to get test data:

- 1) User will have to recreate data in DEV environment. The interface reads table EQUI, for Object Types H003* that have been created/modified since last run of interface D (last run on ZLPM_AGILE_IF).
- 2) User can delete the ZLPM_AGILE_IF entry for the last run of interface D. This will then select all of the Gate Equipment in the SAP system and send them to AgileAssets.

PROXY: ZPYCO_SI_AAPAMS_OA_PROXY_D~SI_AAPAMS_OA_PROXY_D

PI Scenario: ZPTC_LO_PM_AAPAMS_D

7.2.11. Interface D - Equipment to Agile Assets Interface

Overview	
Custom Dev ID:	17Q3_LPM_I10210 Dev Type: ECC, Proxy, PI
Interface Name:	SIGNS Interface D Sends Signs Equipment number to AgileAssets.
Description:	All signs are created in AgileAssets as assets, then interface A extracts these assets and sends them to SAP to a created corresponding equipment, with attachments. Interface D runs nightly, after interface A, to create an XML file with the

	<p>corresponding SAP Equipment number for each asset. An AgileAssets job will run and pull the XML file from interface D and update the asset records in AgileAssets with the SAP equipment number.</p>
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Outbound.
Frequency:	Daily, scheduled as Monday through Friday: ABAP job D: 01:35am
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML file
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_I10210_AGILE_SIGNS_D
Variant:	AASIGNS
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program with variant for Signs. 2. SAP extract program reads sign equipment from table ZLPM_AGILE_EQUIP. It extracts equipment data for signs that have been created since last run of Interface A and passes the equipment number to PI via proxy (XML). 	

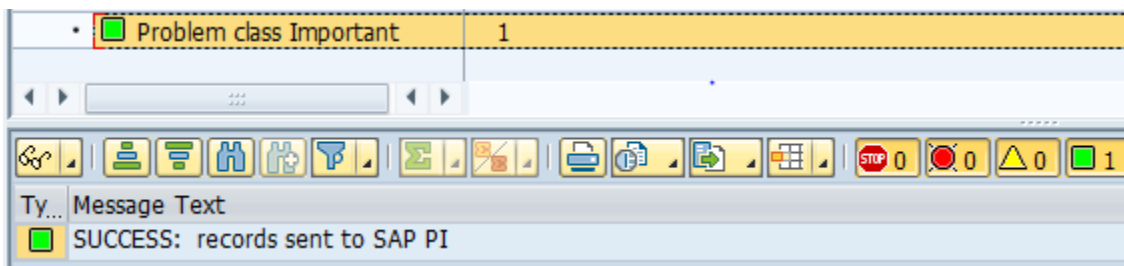
3. PI passes .xml file to AgileAssets SFTP server in directory `\\data\PRD\interface\D\in\`, archives copy to `\\cvxp21\Archive\Outbound\SIGNS\OUT\InterfaceD\`, & writes copy email folder `\\cvxp21\XP2Interface\Outbound\LO\Signs\OUT\InterfaceD\PROCESS\`
4. AgileAssets runs a job to update assets with SAP equipment number.

ABAP Information

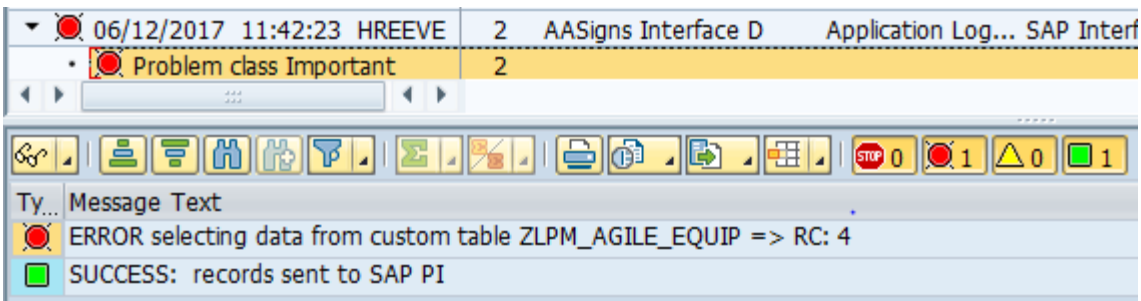
Extract Program: ZLPM_I10210_AGILE_SIGNS_D (Variant: AASIGNS)

Equipment documents that are attached in SAP are not in scope for this interface.

When the file is processed successfully, there will be an SLG1 entry like this:



While it is possible to have other errors in the outbound process, the most common will be when no equipment was created since the last run of interface A. In that case, the following message will be logged in SLG1:



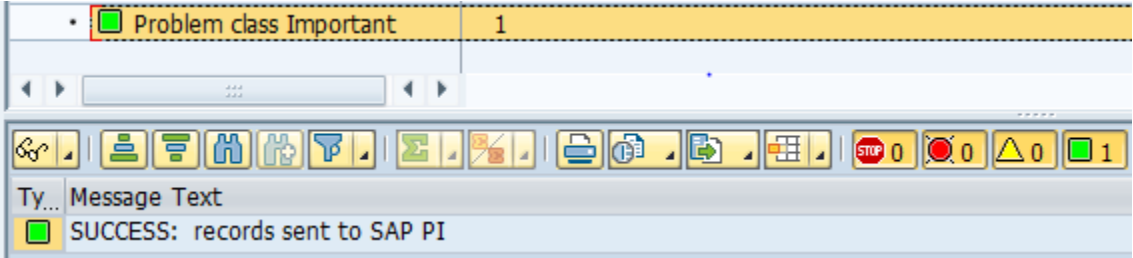
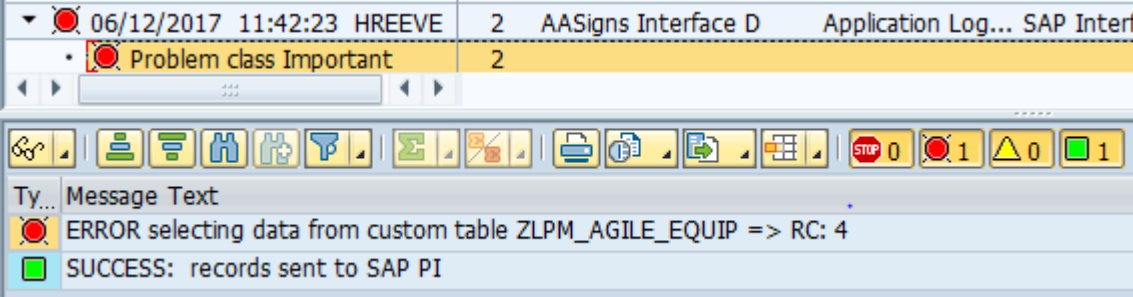
When you are testing in Dev, in order to get test data:

- 1) User will have to recreate data in DEV environment. The interface reads table ZLPM_AGILE_EQUIP, which is appended as new equipment is created. So data is environment driven.
- 2) It is possible to take prod archived files from interface A and run the data through the A interface to create the same equipment as in prod.
- 3) After running prod archive data through interface A, user can run interface D. However, the data in AgileAssets DEV environment will not have same asset numbers.

PROXY:	ZPYCO_MI_AASIGNS_OA_PROXY_D~MI_AASIGNS_OA_PROXY_D
PI Scenario:	ZPTC_LO_PM_AASIGNS_D

7.2.12. Interface D - Equipment to Agile Assets Interface

Overview	
Custom Dev ID:	17Q3_LPM_I10210
Dev Type:	ECC, Proxy, PI
Interface Name:	SIGNS Interface D Sends Signs Equipment number to AgileAssets.
Description:	All signs are created in AgileAssets as assets, then interface A extracts these assets and sends them to SAP to create a corresponding equipment, with attachments. Interface D runs nightly, after interface A, to create an XML file with the corresponding SAP Equipment number for each asset. An AgileAssets job will run and pull the XML file from interface D and update the asset records in AgileAssets with the SAP equipment number.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Outbound.
Frequency:	Daily, scheduled for 2:30 AM.
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML file
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_I10210_AGILE_SIGNS_D

Variant:	AASIGNS??
Execution / Business Process Flow	
<ol style="list-style-type: none"> SAP job runs nightly that executes the extract program with variant for Signs. SAP extract program reads sign equipment from table ZLPM_AGILE_EQUIP. It extracts equipment data for signs that have been created since last run of Interface A and passes the equipment number to PI via proxy (XML). PI passes .xml file to AgileAssets SFTP server in directory <code>\\data\PROD\interface\Signs\D\in\</code>, archives copy to <code>\\cvxp21\Archive\Outbound\SIGNS\OUT\InterfaceD\</code>, & writes copy email folder <code>\\cvxp21\XP2Interface\Outbound\LO\Signs\OUT\InterfaceD\PROCESS\</code> AgileAssets runs a job to update assets with SAP equipment number. 	
ABAP Information	
Extract Program:	ZLPM_I10210_AGILE_SIGNS_D (Variant: AASIGNS)
Equipment documents that are attached in SAP are not in scope for this interface.	
When the file is processed successfully, there will be an SLG1 entry like this:	
	
While it is possible to have other errors in the outbound process, the most common will be when no equipment was created since the last run of interface A. In that case, the following message will be logged in SLG1:	
	
When you are testing in Dev, in order to get test data:	
<ol style="list-style-type: none"> When error is in SAP => take prod archived file(s) from interface A & place file on AA SFTP server in folder <code>\\data\DEV\interface\Signs\A\out\</code>. Run SAP PI interface A comm channel to get 	


<p>data into SAP. Then interface D job can be run. The file for D can be viewed on AA SFTP server in folder \\data\DEV\interface\Signs\D\in\.</p> <p>5) When error is in AgileAssets => User will have to recreate data in AgileAssets test environment and run Agile extract program to get XML file into folder for interface A. Run SAP PI interface A comm channel to get data into SAP. Then interface D job can be run in SAP. Then Agile job for interface D should be run to get the info into AgileAssets Sign Management System.</p>	
PI Information	
PROXY:	ZPYCO_MI_AASIGNS_OA_PROXY_D~MI_AASIGNS_OA_PROXY_D
PI Scenario:	ZPTC_LO_PM_AASIGNS_D

7.2.13. Interface E - WBS Element Info to Agile Assets Interface

Overview			
Custom Dev ID:	17Q4_LPM_PRJ15638	Dev Type:	ECC, Proxy, PI
Interface Name:	PAMS Interface E Sends SAP WBS Element info to AgileAssets.		
Description:	WBS Elements that are relevant to AgileAssets PaMS will be loaded nightly to custom SAP table ZLPM_AGILE_WBS via interface F. Interface E will read the custom table and extract data for the Projects/WBS Elements that are new on the table or that have been modified since the last run of this interface. The new/modified WBS Element information will be passed (XML File) to an SAP PI proxy to be sent to the AgileAssets SFTP server. An AgileAssets job will run to modify the projects in the AgileAssets Pavement Management System.		
Released:	4th quarter, 2017		
Data Source(s) and Frequency			
In/Out Bound:	Outbound.		
Frequency:	Daily, scheduled for 4:30 AM.		
Pull/Push:	Push.		
Method:	Interface file is sent via PI software.		
Email:	PI/ECC		
File Type:	XML file		
End of Job/Communication Information			

Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_PRJ15638_AGILE_PAMS_E
Variant:	N/A
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program for PaMS. 2. SAP extract program reads PaMS WBS Element table ZLPM_AGILE_WBS. It extracts the data from the WBS Elements that are new or have been created/modified since the last run of interface E and passes the WBS Element info to PI via proxy (XML). 3. PI passes .xml file to AgileAssets SFTP server in directory <code>\\data\PRD\interface\PAMS\E\in\</code>, archives copy to <code>\\cvxp21\Archive\Outbound\PAMS\OUT\InterfaceE\</code>, & writes copy email folder <code>\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceE\PROCESS\</code> 4. AgileAssets runs a job to update WBS Element & Project info Pavement Management System. 	

ABAP Information	
Extract Program:	ZLPM_PRJ15638_AGILE_PAMS_E
No file attachments written to PI server.	
When the file is processed successfully, there will be an SLG1 entry like this:	
When there are errors in the extract program, there will be an SLG1 entry like this:	

Type	Message Text
	Error in selection from table ZLPM_AGILE_IF: RC =

When you are testing in Dev, in order to get test data:

6) User will have to recreate data in DEV environment by adding desired WBS Elements to table ZLPM_AGILE_WBS and mark the records as initial. If the records are not marked as initial, and the WBS Elements have not been created/modified since last run of E in DEV, the records will not be picked up. Data is environment driven.

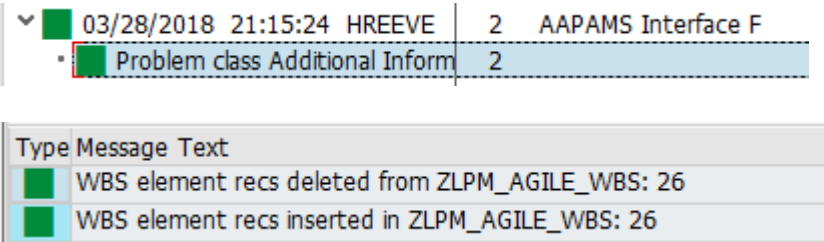
PROXY: ZPYCO_SI_AAPAMS_OA_PROXY_E~SI_AAPAMS_OA_PROXY_E

PI Scenario: ZPTC_LO_PM_AAPAMS_E

7.2.14. Interface F - WBS Elements from Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_PRJ15638
Dev Type:	PI, Proxy, ECC
Interface Name:	PaMS Interface F PaMS WBS Elements
Description:	The WBS elements that are relevant to the PaMS functionality and tracking is maintained manually in AgileAssets. Nightly an AgileAssets program will run and put the WBS elements (XML file) on the AgileAssets SFTP server. An SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. SAP PI will also archive a copy of the XML file on the PI server and put a copy of the XML file in the email process folder on the PI server. SAP will take the WBS element data and load it into custom table ZLPM_AGILE_WBS, which Interface E will use to send WBS element info back to AgileAssets.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Inbound.
Frequency:	Daily, scheduled for 4 AM.
Pull/Push:	Pull.
Method:	Interface file is received via PI software.
Email:	PI/ECC
File Type:	XML files
End of Job/Communication Information	

Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful?
Members of Distribution List:	
Additional Info	
Transaction Code:	n/a.
Job Name:	n/a
Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. AgileAssets job runs to extract all WBS Elements manually maintained in PaMS. 2. AgileAssets job places extracted WBS Elements on Agile’s SFTP server (sftp://ptcuftpv1.agileassets.com) in directory <code>\\data\PRD\interface\PAMS\F\out\</code> (XML) 3. PI pulls .xml file and passes it to the proxy, archives a copy to <code>\\cvxp21\Archive\Inbound\LO\PAMS\IN\InterfaceF\</code>, and writes copy to email folder <code>\\cvxp21\XP2Interface\Inbound\LO\PAMS\IN\InterfaceF\Process\</code> 4. ECC proxy uses the .xml file to validate the WBS Elements in SAP and load Z-table ZLPM_AGILE_WBS 5. Use SE16N to view contents of table ZLPM_AGILE_WBS 	

ABAP Information	
Proxy Method: ZPYII_MI_AAPAMS_IA_PROXY_F~SI_AAPAMS_IA_PROXY_F	
No attachments are sent for WBS Elements	
When the file is processed successfully, there will be an SLG1 entry like this:	
	
When there is an error in processing, there will be an SLG1 entry like this:	

03/05/2018 13:23:57 HREEVE	8 AAPAMS Interface F
Problem class Important	8

Type	Message Text
●	ERROR: WBS Element A-031.00T001-2 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-01 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-02 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-03 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-04 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-05 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-06 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-07 not found (Table PRPS)

When you are testing in Dev, in order to get test data:

- 1) Copy the corresponding day's .xml file from the Prod archive folder to the Agile SFTP server
\\data\DEV\interface\PAMS\F\out\
- 2) You can manually add entries to ZLPM_AGILE_WBS using transaction SM30.

PROXY: ZPYII_MI_AAPAMS_IA_PROXY_F~SI_AAPAMS_IA_PROXY_F

PI Scenario: ZPTC_LO_PM_AAPAMS_F

8. Stormwater Management Application Requirements

Excerpt from High-Level Requirements Document (Final)

Document Version 1.2 • March 20, 2018

8.1. Mission Statement

The Pennsylvania Turnpike Commission (PTC) seeks a database and application to manage stormwater assets along the span of its roadways and facilities. The new Stormwater Management Solution will capture and integrate inventory and inspection data that will be used to monitor, maintain, and report asset performance.

The Stormwater Management Solution will support mandatory annual reporting to the Pennsylvania Department of Environmental Protection (DEP) and ad hoc reporting to the federal Environmental Protection Agency (EPA) through this integrated database. Mandatory reporting requirements come from permits applicable to PTC.

- This deliverable includes the high-level functional/non-technical and technical requirements. A subsequent deliverable will provide the build vs. buy analysis.

- This initiative supports the Commission’s strategic objective 4.1 – *Maintain and improve assets in a “good” state of repair while using a life cycle approach.*

8.2. Background

The United States Congress directed the federal EPA to manage the Clean Water Act as the foundation for implementing and managing pollutant discharges into the waters of the United States. Through permits, the EPA’s National Pollutant Discharge Elimination System (NPDES) limits and maintains other provisions regarding discharges into waterways.

In Pennsylvania, stormwater runoff requirements of the Clean Water Act are met through Act 167 (for stormwater management), Erosion and Sediment Control Requirements, the NPDES Permit Program, and the Municipal Separate Storm Sewer System (MS4). PTC has a MS4 permit which requires annual reports to be compiled.

The annual reporting to the DEP requires assembly of MS4 data through access of Erosion and Sedimentation Control Inspection reporting in Kahua, stored documents in OnBase, Stormwater Maintenance Data in the SAP/Plant Maintenance module, and more.

8.3. Objectives

PTC is seeking a stormwater asset management system for the inventory, inspection, maintenance, and performance monitoring of stormwater, drainage, and MS4 assets. The Stormwater Management Solution will also support mandatory reporting to Pennsylvania’s DEP and the Federal EPA.

The objective of this initiative is to identify high-level functional/non-technical and technical requirements and an analysis of the build vs. buy options needed to proceed with the effort to obtain a Stormwater Management Solution. This deliverable contains the high-level requirements. A subsequent deliverable will provide the build vs. buy analysis.

This Stormwater Management Solution will eventually provide GIS capabilities to track and map locations and interactive documents of stormwater management assets for PTC roadways and facilities.

8.4. Requirements

The purpose of this section is to document clear and unambiguous high-level solution requirements of the Stormwater Management Solution. The solution requirements have been categorized into functional/non-technical and technical requirements.

The first column tracks a requirement identifier, the second column states the solution requirement, the third column describes the priority for that solution requirement, and the fourth column allows for any clarifying notes.

8.4.1. Functional/Non-Technical Requirements

In the next section, functional/non-technical requirements are documented. The Functional/Non-technical Requirements of the Stormwater Management Solution have been grouped by sub-topics as shown below.

ID	Requirements	Comments (If No or Partially, please include comments)
Category 1: Input Capabilities		
FS1.1	<p>The Stormwater Management Solution shall include capabilities to import initial data directly from other databases or spreadsheets, with data validation and user controls.</p> <ul style="list-style-type: none"> • GIS files will be provided through ArcGIS Online or through periodic updates from PTC GIS Department • Interface and integrate with Esri ArcGIS Online, Survey123 & Collector stormwater mobile inspection application • Accept an initial upload of the following document types: Adobe PDF, Excel, Word, PowerPoint, JPG, etc. • Examples of these documents' types include: plans, calculations, photos, existing inspection reports, permit documentation, operation manuals, meeting minutes, associated handouts, and PowerPoint presentations. • Reformatting, reorganization, and renaming of documents will be required by the PTC for the initial upload. The vendor of the solution will need to specify how the data is to be reformatted, reorganized, and renamed for the initial upload of data. 	
Category 2: Inventory		
FS2.1	<p>The Stormwater Management Solution shall provide PTC the ability to define and maintain stormwater asset items/attributes (such as those associated with culverts, basins, eroded ditches, swales, and rain gardens).</p> <ul style="list-style-type: none"> • At the present, assets are limited to the stormwater control measures (approximately 476 in the current inventory) and their associated attributes. • Attributes for each asset include the 86+/- attributes from the Esri Survey123 & Collector mobile inspection application and the associated files as mentioned FS1.1 • Future retrofit (rebuilding) of existing stormwater control measures will occur as part of the MS4 Pollutant Reduction Plan (PRP). New calculations, plans, additional permitting, and pollution credits will need to be tracked and managed for each asset that is rebuilt. 	Documentation will be stored as an attachment the corresponding record or as an integration with the document management system.

ID	Requirements	Comments (If No or Partially, please include comments)
	<ul style="list-style-type: none"> • Documentation for the MS4 program as a whole will need to be managed. Examples from FS1.1 included permit documentation, operation manuals, meeting minutes, etc. • All of the aforementioned items will need to be reported on as part of the Annual MS4 Status Report. • All asset temporal and spatial components need to reference PTC’s existing LRS and LRMs. • Future assets may include components of the drainage network such as inlets and pipes along the roadway. 	
Category 3: Inspection		
FS3.1	<p>The Stormwater Management Solution shall store, retrieve, and manage stormwater asset inspection findings and reports.</p> <ul style="list-style-type: none"> • As stated in FS1.1, the solution shall interface with PTC’s mobile inspection application that utilizes Survey123 & Collector. This mobile inspection application is currently in development, and at present is a standalone product where querying and reporting can be performed through ArcGIS Online. The solution shall consume the data to allow for storing, retrieving, querying, and reporting to be completed within the solution or through ArcGIS Online. 	<p>There are several options to implementing a mobile inspection solution to satisfy PTC’s requirements including connecting the ESRI mobile apps directly to AgileAssets or using the AgileAssets mobile solution.</p>
FS3.2	<p>The Stormwater Management Solution shall evaluate and track uploaded inspection data for a given inspection year or period.</p> <ul style="list-style-type: none"> • This requirement correlates directly to FS3.1 and requires the solution to create a report incorporating all of the inspection data for a 1-year period on all of the stormwater control measures into a condensed, abbreviated report that will be included in the Annual MS4 Status Report. 	<p>If the report format is consistent i.e. same data sources and format, then one report is possible otherwise it may have to be multiple reports. More investigation would be required.</p>
FS3.3	<p>The Stormwater Management Solution shall enable users to enter or upload inspection findings using mobile devices.</p> <ul style="list-style-type: none"> • Mobile inspection devices will utilize PTC’s Survey123 & Collector mobile inspection application. The mobile inspection application has the ability to automatically upload inspection findings when mobile wireless is available or hold 	

ID	Requirements	Comments (If No or Partially, please include comments)
	the inspection data until mobile wireless signal is received.	
Category 4: Asset Condition, Defects, Repairs		
FS4.1	<p>The Stormwater Management Solution shall create notifications and receive work order status updates on work requests through an interface with SAP.</p> <ul style="list-style-type: none"> • In order to generate a work order, the inspection results must be able to be queried and reported on. For instance, the user may wish to generate a report that will identify all stormwater control measures that require corrective action for erosion within PTC District 1. From that query, the user can group adjacent stormwater control measures that require work and generate a notification for PTC Maintenance or a work order for a contractor to perform the work. • Tracking costs of repairs is desirable • Generating additional work orders that are related to the repair of the stormwater control measures may be required as well, such as Maintenance and Protection of Traffic (MPT). There will likely be scenarios where PTC Maintenance will provide MPT and a contractor will perform work on the stormwater control measure. 	<p>Based on inspection results a work request can be generated which can be turned into a work order.</p> <p>Tracking costs is supported</p> <p>A single work request can generate multiple work orders. However, more detailed analysis will need to be done to ensure the integration has this capability.</p>
FS4.2	<p>The Stormwater Management Solution shall allow annotation of images and added comments on images stored.</p> <ul style="list-style-type: none"> • The PTC mobile inspection application will allow for the inspector to take photographs and add comments as part of the standard data collection procedure. For work order generation it may be beneficial to take those photographs and comments and add annotation/ red-line markups such as circling deficiencies or providing dimensions in order to more effectively communicate what the problem is or what needs to be repaired/ replaced. • Photographs could be in their native format or Adobe PDF. 	<p>The stormwater application supports the attachment of images and comments. Annotation will need to be done outside of the stormwater application. For example, a picture can be taken on the mobile device, annotated and then saved and ready for upload. Once annotated, the image can then be uploaded. Depending on the device, native annotation functionality may be available. More investigation required.</p>
FS4.3	<p>The Stormwater Management Solution shall maintain open end repair reports.</p> <ul style="list-style-type: none"> • Open end repairs are performed by open end contractors, meaning that every time a work order is generated it does not need to go out to bid if open end contractor can perform the work. 	<p>This functionality can be accomplished using projects or work requests or a combination of the two. There are multiple configurations possible to address these requirements. More detailed requirements are needed to ensure the</p>

ID	Requirements	Comments (If No or Partially, please include comments)
	<ul style="list-style-type: none"> • Essentiality the work order as outlined in FS4.1 with associated cost and before and after photographs of the work area are desired. The before photographs could be used from the inspection that was used to generate the work order and the photographs of the completed work could be provided by the contractor or using the mobile inspection application through a follow-up inspection. • Reports will most likely be generated for the work performed for the previous year (or less). • The repair reports will be included in the Annual MS4 Status Report. • This will require integration with SAP. 	<p>solution meets the desired business process.</p>
FS4.4	<p>The Stormwater Management Solution shall have the ability to generate reports for all work requests and work orders, by status and other groupings, that were entered into SAP.</p> <ul style="list-style-type: none"> • Same requirements as FS4.3 except that in this requirement the reports should be able to be generated for all procurement types: bid, open end, or in-house using PTC Maintenance. • Requires the ability to report on which stormwater control measures had work completed, what work was completed, when it was completed, how much it cost, and who did the work. • Reports will most likely be generated for work requests and work orders generated for the previous year (or less). • These reports could be included in the Annual MS4 Status Report. 	<p>Provided the information is available within the AgileAssets solution.</p>
FS4.5	<p>The Stormwater Management Solution shall provide the ability to search through historical repair reports.</p> <ul style="list-style-type: none"> • The ability to query and report on data contained and managed according to FS4.3 and FS4.4 over the period of several years, rather than just the previous year. • The function allows PTC to go beyond requirements of reporting for MS4 permit compliance and gives the ability to manage assets. • PTC will not be tracking repair data prior to the implementation of the stormwater management solution. Historical repair reports will be generated based on repair data entered from implementation moving forward. 	<p>Will need to ensure the data retention policies, stipulated in the SaaS contract, match the stated requirements. More requirements are needed to ensure the solution meets the business requirements.</p>

Category 5: Reporting Capabilities

ID	Requirements	Comments (If No or Partially, please include comments)
FS5.1	<p>The Stormwater Management Solution shall support the MS4 Permit.</p> <ul style="list-style-type: none"> • Shall be able to report on all components required to be within Annual MS4 Status Report. • Solution must have the ability to adapt to new MS4 permit requirements every 5+ years. 	
FS5.2a	<p>The Stormwater Management Solution shall generate reports that include photos.</p> <ul style="list-style-type: none"> • Reports can be generated using data from the mobile inspection application or based on user-uploaded data that is properly named, formatted, and located for retrieval. 	
FS5.2b	<p>The Stormwater Management Solution shall generate reports that include supplemental plans, videos, and other multimedia.</p> <ul style="list-style-type: none"> • It is acceptable for supplemental plans, videos, multimedia to be accessible by attachment or link from the generated report. 	There may be storage considerations depending on hosting agreements and/or storage media.
FS5.3	<p>The Stormwater Management Solution shall provide the ability to store and retrieve documents, multimedia data (images, plans, videos), and reports from the OnBase system, network share drive, and other systems of record.</p>	
FS5.4	<p>The Stormwater Management Solution shall be an all-inclusive repository to document and retrieve all inspection related findings and reports.</p> <ul style="list-style-type: none"> • Stormwater control measure inspections will begin Fall of 2018 using the newly created PTC stormwater mobile inspection application. Previous reporting has achieved through inserting pictures into a Word document, adding the appropriate comments and notes, and creating a pdf document. • All of the inspection data and documents created for each asset must be retrievable. 	More detailed requirements are needed regarding the integration of the mobile solution.
FS5.5	<p>The Stormwater Management Solution shall automatically generate a unique identification code for all reports.</p>	
Category 6: QA		
FS6.1	<p>The Stormwater Management Solution shall follow in-place QA standards.</p> <ul style="list-style-type: none"> • The user shall have the ability to check, edit and QA the data collected with the mobile inspection application either in the solution or through ArcGIS Online. 	This can be accomplished using a role-based approval process.

ID	Requirements	Comments (If No or Partially, please include comments)
	<ul style="list-style-type: none"> Other documents uploaded to the system shall have the opportunity for checking and QA within the system. 	
Category 7: System Capabilities		
FS7.1	<p>The Stormwater Management Solution shall provide a configurable capability for adding data elements.</p> <ul style="list-style-type: none"> PTC staff should have the ability to configure views, add documents, and generate user-defined reports. 	More detailed requirements are needed to determine the solution components
FS7.2	<p>The Stormwater Management Solution shall be device agnostic and support different form factors including mobile devices.</p> <ul style="list-style-type: none"> Generally, this solution will be used at the office using a laptop or desktop computer. During inspections it may be necessary to gain access using an Xplore B10 rugged tablet to access inspection files. It may be necessary to generate a notification, work order, or work status update in the field. 	All form factors are supported. However, some application functionality is not supported on a phone form factor due to the complexity of the screen layouts. Work order status updates depend on integration capabilities. More detailed requirements are needed.
FS7.3	<p>The Stormwater Management Solution shall provide and support offline mode (app) for data collection at Stormwater Management sites and allow data to be uploaded to the system web application when connected to internet</p> <ul style="list-style-type: none"> Currently this is a requirement for the PTC mobile inspection application. As mentioned in FS7.2 it may be required to generate notifications, work orders, or work status update in the field when internet connection is not available. 	Offline capabilities are available in the AgileAssets inspection app and ESRI apps. Notifications and status update capabilities will require more details.
Category 8: System Performance		
FS8.1	<p>The Stormwater Management Solution shall be scalable according to PTC business priorities, following a phased integration plan.</p> <ul style="list-style-type: none"> The first priority is being compliant with our MS4 permit and reporting on what is required of the Annual MS4 Status Report. The second priority is to interface with PTC’s existing asset management systems and to use this solution as an asset management tool to track investment cost and work performed throughout time. 	

8.4.2. Technical Requirements

In the next section, solution technical requirements are documented. The Technical Requirements of the Stormwater Management Solution have been grouped by sub-topics as shown below.

ID	Requirements	Comments
Category 1: System Interfaces		
TS1.1	<p>The Stormwater Management Solution shall interface with SAP to exchange data in support of the MS4 Permit.</p> <ul style="list-style-type: none"> • SAP Master Data • SAP Modules • SAP Project Systems • SAP Plant Maintenance • Request for Work Maintenance Notifications 	
TS1.2	<p>The Stormwater Management Solution shall interface with AgileAssets (for example, Pavement Analyzer) in support of the MS4 Permit. Example is Pavement Analyzer</p>	
TS1.3	<p>The Stormwater Management Solution shall interface with ESRI GIS Geo-Analytics in support of the MS4 Permit. Example is for interfacing with PTC Mobile Inspection Application</p>	
TS1.4	<p>The Stormwater Management Solution shall interface with Kahua to exchange data in support of the MS4 Permit.</p> <ul style="list-style-type: none"> • Interface via open API • Examples of data include MS4 annual report and supporting documentation 	
TS1.5	<p>The Stormwater Management Solution shall interface with OnBase to exchange data in support of the MS4 Permit. Examples of data include images, plans, and videos.</p>	
TS1.6	<p>The Stormwater Management Solution shall interface with Penn State Web-IFM (Information for Facility Management) assessment system to exchange data in support of the MS4 Permit.</p>	<p>More details on the integration will be needed however, AgileAssets has extensive experience with integrations</p>
TS1.7	<p>The Stormwater Management Solution shall integrate through flat file, imports, or API calls using scheduled import, export, or manual means to exchange data in support of the MS4 Permit. For importing and exporting of data</p>	

ID	Requirements	Comments
TS1.8	<p>The Stormwater Management Solution shall adapt to changes in interface systems.</p> <p>For example, the following system interfaces</p> <ul style="list-style-type: none"> • SAP • OnBase • Kahua 	
TS1.9	<p>The Stormwater Management Solution shall be able to export information (at a minimum) to MS Word, MS Excel, and Adobe PDF.</p>	<p>Data can be exported as a comma-separated text (.csv) file; an HTML file; a Microsoft Excel (.xls) file; a DBF file; a Google Earth KML file; or a Shape file. Some reports may be exported as a PDF as well.</p>
Category 2: Platform Characteristics		
TS2.1	<p>The Stormwater Management Solution shall be a web-based application with cross browser compatibility and must support Google Chrome, Mozilla Firefox, MS Internet Explorer, and MS Edge browsers.</p> <p>Expect that the solution will have a browser-based component.</p>	<p>Testing has revealed behavioral differences between supported browsers.</p>
TS2.2	<p>The Stormwater Management Solution shall provide a Mobile Field Data Collection/Data Review Application that supports disconnected editing with store and forward capabilities and the ability to update the master database.</p> <p>Application should operate on Android, Windows and iOS platforms and can be deployed in a private AirWatch app store.</p>	
TS2.3	<p>If the Stormwater Management Solution is provider hosted, the provider shall include uptime Service Level Agreements by application.</p> <p>Important to be available at all time during PTC business hours and shut down for maintenance activities during an agreed upon window</p>	
TS2.4	<p>Stormwater Management data will be stored as a cloud solution.</p> <p>i.e., Off premises</p>	
TS2.5	<p>The Stormwater Management Solution will be SaaS. Software as a Solution (SaaS) is a third-party provider hosted application, available to customers over the internet.</p>	

ID	Requirements	Comments
TS2.6	<p>The Stormwater Manager Solution must be CONUS hosted. CONUS = contiguous United States If the TMS were to be a cloud-based solution, then the hosting environment should be physically located in the USA.</p>	
TS2.7	<p>The Stormwater Management Solution shall be hosted in three environments, i.e. Production, Staging (for QA and training), and Development (for testing).</p>	
TS2.8	<p>The Stormwater Management Solution shall be a secured web application that is accessible outside the PTC network.</p>	
Category 3: Access and Data Security		
TS3.1	<p>The Stormwater Management Solution shall support user groups based on role assignment (user groups mirrored between Stormwater Management System and PTC Active Directory). Works with MS Active Directory.</p> <ul style="list-style-type: none"> • Displays system data only after authorization and authentication of the user is completed. • Presents only the information for which the authorized user has assigned permissions. • Provides security for data at rest and data in transit from unauthorized access. • Authorized users are determined by PTC. 	
TS3.2	<p>The Stormwater Management Solution shall provide secure login authentication for Single Sign On by SAML 3.0 authentication and Microsoft ADFS services. Regardless of whether the Stormwater Management Solution is hosted on or off premise, authentication must go through AD. If off premise (i.e., cloud) it must work with Active with Active Directory Federated Services (ADFS).</p>	<p>We support SAML 2.0 which is the latest released version. We assume that when you refer to SAML 3.0 that you are referring to OpenSAML which includes SAML 2.0 libraries. Further clarification/confirmation is requested.</p>
TS3.3	<p>The Stormwater Management Solution shall provide audit functions that track activity logging and data changes (who changed what data and when). Important for MS4 annual reporting.</p>	
TS3.4	<p>The Stormwater Management Solution shall meet the PTC Record Retention and Data Back-up and Recovery Requirements.</p>	
TS3.5	<p>The Stormwater Management Solution shall encrypt data in-transit. Any PTC data outside the PTC firewall must be encrypted.</p>	

ID	Requirements	Comments
TS3.6	The Stormwater Management Solution shall follow the PTC interface standard protocol to push or pull data using SFTP. Web services may be provided through TLS 1.2 or higher SSL (https) connection.	
Category 4: Data Policy Compliance		
TS4.1	The Stormwater Management Solution shall conform to written data retention policies, procedures, and protocols.	
TS4.2	The Stormwater Management Solution shall meet data audit and data purging protocols.	More detailed requirements would be needed to determine the best solution.
TS4.3	The Stormwater Management Solution shall have the ability to configure file naming structure. To allow PTC users to upload files and organize them in desired folder structure.	More details are needed however, the stormwater module supports a configurable directory structure for attachments
Category 5: Quality Assurance		
TS5.1	The Stormwater Management Solution shall include a QA test environment that simulates the production environment. For Quality Assurance testing before moving to production and training.	
TS5.2	The Stormwater Management Solution provider shall provide test scripts for requirements that follow PTC QA testing template. QA team can provide examples of scripts and template.	
TS5.3	The Stormwater Management Solution shall follow test script protocols for QA testing including the design steps for Quality Center upload. QA team can provide examples of scripts.	More detail is needed however, the stormwater module supports some automated testing.

8.5. Assumptions

The following Assumptions have been made when capturing the high-level functional/non-technical and technical requirements of the Stormwater Management Solution.

1. PTC management will continue to be fully supportive throughout the remainder of the processes needed to put a Stormwater Management Solution in-place.
2. PTC has the in-house or contractor development talent available if the decision is made to “build” the final solution.
3. Since the suite of products needed to complete the Stormwater Management Solution could be awarded to different product providers, there may be software compatibility issues.
4. A manual process will decipher the current data and data structure, rendering needed consistency prior to uploading data and database records for stormwater asset management and reporting.

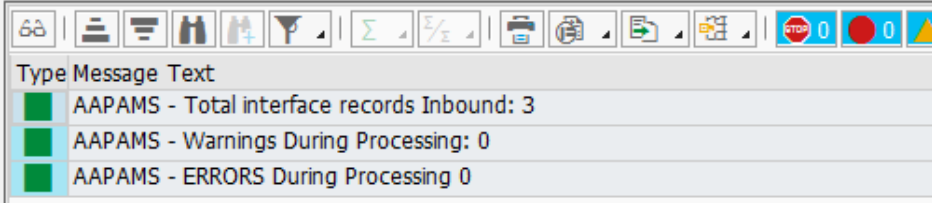
9. PAMS

9.1. Interface B - Create Notifications from Agile Assets Interface

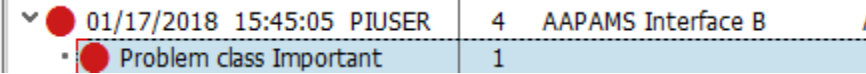
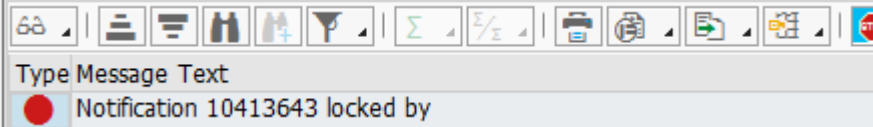
Overview	
Custom Dev ID:	17Q4_LPM_I32044
Dev Type:	PI, Proxy, OnBase, ECC
Interface Name:	PaMS Interface B Create Notifications
Description:	Work requests will be created/modified in AgileAssets and documents may be attached. Nightly an AgileAssets program will run and put the new/modified work requests (XML file) and the attachments (JPG or PDF) on the AgileAssets SFTP server. Two SAP PI processes will run. First an SAP PI SFTP adapter will pull the attachments and place them in the OnBase directory within PTC network. Second, an SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. If an SAP Notification exists in the XML file, the SAP Notification will be modified. Otherwise a new Notification will be created.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Inbound.
Frequency:	Daily, scheduled for 3 AM.
Pull/Push:	Pull.
Method:	Interface file is received via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful?
Members of Distribution List:	
Additional Info	

Transaction Code:	n/a.
Job Name:	n/a
Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. AgileAssets job runs to extract all work requests created/modified since last extract. 2. AgileAssets job places extracted work requests on Agile’s SFTP server (sftp://ptcuftpv1.agileassets.com) in directory <u>\\data\PRD\interface\PAMS\B\out\</u> (XML) & <u>\\data\PRD\interface\PAMS\B\out\attachments\</u> (Attachments) 3. PI copies the attachments to OnBase folder <u>\\cvonbasepr\g\$\pm_agile_assets_pavement\</u> 4. PI pulls .xml file and passes it to the proxy/function module, archives a copy to <u>\\cvxp21\Archive\Inbound\LO\PAMS\IN\InterfaceB\</u>, and writes copy to email folder <u>\\cvxp21\XP2Interface\Inbound\LO\PAMS\IN\InterfaceB\Process\</u> 5. ECC proxy/function module creates/modifies notifications using the .xml file and writes DIP file to OnBase folder. (If there are no attachments, no DIP file is written) 6. The On-Base Import job uses DIP file to link the attachments from the OnBase folder <u>\\cvonbasepr\pmdocuments\</u> to ECC notifications 7. Use IW22 to view notifications and attachments (IW29) search created by ‘AAPAMS’ 	

ABAP Information	
Function Module:	ZLPM_AGILEASSETS_NOTIF_PAMS
File attachments are sent to OnBase in:	
<u>\\cvonbasede\g\$\pm_agile_assets_pavement\</u>	
<u>\\cvonbaseqa\g\$\pm_agile_assets_pavement\</u>	
<u>\\cvonbasepr\g\$\pm_agile_assets_pavement\</u>	
When the file is processed successfully, there will be an SLG1 entry like this:	
<p>The screenshot shows a log entry with the following details: Date/Time: 10/27/2017 00:00:40, User: PIUSER, Count: 3, Transaction: AAPAMS Interface B, and Application: Applicati. Below this, a sub-entry is visible: Problem class: Additional Inform, Count: 3.</p>	



When there is an error in processing, there will be an SLG1 entry like this:

When you are testing in Dev, in order to get test data:

- 1) Copy attachment files from Prod OnBase folder to Agile SFTP server
(sftp://ptcuftpv1.agileassets.com) \\data\DEV\interface\PAMS\B\out\attachments\
- 2) Copy the corresponding day's .xml file from the Prod archive folder to the Agile SFTP server
\\data\DEV\interface\PAMS\B\out\
- 3) Make sure the attachment file names from the xml match the attachment file names.

Proxy Class: ZPY_CL_SI_AAPAMS_IA_PROXY_B

Proxy Method: ZPY_II_SI_AAPAMS_IA_PROXY_B~SI_AAPAMS_IA_PROXY_B

PI Scenario: ZPTC_LO_PM_AAPAMS_B

9.2. Interface C - PM Notification Info to Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_I32044
Dev Type:	ECC, Proxy, PI
Interface Name:	PAMS Interface C Sends PaMS SAP PM Notification/Work Order info to AgileAssets.
Description:	PaMS Notifications will be modified (work orders created, technically completed, etc.) in SAP and documents may be attached to work orders. Nightly, an SAP job will run and extract the modified notifications (XML file) and pass this file to an SAP PI proxy to be sent to the AgileAssets SFTP server. The same job will extract documents attached to the related work orders (JPG or PDF) and write them to the SAP PI server. Then an SAP PI FILE adapter will pull the attachments and place

<p>them on the AgileAssets SFTP server. An AgileAssets job will run to modify work requests in the AgileAssets Pavement Management System. (NOTE: All work requests/Notifications originate from Agile)</p>	
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound: Outbound.	
Frequency:	Daily, scheduled for 3:30 AM.
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML, pdf, jpg files
End of Job/Communication Information	
Email Sent:	yes.
Type: successful	Application Log entry if errors (SLG1). Application log Success entry if
Members of Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_I32044_AGILE_PAMS_C
Variant:	AAPAMS_C
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program with variant for PaMS. 2. SAP extract program reads current PaMS PM Notifications from table ZLPM_AGILE_WR. It extracts the data from the notifications and related work orders and any new attachments to work orders. It writes new attachments to <u>\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\</u> and passes the Notification/work order info to PI via proxy (XML). 3. PI passes .xml file to AgileAssets SFTP server in directory <u>\\data\PRD\interface\PAMS\C\in\</u>, archives copy to <u>\\cvxp21\Archive\Outbound\LO\PAMS\OUT\InterfaceC\</u>, & writes copy email folder <u>\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\PROCESS\</u> 	

4. PI copies attachments to AA SFTP directory \\data\PRD\interface\PAMSC\in\attachments\
5. AA runs job to update work requests w/Notification/Work Order info and attachments.

ABAP Information

Extract Program: ZLPM_I32044_AGILE_PAMS_C (Variant: AAPAMS_C)

File attachments written to PI server in:

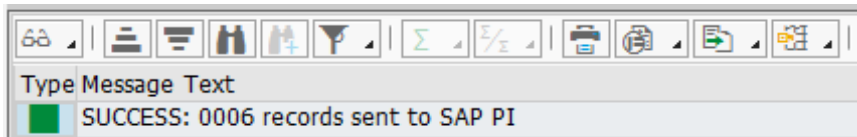
\\cvxd2\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\

\\cvxq2\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\

\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceC\

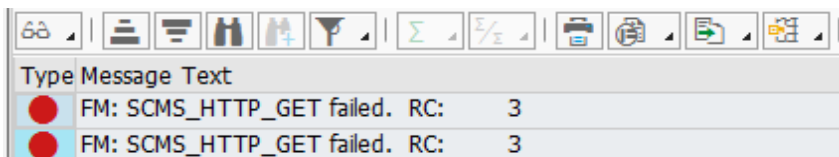
When the file is processed successfully, there will be an SLG1 entry like this:

▼	03/28/2018 15:13:17 HREEVE	1	AAPAMS Interface C
▪	Problem class Important	1	



When there are errors in the extract program, there will be an SLG1 entry like this:

▼	01/24/2018 11:09:19 HREEVE	2	AAPAMS Interface C
▪	Problem class Important	2	



When you are testing in Dev, in order to get test data:

- 1) User will have to recreate data in DEV environment. The interface reads table ZLPM_AGILE_WR, which is appended as Notifications are created. So data is environment driven.
- 2) It is possible to take prod archived files from interface B and run the data through the B interface to create the same data as in prod.
- 3) After running prod archive data through interface B, user can run interface C. However, the data in AgileAssets DEV environment will not have same work requests.

PROXY:	ZPY_CO_SI_AAPAMS_OA_PROXY_C~SI_AAPAMS_OA_PROXY_C
PI Scenario:	ZPTC_LO_PM_AAPAMS_C

9.3. Interface D - Equipment to Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_I32044
Dev Type:	ECC, Proxy, PI
Interface Name:	PaMS Interface D Sends Gate Equipment info to AgileAssets.
Description:	All gate information is created and maintained in SAP. This interface runs nightly to create an XML file with the any SAP Gate Equipment that has been created or modified since last interface run. An AgileAssets job will run and pull the XML file from interface D and update the asset records in AgileAssets with the SAP data.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Outbound.
Frequency:	Daily, scheduled for 2:30 AM.
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML file
End of Job/Communication Information	
Email Sent:	yes.
Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_I32044_AGILE_PAMS_D

Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program. 2. SAP extract program reads gate equipment from table EQUI. It extracts equipment data for records that have been created/modified since last run of Interface D and passes information to PI via proxy (XML). 3. PI passes .xml file to AgileAssets SFTP server in directory <code>\\data\PRD\interface\PAMS\D\in\</code>, archives copy to <code>\\cvxp21\Archive\Outbound\LO\PAMS\OUT\InterfaceD\</code>, & writes copy email folder <code>\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceD\PROCESS\</code> 4. AgileAssets runs a job to update assets with SAP gate equipment information. 	

ABAP Information	
Extract Program:	ZLPM_I32044_AGILE_PAMS_D
Documents that are attached to gate equipment in SAP are not in scope for this interface.	
When the file is processed successfully with records sent, there will be an SLG1 entry like this:	
<p>The screenshot shows a log entry for 'AAPAMS Interface D' on 03/28/2018 at 15:49:27. It includes a sub-entry for 'Problem class Additional Inform' with a count of 1. Below this, a message box displays 'SUCCESS: 0301 records sent to SAP PI'.</p>	
When the file is processed successfully but no records sent, there will be an SLG1 entry like this:	
<p>The screenshot shows a log entry for 'AAPAMS Interface D' on 03/28/2018 at 20:34:46. It includes a sub-entry for 'Problem class Additional Inform' with a count of 1. Below this, a message box displays 'No gate equipment has been created/modified since'.</p>	
When the file is processed and there was an error, there will be an SLG1 entry like this:	
<p>The screenshot shows a log entry for 'AAPAMS Interface D' on 01/05/2018 at 19:32:49. It includes a sub-entry for 'Problem class Important' with a count of 1. Below this, a message box displays 'Error in selection from table ZLPM_AGILE_IF: RC ='.</p>	
When you are testing in Dev, in order to get test data:	


4)	User will have to recreate data in DEV environment. The interface reads table EQUI, for Object Types H003* that have been created/modified since last run of interface D (last run on ZLPM_AGILE_IF).
5)	User can delete the ZLPM_AGILE_IF entry for the last run of interface D. This will then select all of the Gate Equipment in the SAP system and send them to AgileAssets.
PROXY:	ZPY_CO_SI_AAPAMS_OA_PROXY_D~SI_AAPAMS_OA_PROXY_D
PI Scenario:	ZPTC_LO_PM_AAPAMS_D

9.4. Interface E - WBS Element Info to Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_I32044
Dev Type:	ECC, Proxy, PI
Interface Name:	PAMS Interface E Sends SAP WBS Element info to AgileAssets.
Description:	WBS Elements that are relevant to AgileAssets PaMS will be loaded nightly to custom SAP table ZLPM_AGILE_WBS via interface F. Interface E will read the custom table and extract data for the Projects/WBS Elements that are new on the table or that have been modified since the last run of this interface. The new/modified WBS Element information will be passed (XML File) to an SAP PI proxy to be sent to the AgileAssets SFTP server. An AgileAssets job will run to modify the projects in the AgileAssets Pavement Management System.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Outbound.
Frequency:	Daily, scheduled for 4:30 AM.
Pull/Push:	Push.
Method:	Interface file is sent via PI software.
Email:	PI/ECC
File Type:	XML file
End of Job/Communication Information	
Email Sent:	yes.

Type:	Application Log entry if errors (SLG1). Application log Success entry if successful
Members of	
Distribution List:	
Additional Info	
Transaction Code:	SM37
Job Name:	Z_LPM_I32044_AGILE_PAMS_E
Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. SAP job runs nightly that executes the extract program for PaMS. 2. SAP extract program reads PaMS WBS Element table ZLPM_AGILE_WBS. It extracts the data from the WBS Elements that are new or have been created/modified since the last run of interface E and passes the WBS Element info to PI via proxy (XML). 3. PI passes .xml file to AgileAssets SFTP server in directory <code>\\data\PRD\interface\PAMS\E\in\</code>, archives copy to <code>\\cvxp21\Archive\Outbound\LO\PAMS\OUT\InterfaceE\</code>, & writes copy email folder <code>\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceE\PROCESS\</code> 4. AgileAssets runs a job to update WBS Element & Project info Pavement Management System. 	

ABAP Information	
Extract Program:	ZLPM_I32044_AGILE_PAMS_E
No file attachments written to PI server.	
When the file is processed successfully, there will be an SLG1 entry like this:	
When there are errors in the extract program, there will be an SLG1 entry like this:	

Type	Message Text
	Error in selection from table ZLPM_AGILE_IF: RC =

When you are testing in Dev, in order to get test data:

- 6) User will have to recreate data in DEV environment by adding desired WBS Elements to table ZLPM_AGILE_WBS and mark the records as initial. If the records are not marked as initial, and the WBS Elements have not been created/modified since last run of E in DEV, the records will not be picked up. Data is environment driven.

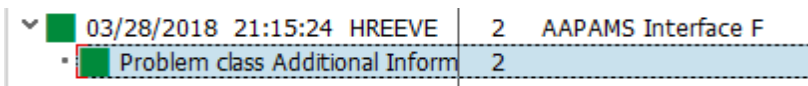
PROXY: ZPY_CO_SI_AAPAMS_OA_PROXY_E~SI_AAPAMS_OA_PROXY_E

PI Scenario: ZPTC_LO_PM_AAPAMS_E

9.5. Interface F - WBS Elements from Agile Assets Interface

Overview	
Custom Dev ID:	17Q4_LPM_I32044
Dev Type:	PI, Proxy, ECC
Interface Name:	PaMS Interface F PaMS WBS Elements
Description:	The WBS elements that are relevant to the PaMS functionality and tracking are maintained manually in AgileAssets. Nightly an AgileAssets program will run and put the WBS elements (XML file) on the AgileAssets SFTP server. An SAP PI SFTP Adapter will pull the XML file from the AgileAssets SFTP server and pass it directly to SAP ECC via proxy. SAP PI will also archive a copy of the XML file on the PI server and put a copy of the XML file in the email process folder on the PI server. SAP will take the WBS element data and load it into custom table ZLPM_AGILE_WBS, which Interface E will use to send WBS element info back to AgileAssets.
Released:	4th quarter, 2017
Data Source(s) and Frequency	
In/Out Bound:	Inbound.
Frequency:	Daily, scheduled for 4 AM.
Pull/Push:	Pull.
Method:	Interface file is received via PI software.
Email:	PI/ECC
File Type:	XML files

End of Job/Communication Information	
Email Sent:	yes.
Type: successful?	Application Log entry if errors (SLG1). Application log Success entry if successful?
Members of	
Distribution List:	
Additional Info	
Transaction Code:	n/a.
Job Name:	n/a
Variant:	n/a
Execution / Business Process Flow	
<ol style="list-style-type: none"> 1. AgileAssets job runs to extract all WBS Elements manually maintained in PaMS. 2. AgileAssets job places extracted WBS Elements on Agile’s SFTP server (sftp://ptcuftpv1.agileassets.com) in directory <u>\\data\PRD\interface\PAMS\F\out\</u> (XML) 3. PI pulls .xml file and passes it to the proxy, archives a copy to <u>\\cvxp21\Archive\Inbound\LO\PAMS\IN\InterfaceF\</u>, and writes copy to email folder <u>\\cvxp21\XP2Interface\Inbound\LO\PAMS\IN\InterfaceF\Process\</u> 4. ECC proxy uses the .xml file to validate the WBS Elements in SAP and load Z-table ZLPM_AGILE_WBS 5. Use SE16N to view contents of table ZLPM_AGILE_WBS 	

ABAP Information	
Proxy Class:	ZPY_CL_MI_AAPAMS_IA_PROXY_F
Proxy Method:	ZPY_II_MI_AAPAMS_IA_PROXY_F~SI_AAPAMS_IA_PROXY_F
No attachments are sent for WBS Elements	
When the file is processed successfully, there will be an SLG1 entry like this:	
 <p>The screenshot shows a log entry with a green status icon, timestamp '03/28/2018 21:15:24', user 'HREEVE', and message '2 AAPAMS Interface F'. Below it is a sub-entry with a red status icon and text 'Problem class Additional Inform' followed by '2'.</p>	

Type	Message Text
■	WBS element recs deleted from ZLPM_AGILE_WBS: 26
■	WBS element recs inserted in ZLPM_AGILE_WBS: 26

When there is an error in processing, there will be an SLG1 entry like this:

▼	●	03/05/2018 13:23:57 HREEVE	8	AAPAMS Interface F
	●	Problem class Important	8	

Type	Message Text
●	ERROR: WBS Element A-031.00T001-2 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-01 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-02 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-03 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-04 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-05 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-06 not found (Table PRPS)
●	ERROR: WBS Element A-031.00T001-3-07 not found (Table PRPS)

When you are testing in Dev, in order to get test data:

- 1) Copy the corresponding day's .xml file from the Prod archive folder to the Agile SFTP server \\data\DEV\interface\PAMS\F\out\
- 2) You can manually add WBS Element entries in AgileAssets' test system and run interface F to populate table ZLPM_AGILE_WBS.

Proxy Class: ZPY_CL_MI_AAPAMS_IA_PROXY_F

Proxy Method: ZPY_II_MI_AAPAMS_IA_PROXY_F~SI_AAPAMS_IA_PROXY_F

PI Scenario: ZPTC_LO_PM_AAPAMS_F

9.6. Interface C - Technical Specification – Update AgileAssets Work Request

Date	12/07/2017
Description	Notifications will only be created in SAP via interface B. However, notifications can be modified (work orders created, technically completed, etc.) in SAP and documents may be attached to work orders. Nightly, an SAP job will run and extract the new/modified notifications (XML file) and pass this file to an SAP PI proxy to be sent to the AgileAssets SFTP server. The same job will extract documents attached to the related work orders (JPG or PDF) and write them to the SAP PI server. Then an SAP PI FILE adapter will pull the attachments and place them on the AgileAssets SFTP server. An

	AgileAssets job will run to modify work requests in the AgileAssets Pavement Management System and link the attachments to the appropriate work request.
--	--

Technical Name	17Q4 LPM I32044C
Description	Nightly, an SAP job (Z_LPM_I32044_AGILE_PAMS_C) will run that calls an ABAP program (ZLPM_I32044_AGILE_PAMS_C) which reads a Z-table (ZLPM_AGILE_WR) that tracks all of the active and recently completed SAP notifications created for PAMS. The ABAP program extracts the info for these notifications and any documents that have been attached to the related work orders since the last run of this interface. The notification data (XML file) is passed to the AgileAssets SFTP server (sftp://ptcuftpv1.agileassets.com), via SAP PI proxy, and placed in directory \\data\PROD\interface\PAMS\C\in\. The ABAP extract program writes a copy of work order attachments to the PI server directory \\cvxp2\XP2\interface\Outbound\LO\PAMS\OUT\InterfaceC\. A SAP PI file adapter pulls the work order attachments and writes them in Agile’s SFTP server directory \\data\PROD\interface\PAMS\C\in\attachments\. Once the XML file and attachments have been moved to Agile’s SFTP server, an AgileAssets job is run to update work requests and link attachments.

<i>Program type</i>
<input type="checkbox"/> Batch <input checked="" type="checkbox"/> Online

<i>Direction of Interface</i>
<input type="checkbox"/> Inbound <input checked="" type="checkbox"/> Outbound <input type="checkbox"/> Both

<i>Process Description</i>
<ol style="list-style-type: none"> 1. SAP – A job (Z_LPM_I32044_AGILE_PAMS_C) is run. This job calls an ABAP extract program (ZLPM_I32044_AGILE_PAMS_C Variant: AAPAMS_C), which reads a Z-table (ZLPM_AGILE_WR) that tracks all the active and recently closed PAMS notifications. The ABAP program extracts all the relevant information on these notifications and any documents that have been attached to related work orders since last run of the SAP job (Only files named *.jpg, *.JPG, *.pdf, or *.PDF will be processed). The notification information will be passed to SAP PI via proxy and the attachments will be written to the SAP PI server. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of notifications created will be written to the log file (SLG1). 2. SAP PI – An SAP PI file channel (CC_SENDER_FILE_ATTACHMENTS_AAPAMS_C) will pull the attachments from the PI server and write them in the AgileAssets SFTP server directory \\data\PROD\interface\PAMS\C\in\attachments\.

3. SAP PI – The SAP PI proxy process will write the notification information (XML file) onto the AgileAssets SFTP server, write a copy of the XML file to the SAP PI server archive folder `\\cvxp2\Archive\Outbound\LO\PAMS\OUT\InterfaceC`, and write another copy to the email process folder (`\\cvxd2\XD2Interface\Outbound\LO\PAMS\OUT\InterfaceC\PROCESS`) on the SAP PI server.
4. AgileAssets – A system job (B-PAMS Interface C) will read the notifications information (XML File) and update work requests in AgileAssets. This same job will link any attachments to their related work requests.

Extraction Description

Data is extracted from SAP by running job Z_LPM_I32044_AGILE_PAMS_C, which calls ABAP program ZLPM_I32044_AGILE_PAMS_C.

See below for detail logic of extract program.

<i>XML File Format – Proxy Output from SAP</i>					
Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Data Type	Occurrence	Field Description
Record			Node	0..unbound	Record with Work Request info
	AA_workReq_nbr		String	1..1	AgileAssets Work Request number
	SAP_FLoc_ID		String	1..1	Functional Location
	SAP_Equip_Nbr		String	0..1	SAP Equipment Number
	SAP_Notif_Nbr		String	0..1	SAP Notification Number
	SAP_Notif_Create_Date		String	0..1	Date notification created in SAP
	SAP_Notif_Created_By		String	0..1	User who created notification
	SAP_Notif_Status		String	0..1	SAP Notification status
	Priority_ID		String	0..1	Priority of work request/Notification (1, 2, 3)
	SAP_WO_Nbr		String	0..1	SAP Work Order number
	SAP_WO_long_desc		String	0..1	SAP Work Order long description
	wr_short_desc		String	0..1	Work Request short description (40 char)
	wr_long_desc		String	0..1	Work Request long description (4000 char)
	Planned_Date		String	0..1	Planned start date
	SAP_Completion_Date		String	0..1	Date notification completed
	Attachments		Node	0..1	Work Request Attachments

		Filename	String	1..unbound	Filename of attachments
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<i>Middleware Description – SAP PI Components</i>	
Description	INTERFACE C – Daily Notification XML file to AgileAssets Proxy
Direction	Pushing
Method of pulling/pushing	SAP PI Proxy
Namespace	http://paturnpike.com/LO/AAPAMS_C
Data Type	DT_AAPAMS_C
Message Type	MT_AAPAMS_XML_C (used by source and target)
Message Interfaces	SI_AAPAMS_IA_Proxy_C SI_AAPAMS_OA_Proxy_C SI_AAPAMS_IA_Attachments_C
Message Mappings	MM_AAPAMS_Proxy_to_File_C
Interface Mappings	OM_AAPAMS_Proxy_to_File_C
Sender Channel	CC_SENDER_PROXY_SAP_2_PI (ED2CLNT210) CC_SENDER_FILE_ATTACHMENTS_AAPAMS_C (INTEGRATION_SERVER_XD2)
Receiver Channel	CC_RECEIVER_SFTP_XML_AAPAMS_C (BC_AAPAMS_C_XML_RECEIVER) CC_RECEIVER_FILE_XML_COPY_AAPAMS_C (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_C (BC_AAPAMS_XML_MAIL_RECEIVER) CC_RECEIVER_SFTP_ATTACHMENTS_AAPAMS_C (BC_AAPAMS_C_ATTACHMENTS_RECEIVER)

<p>Sender Agreement</p>	<p>ED2CLNT210 / SI_AAPAMS_OA_Proxy_C Channel: CC_SENDER_PROXY_SAP_2_PI</p> <p>INTEGRATION_SERVER_XD2 / SI_AAPAMS_IA_Attachments_C Channel: CC_SENDER_FILE_ATTACHMENTS_AAPAMS_C</p>
<p>Receiver Agreement</p>	<p>ED2CLNT210 / BC_AAPAMS_C_XML_RECEIVER / SI_AAPAMS_IA_Proxy_C Channel: CC_RECEIVER_SFTP_XML_AAPAMS_C</p> <p>ED2CLNT210 / INTEGRATION_SERVER_XD2 / SI_AAPAMS_OA_Proxy_C Channel: CC_RECEIVER_FILE_XML_COPY_AAPAMS_C</p> <p>ED2CLNT210 / BC_AAPAMS_XML_MAIL_RECEIVER / SI_AAPAMS_OA_Proxy_C Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_C</p> <p>INTEGRATION_SERVER_XD2 / BC_AAPAMS_C_ATTACHMENTS_RECEIVER / SI_AAPAMS_IA_Attachments_C Channel: CC_RECEIVER_SFTP_ATTACHMENTS_AAPAMS_C</p>
<p>Interface Determination</p>	<p>ED2CLNT210 / SI_AAPAMS_OA_Proxy_C / BC_AAPAMS_C_XML_RECEIVER / OM_AAPAMS_Proxy_to_File_C</p>
<p>Receiver Determination</p>	<p>ED2CLNT210 / SI_AAPAMS_OA_Proxy_C</p> <p>Receiver: BC_AAPAMS_C_XML_RECEIVER</p> <p>Receiver: INTEGRATION_SERVER_XD2</p> <p>Receiver: BC_AAPAMS_XML_MAIL_RECEIVER</p> <p>INTEGRATION_SERVER_XD2 / SI_AAPAMS_IA_Attachments_C</p> <p>Receiver: BC_AAPAMS_C_ATTACHMENTS_RECEIVER</p>

<p><i>Loading Description</i></p>
<p>The XML data is processed in the AgileAssets system via the “B-PAMS Interface C” system job.</p>

The job is scheduled to execute once a day. It reads the XML file from //data/PROD/interface/PAMS/C/in/ folder and updates work requests in AgileAssets. The related attachments for these work requests are read from directory /data/PROD/interface/PAMS/C/in/attachments/ and linked to associated work request.

Load Format

AgileAssets load format is the same as SAP Proxy extract format.

Failure / Restart Programs

Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.

Proxy and ABAP Extract program will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:

SAP Extract Program: ZLPM_I32044_AGILE_PAMS_C

- ZPM000 – FM: SCMS_BINARY_TO_XSTRING failed. RC: &
- ZPM005 – ERROR LOGIC, sys-host not found (Dev defaulted) RC: &
- ZPM006 – ERROR opening dataset file not created RC: &
- ZPM007 – ERROR writing to dataset RC: &
- ZPM008 – ERROR Closing dataset RC: &
- ZPM009 – ERROR Locking custom table ZLPM_AGILE_WR => RC: &
- ZPM010 – ERROR selecting data from custom table ZLPM_AGILE_WR => RC: &
- ZPM011 – SUCCESS: & records sent to SAP PI
- ZPM012 – ERROR: No XML proxy file created – RC: &
- ZPROXY009 – Method & is not a valid method for further processing.

Extract Program	Logic Diagram
ZLPM_I32044_AGILE_PAMS_C	<ol style="list-style-type: none"> 1. Save current timestamp and get timestamp of last run of interface C from ZLPM_AGILE_IF 2. Create Application Log entry 3. Get all data from table ZLPM_AGILE_WR 4. Remove all notifications from ZLPM_AGILE_WR that have been closed for longer than 14 days 5. Get all relevant SAP data for remaining Notifications/work orders on table ZLPM_AGILE_WR

	<ol style="list-style-type: none"> 6. Find directory from table ZDCA_FILEPARAM, to copy work order attachments to 7. Using data from Step 5, update table ZLPM_AGILE_WR, build proxy output for XML file to AgileAssets, and copy any documents that have been attached to work orders, since last interface run, in directory found in Step 6 8. Send proxy output to SAP PI to create XML file for AgileAssets. 9. Update ZLPM_AGILE_IF (interface last run table) with timestamp save in Step 2
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9.7. Interface D - Technical Specification – Gate Equipment to AgileAssets Asset

Date	01/29/2018
Description	Gate equipment will be created/modified in SAP. Nightly, an SAP job will run and extract the new/modified gate equipment (XML file) and pass this file to an SAP PI proxy to be sent to the AgileAssets SFTP server. An AgileAssets job will run to create/modify assets in the AgileAssets Pavement Management System.

Technical Name	17Q4 LPM I32044D
Description	<p>Nightly, an SAP job (Z_LPM_I32044_AGILE_PAMS_D) will run that calls an ABAP program (ZLPM_I32044_AGILE_PAMS_D) which selects all gate equipment in SAP that has been created or modified since the last run of the interface. The timestamp for the last interface run is stored on Z-table (ZLPM_AGILE_IF). The ABAP program extracts the related info for the gate equipment selected. The gate equipment data (XML file) is passed to the AgileAssets SFTP server (sftp://ptcuftpv1.agileassets.com), via SAP PI proxy, and placed in directory \\data\PROD\interface\PAMS\D\in\.</p> <p>SAP PI also makes two copies of the XML file. The first copy of the XML file is archived on the PI server (\\cvxp21\Archive\Outbound\LO\PAMS\OUT\InterfaceD\).</p> <p>The second copy of the XML file is placed in the email folder on the SAP PI server (\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceD\PROCESS\).</p> <p>Once the XML file has been moved to Agile’s SFTP server, an AgileAssets job is run to update the gate equipment in AgileAssets Pavement Management System.</p>

<i>Program type</i>

Batch **Online**

Direction of Interface
 Inbound **Outbound** **Both**

Process Description

1. SAP – A job (Z_LPM_I32044_AGILE_PAMS_D) is run. This job calls an ABAP extract program (ZLPM_I32044_AGILE_PAMS_D), which selects all SAP gate equipment that has been created or modified since the last run of interface D (Z-table ZLPM_AGILE_IF tracks timestamp of last run). The ABAP program extracts all the relevant information on the gate equipment, then passes this information to SAP PI via proxy. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of notifications created will be written to the log file (SLG1).
2. SAP PI – The SAP PI proxy process will write the gate equipment information (XML file) onto the AgileAssets SFTP server, write a copy of the XML file to the SAP PI server archive folder `\\cvxp2\Archive\Outbound\LO\PAMS\OUT\InterfaceD`, and write another copy to the email process folder (`\\cvxd2\XD2Interface\Outbound\LO\PAMS\OUT\InterfaceD\PROCESS`) on the SAP PI server.
3. AgileAssets – A system job (B-PAMS Interface D) will read the gate equipment information (XML File) and update the corresponding assets in AgileAssets.

Extraction Description
Data is extracted from SAP by running job Z_LPM_I32044_AGILE_PAMS_D, which calls ABAP program ZLPM_I32044_AGILE_PAMS_D.

See below for detail logic of extract program.

XML File Format – Proxy Output from SAP

Root Level Field Name	Level 1 Field Name	Data Type	Occurrence	Field Description
Record		Node	0..unbound	Record with Gate Equipment info
	sap_equip_nbr	String	1..1	SAP gate equipment number
	sap_equip_desc	String	0..1	SAP gate equipment description
	sap_fLoc_id	String	0..1	SAP functional location of equipment
	mainShed	String	0..1	Description of SAP plant section for equipment
	startPoint	String	0..1	Linear start point for equipment
	endPoint	String	0..1	Linear end point for equipment
	techObject	String	0..1	SAP technical object type of equipment

	lockType	String	0..1	Description of technical object type of equipment
	Sap_equip_status	String	0..1	SAP System status of equipment

<i>Middleware Description – SAP PI Components</i>	
Description	INTERFACE D – Daily Gate Equipment XML file to AgileAssets Proxy
Direction	Pushing
Method of pulling/pushing	SAP PI Proxy
Namespace	http://paturnpike.com/LO/AAPAMS_D
Data Type	DT_AAPAMS_D
Message Type	MT_AAPAMS_XML_D (used by source and target)
Message Interfaces	SI_AAPAMS_OA_Proxy_D
Message Mappings	N/A (Pass-through)
Interface Mappings	N/A (Pass-through)
Sender Channel	CC_SENDER_PROXY_SAP_2_PI (ED2CLNT210)
Receiver Channel	CC_RECEIVER_SFTP_XML_AAPAMS_D (BC_AAPAMS_D_XML_RECEIVER) CC_RECEIVER_FILE_XML_COPY_AAPAMS_D (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_D (BC_AAPAMS_XML_MAIL_RECEIVER)
Sender Agreement	ED2CLNT210 / SI_AAPAMS_OA_Proxy_D Channel: CC_SENDER_PROXY_SAP_2_PI
Receiver Agreement	ED2CLNT210 / BC_AAPAMS_D_XML_RECEIVER / SI_AAPAMS_OA_Proxy_D Channel: CC_RECEIVER_SFTP_XML_AAPAMS_D ED2CLNT210 / INTEGRATION_SERVER_XD2 / SI_AAPAMS_OA_Proxy_D

	<p>Channel: CC_RECEIVER_FILE_XML_COPY_AAPAMS_D</p> <p>ED2CLNT210 / BC_AAPAMS_XML_MAIL_RECEIVER / SI_AAPAMS_OA_Proxy_D</p> <p>Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_D</p>
Interface Determination	N/A (Pass-through)
Receiver Determination	<p>ED2CLNT210 / SI_AAPAMS_OA_Proxy_D</p> <p>Receiver: BC_AAPAMS_D_XML_RECEIVER</p> <p>Receiver: INTEGRATION_SERVER_XD2</p> <p>Receiver: BC_AAPAMS_XML_MAIL_RECEIVER</p>

<i>Loading Description</i>
<p>The XML data is processed in the AgileAssets system via the “B-PAMS Interface D” system job.</p> <p>The job is scheduled to execute once a day. It reads the XML file from //data/PROD/interface/PAMS/D/in/ folder and updates assets in AgileAssets.</p>

<i>Load Format</i>
AgileAssets load format is the same as SAP Proxy extract format.

<i>Failure / Restart Programs</i>
<p>Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.</p> <p>Proxy and ABAP Extract program will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:</p> <p>SAP Extract Program: ZLPM_I32044_AGILE_PAMS_D</p> <ul style="list-style-type: none"> • ZPM000(E) – Error in selection from table ZLPM_AGILE_IF: RC = & • ZPM000(I) – No gate equipment has been created/modified since last run of AAPAMS Interface D • ZPM000(E) – Error in selection from table EQUI: RC = & • ZPM000(E) – Error modifying table ZLPM_AGILE_IF: RC = & • ZPM011(S) – SUCCESS: & records sent to SAP PI

- ZPROXY009(W) – Method & is not a valid method for further processing.

Extract Program	Logic Diagram
ZLPM_I32044_AGILE_PAMS_D	<ol style="list-style-type: none"> 1. Create Application Log entry 2. Save current timestamp and get timestamp of last run of interface D from ZLPM_AGILE_IF 3. Get all gate equipment from table EQUI that has been created or changed since last run of Interface D 4. Get all relevant SAP data for gate equipment selected in step 3 and build proxy output for XML file to AgileAssets 5. Send proxy output to SAP PI to create XML file for AgileAssets. 6. Update ZLPM_AGILE_IF (interface last run table) with timestamp save in Step 2

9.8. Interface D - Technical Specification – Gate Equipment to SAP

Date	03/27/2018
Description	WBS Elements that are relevant to AgileAssets PaMS will be loaded nightly to custom SAP table ZLPM_AGILE_WBS via interface F. This interface will read the custom table and extract data for the Projects/WBS Elements that are new on the table or that have been modified since the last run of this interface. The new/modified WBS Element information will be passed (XML File) to an SAP PI proxy to be sent to the AgileAssets SFTP server. An AgileAssets job will run to modify the projects in the AgileAssets Pavement Management System.

Technical Name	17Q4 LPM PRJ0015638E
Description	Nightly, an SAP job (Z_LPM_PRJ15638_AGILE_PAMS_E) will run that calls an ABAP program (ZLPM_PRJ15638_AGILE_PAMS_E) which reads a Z-table (ZLPM_AGILE_WBS) that contains all the relevant WBS Elements for AgileAssets PaMS projects. The Z-table has an ‘Initial’ indicator marked if this is the first time the WBS Element has been loaded on the table by interface F. The program extracts the relevant data in SAP for the WBS Elements that have the ‘Initial’ indicator set or the WBS Element has been created/modified since the last run of the interface. The timestamp for the last interface run is stored on Z-table (ZLPM_AGILE_IF). The WBS Element data (XML file) is passed to the AgileAssets SFTP server

	<p>(sftp://ptcuftpv1.agileassets.com), via SAP PI proxy, and placed in directory \\data\PROD\interface\PAMS\E\in\ . SAP PI also makes two copies of the XML file. The first copy of the XML file is archived on the PI server (\\cvxp21\Archive\Outbound\PAMS\OUT\InterfaceE\). The second copy of the XML file is placed in the email folder on the SAP PI server (\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceE\PROCESS\). Once the XML file has been moved to Agile’s SFTP server, an AgileAssets job is run to update the WBS Project information in AgileAssets Pavement Management System.</p>
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<i>Program type</i>	
<input checked="" type="checkbox"/> Batch	<input type="checkbox"/> Online

<i>Direction of Interface</i>	
<input type="checkbox"/> Inbound	<input checked="" type="checkbox"/> Outbound <input type="checkbox"/> Both

<i>Process Description</i>	
<ol style="list-style-type: none"> 1. SAP – A job (Z_LPM_PRJ15638_AGILE_PAMS_E) is run. This job calls an ABAP extract program (ZLPM_PRJ15638_AGILE_PAMS_E), which extracts data for all SAP WBS Elements on Z-table ZLPM_AGILE_WBS that have the ‘Initial’ indicator set or have been created/modified since the last run of interface E (Z-table ZLPM_AGILE_IF tracks timestamp of last run). The ABAP program extracts all the relevant information on these WBS Elements, then passes this information to SAP PI via proxy. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of projects sent will be written to the log file (SLG1). 2. SAP PI – The SAP PI proxy process will write the WBS project information (XML file) onto the AgileAssets SFTP server, write a copy of the XML file to the SAP PI server archive folder \\cvxp2\Archive\Outbound\PAMS\OUT\InterfaceE, and write another copy to the email process folder (\\cvxd2\XD2Interface\Outbound\LO\PAMS\OUT\InterfaceE\PROCESS) on the SAP PI server. 3. AgileAssets – A system job (B-PAMS Interface E) will read the WBS Project information (XML File) and update the corresponding projects in AgileAssets. 	

<i>Extraction Description</i>	
<p>Data is extracted from SAP by running job Z_LPM_PRJ15638_AGILE_PAMS_E, which calls ABAP program ZLPM_PRJ15638_AGILE_PAMS_E.</p> <p>See below for detail logic of extract program.</p>	

<i>XML File Format – Proxy Output from SAP</i>							
Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Level 3 Field Name	Level 4 Field Name	Data Type	Occur	Field Description
project					Node	0..1	Project Definition Record
	project_definition				String	1..1	SAP project definition
	project_status				String	1..1	SAP project system status
	wbs_design				Node	0..1	SAP project design WBS
		wbs_element			String	1	Design WBS Element
		person_responsible			String	0..1	Design person responsible
	wbs_construction				Node	0..1	Construction WBS Elements
		wbs_element			String	1	Construction WBS Element
		person_responsible			String	0..1	Const. person responsible
		network_loop			Node	0..1	Const. Network loop
			net_nbr		String	1	Network number
			activity_loop		Node	0..1	Const. activity loop
				vendor	String	0..1	Vendor name
				received_amt	Decimal	0..1	Amount received
		milestones_loop			Node	0..1	Constr. Milestones loop
			description		String	1	Milestone description
			date		Date	1	Milestone date

<i>Middleware Description – SAP PI Components</i>	
Description	INTERFACE E – Daily WBS Element XML file to AgileAssets Proxy
Direction	Pushing

Method of pulling/pushing	SAP PI Proxy
Namespace	http://paturndpike.com/LO/AAPAMS_E
Data Type	DT_AAPAMS_E
Message Type	MT_AAPAMS_XML_E (used by source and target)
Message Interfaces	SI_AAPAMS_OA_Proxy_E
Message Mappings	N/A (Pass through)
Interface Mappings	N/A (Pass through)
Sender Channel	CC_SENDER_PROXY_SAP_2_PI (ED2CLNT210)
Receiver Channel	CC_RECEIVER_SFTP_XML_AAPAMS_E (BC_AAPAMS_E_XML_RECEIVER) CC_RECEIVER_FILE_XML_COPY_AAPAMS_E (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_E (BC_AAPAMS_XML_MAIL_RECEIVER)
Sender Agreement	ED2CLNT210 / SI_AAPAMS_OA_Proxy_E Channel: CC_SENDER_PROXY_SAP_2_PI
Receiver Agreement	ED2CLNT210 / BC_AAPAMS_E_XML_RECEIVER / SI_AAPAMS_OA_Proxy_E Channel: CC_RECEIVER_SFTP_XML_AAPAMS_E ED2CLNT210 / INTEGRATION_SERVER_XD2 / SI_AAPAMS_OA_Proxy_E Channel: CC_RECEIVER_FILE_XML_COPY_AAPAMS_E ED2CLNT210 / BC_AAPAMS_XML_MAIL_RECEIVER / SI_AAPAMS_OA_Proxy_E Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_E
Interface Determination	N/A (Pass through)

Receiver Determination	ED2CLNT210 / SI_AAPAMS_OA_Proxy_E Receiver: BC_AAPAMS_E_XML_RECEIVER Receiver: INTEGRATION_SERVER_XD2 Receiver: BC_AAPAMS_XML_MAIL_RECEIVER
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<i>Loading Description</i>
The XML data is processed in the AgileAssets system via the “B-PAMS Interface E” system job. The job is scheduled to execute once a day. It reads the XML file from //data/PROD/interface/PAMS/E/in/ folder and updates projects in AgileAssets.

<i>Load Format</i>
AgileAssets load format is the same as SAP Proxy extract format.

<i>Failure / Restart Programs</i>
Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI. Proxy and ABAP Extract program will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur: SAP Extract Program: ZLPM_PRJ15638_AGILE_PAMS_D <ul style="list-style-type: none"> • ZPM000(E) – Error in selection from table ZLPM_AGILE_IF: RC = & • ZPM000(I) – No WBS Elements on table ZLPM_AGILE_WBS • ZPM000(E) – Error in selection from table ZLPM_AGILE_WBS: RC = & • ZPM000(E) – WBS Element not found on table PRPS & • ZPM000(E) – Error modifying table ZLPM_AGILE_IF: RC = & • ZPM011(S) – SUCCESS: & records sent to SAP PI • ZPROXY009(W) – Method & is not a valid method for further processing.

Extract Program	Logic Diagram
ZLPM_PRJ15638_AGILE_PAMS_E	1. Create Application Log entry 2. Save current timestamp and get timestamp of last run of interface E from ZLPM_AGILE_IF

	<ol style="list-style-type: none"> 3. Get relevant WBS Elements from table ZLPM_AGILE_WBS 4. Get list of SAP Project Definitions for WBS Elements from step 3. Determine which project definitions are 'Initial' (first time on Z-table) or have been created/modified since last run of interface E. 5. Get all relevant SAP Design, Construction, Network, Activity, and Milestone data for SAP Project Definitions determined in step 4. 6. Build proxy output for XML file to AgileAssets 7. Send proxy output to SAP PI to create XML file for AgileAssets. 8. Update ZLPM_AGILE_IF (interface last run table) with timestamp save in Step 2
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9.9. Interface E - Technical Specification – WBS Element Info to AgileAssets Asset

Date	03/27/2018
Description	WBS Elements that are relevant to AgileAssets PaMS will be loaded nightly to custom SAP table ZLPM_AGILE_WBS via interface F. This interface will read the custom table and extract data for the Projects/WBS Elements that are new on the table or that have been modified since the last run of this interface. The new/modified WBS Element information will be passed (XML File) to an SAP PI proxy to be sent to the AgileAssets SFTP server. An AgileAssets job will run to modify the projects in the AgileAssets Pavement Management System.

Technical Name	17Q4 LPM I32044E
Description	Nightly, an SAP job (Z_LPM_I32044_AGILE_PAMS_E) will run that calls an ABAP program (ZLPM_I32044_AGILE_PAMS_E) which reads a Z-table (ZLPM_AGILE_WBS) that contains all the relevant WBS Elements for AgileAssets PaMS projects. The Z-table has an 'Initial' indicator marked if this is the first time the WBS Element has been loaded on the table by interface F. The program extracts the relevant data in SAP for the WBS Elements that have the 'Initial' indicator set or the WBS Element has been created/modified since the last run of the interface. The timestamp for the last interface run is stored on Z-table (ZLPM_AGILE_IF). The WBS Element data (XML file) is passed to the AgileAssets SFTP server (sftp://ptcuftpv1.agileassets.com), via SAP PI proxy, and placed in directory \\data\PROD\interface\PAMS\E\in\. SAP PI also makes two copies of the

	XML file. The first copy of the XML file is archived on the PI server (\\cvxp21\Archive\Outbound\PAMS\LO\OUT\InterfaceE). The second copy of the XML file is placed in the email folder on the SAP PI server (\\cvxp21\XP2Interface\Outbound\LO\PAMS\OUT\InterfaceE\PROCESS). Once the XML file has been moved to Agile’s SFTP server, an AgileAssets job is run to update the WBS Project information in AgileAssets Pavement Management System.
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<i>Program type</i>
<input checked="" type="checkbox"/> Batch <input type="checkbox"/> Online

<i>Direction of Interface</i>
<input type="checkbox"/> Inbound <input checked="" type="checkbox"/> Outbound <input type="checkbox"/> Both

<i>Process Description</i>
<ol style="list-style-type: none"> 1. SAP – A job (Z_LPM_I32044_AGILE_PAMS_E) is run. This job calls an ABAP extract program (ZLPM_I32044_AGILE_PAMS_E), which extracts data for all SAP WBS Elements on Z-table ZLPM_AGILE_WBS that have the ‘Initial’ indicator set or have been created/modified since the last run of interface E (Z-table ZLPM_AGILE_IF tracks timestamp of last run). The ABAP program extracts all the relevant information on these WBS Elements, then passes this information to SAP PI via proxy. If there are any failures in this process, they will be written to application log file in SAP (SLG1). If the process is successful, a message with the number of projects sent will be written to the log file (SLG1). 2. SAP PI – The SAP PI proxy process will write the WBS project information (XML file) onto the AgileAssets SFTP server, write a copy of the XML file to the SAP PI server archive folder \\cvxp2\Archive\Outbound\LO\PAMS\OUT\InterfaceE, and write another copy to the email process folder (\\cvxd2\XD2Interface\Outbound\LO\PAMS\OUT\InterfaceE\PROCESS) on the SAP PI server. 3. AgileAssets – A system job (B-PAMS Interface E) will read the WBS Project information (XML File) and update the corresponding projects in AgileAssets.

<i>Extraction Description</i>
Data is extracted from SAP by running job Z_LPM_I32044_AGILE_PAMS_E, which calls ABAP program ZLPM_I32044_AGILE_PAMS_E.
See below for detail logic of extract program.

<i>XML File Format – Proxy Output from SAP</i>
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Root Level Field Name	Level 1 Field Name	Level 2 Field Name	Level 3 Field Name	Level 4 Field Name	Data Type	Occur	Field Description
project					Node	0..u	Project Definition Record
	project_definition				String	1..1	SAP project definition
	project_status				String	1..1	SAP project system status
	wbs_design				Node	0..1	SAP project design WBS
		wbs_element			String	1	Design WBS Element
		person_responsible			String	0..1	Design person responsible
	wbs_construction				Node	0..u	Construction WBS Elements
		wbs_element			String	1	Construction WBS Element
		person_responsible			String	0..1	Const. person responsible
		network_loop			Node	0..u	Const. Network loop
			net_nbr		String	1	Network number
			activity_loop		Node	0..u	Const. activity loop
				vendor	String	0..1	Vendor name
				received_amount	Dec	0..1	Amount received
		milestones_loop			Node	0..u	Constr. Milestones loop
			description		String	1	Milestone description
			date		Date	1	Milestone date

<i>Middleware Description – SAP PI Components</i>	
Description	INTERFACE E – Daily WBS Element XML file to AgileAssets Proxy
Direction	Pushing
Method of pulling/pushing	SAP PI Proxy
Namespace	http://paturnpike.com/LO/AAPAMS_E
Data Type	DT_AAPAMS_E
Message Type	MT_AAPAMS_XML_E (used by source and target)
Message Interfaces	SI_AAPAMS_OA_Proxy_E
Message Mappings	N/A (Pass through)
Interface Mappings	N/A (Pass through)

Sender Channel	CC_SENDER_PROXY_SAP_2_PI (ED2CLNT210)
Receiver Channel	CC_RECEIVER_SFTP_XML_AAPAMS_E (BC_AAPAMS_E_XML_RECEIVER) CC_RECEIVER_FILE_XML_COPY_AAPAMS_E (INTEGRATION_SERVER_XD2) CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_E (BC_AAPAMS_XML_MAIL_RECEIVER)
Sender Agreement	ED2CLNT210 / SI_AAPAMS_OA_Proxy_E Channel: CC_SENDER_PROXY_SAP_2_PI
Receiver Agreement	ED2CLNT210 / BC_AAPAMS_E_XML_RECEIVER / SI_AAPAMS_OA_Proxy_E Channel: CC_RECEIVER_SFTP_XML_AAPAMS_E ED2CLNT210 / INTEGRATION_SERVER_XD2 / SI_AAPAMS_OA_Proxy_E Channel: CC_RECEIVER_FILE_XML_COPY_AAPAMS_E ED2CLNT210 / BC_AAPAMS_XML_MAIL_RECEIVER / SI_AAPAMS_OA_Proxy_E Channel: CC_RECEIVER_FILE_MAIL_XML_COPY_AAPAMS_E
Interface Determination	N/A (Pass through)
Receiver Determination	ED2CLNT210 / SI_AAPAMS_OA_Proxy_E Receiver: BC_AAPAMS_E_XML_RECEIVER Receiver: INTEGRATION_SERVER_XD2 Receiver: BC_AAPAMS_XML_MAIL_RECEIVER

<i>Loading Description</i>
The XML data is processed in the AgileAssets system via the “B-PAMS Interface E” system job. The job is scheduled to execute once a day. It reads the XML file from //data/PROD/interface/PAMS/E/in/ folder and updates projects in AgileAssets.

<i>Load Format</i>
AgileAssets load format is the same as SAP Proxy extract format.

<i>Failure / Restart Programs</i>
<p>Alerts will be setup to monitor errors in SAP PI. Once an error has been identified, analysis will have to be done to determine whether the transaction should be restarted or cancelled in SAP PI.</p> <p>Proxy and ABAP Extract program will be run in background. So restart will not be possible. The following messages will be written to the Application log when errors occur:</p> <p>SAP Extract Program: ZLPM_I32044_AGILE_PAMS_D</p> <ul style="list-style-type: none"> • ZPM000(E) – Error in selection from table ZLPM_AGILE_IF: RC = & • ZPM000(I) – No WBS Elements on table ZLPM_AGILE_WBS • ZPM000(E) – Error in selection from table ZLPM_AGILE_WBS: RC = & • ZPM000(E) – WBS Element not found on table PRPS & • ZPM000(E) – Error modifying table ZLPM_AGILE_IF: RC = & • ZPM000(I) – No WBS Elements changed/created since last run • ZPM011(S) – SUCCESS: & records sent to SAP PI • ZPROXY009(W) – Method & is not a valid method for further processing.

Extract Program	Logic Diagram
ZLPM_I32044_AGILE_PAMS_E	<ol style="list-style-type: none"> 1. Create Application Log entry 2. Save current timestamp and get timestamp of last run of interface E from ZLPM_AGILE_IF 3. Get relevant WBS Elements from table ZLPM_AGILE_WBS 4. Get list of SAP Project Definitions for WBS Elements from step 3. Determine which project definitions are 'Initial' (first time on Z-table) or have been created/modified since last run of interface E. 5. Get all relevant SAP Design, Construction, Network, Activity, and Milestone data for SAP Project Definitions determined in step 4. 6. Build proxy output for XML file to AgileAssets 7. Send proxy output to SAP PI to create XML file for AgileAssets.

	8. Update ZLPM_AGILE_IF (interface last run table) with timestamp save in Step 2
--	--

1. Notice

The information contained within this document is a point in time snapshot of the miscellaneous systems and applications supported by the EBS and GeoAnalytics teams and are in scope for this RFP. This information is intended to provide knowledge on the Commission's miscellaneous software, however, be aware that these systems and applications change from time to time, as upgrades, and projects occur, and new applications are procured. The Selected Proposer must support this list of applications systems for the duration of this agreement with the understanding that the configuration may not be completely documented in this Appendix R.

The commission has implemented several Commercial Off The Shelf (COTS) applications and they have created their own application through internal or external development teams. This document is a high-level source of reference for the miscellaneous applications and more details may be found in the reference vendor web sites listed below. **Please note:** Some of these listed applications are used only to support the IT Organization. However, these applications are still important to the operation of these systems and applications, so the PA Turnpike Commission and the Selected Proposer must provide support for the proper functionality of the systems and applications involved and business processes they support.

2. Miscellaneous Application List

Application	Vendor / Consultant	Vendor Website	What is it?	How does PTC use it?	Audience	business facing?	Comments / Description	App Type
Accuweather	Accuweather							
Adobe Live Cycle Designer	Adobe	https://www.adobe.com/	Commercial off-the-shelf software, that allows Adobe forms to be filled out in SAP	Used as a development tool to create SAP forms	IT Dept.	No	Software that allows Adobe forms to be filled out in SAP.	COTS
ArchiveLink & DMS						No	ArchiveLink / Document Management System.	COTS
Barco	Vistacom							
Bloomberg	Bloomberg	https://www.bloomberg.com/	Web-based, online financial library that allows users to analyze financial data (bonds, investment positions, etc.)	Used to manage the PTC fixed income portfolio by providing information and analytics. (Log in is through internet.)	Finance and Treasury Depts	Yes	2/28/2018 status: Christopher Will is the primary PTC Bloomberg user. Finance Dept maintains users directly with Bloomberg, and contacts IT End User support for assistance with installing the local software.	COTS
Bluebeam	Bluebeam Software	https://www.bluebeam.com/	Commercial off-the-shelf software, like Adobe Pro, and procured under the Kahua contract.	Engineering Dept uses this as a collaborative tool to markup and edit roadway plans.	Eng. Design & Const.	Yes		COTS

Application	Vendor / Consultant	Vendor Website	What is it?	How does PTC use it?	Audience	business facing?	Comments / Description	App Type
BSI Tax Factory	BSI	https://www.bsi.com/	Application for payroll tax calculation solution.	BSI TaxFactory maintains Federal, State, Possession and Local payroll taxes for the employer and employee. Software is integrated into SAP Payroll processing to insure proper payroll tax calculations.	HR and Finance Departs	Yes	BSI TaxFactory maintains Federal, State, Possession and Local payroll taxes for the employer and employee. Software is integrated into SAP Payroll processing to insure proper payroll tax calculations.	COTS
Code Red	OnSolve LLC, via PA Commonwealth	https://next.coderedweb.com/	Web-based, Emergency Alert System for weather and building closures alerts.	Upon direction from executive management, the PTC Operations Center staff use CodeRED to create and send emergency notifications. Employees and consultants can update their personal contact information.	All employees & consultants @ TIP / CAB offices	Yes	Emergency Alert System for weather and building closures alerts.	COTS
Dynamic Message Sign Control Software	Daktronics	https://www.daktronics.com/en-us/markets/transportation/its	Software to manage the highway signs located at the Toll Plazas and along the Highway		Public / Commission Traffic Ops	Yes		COTS
Engineering and Construction Management System (ECMS)	PA DOT	NA	Web-based system that provides up-to-date information on PennDOT's construction projects, construction contracts and consultant agreements.	PTC Security team manages user security to ECMS, by means of ServiceNow requests.	Eng. and Finance Depts	Yes	PA Dot System, but PTC Security team manages users via Help Desk business process.	External Development
Hayes Gold	Hayes	https://www.attunity.com/	a refresh and replication data management software suite for use within SAP solution-based environments.					

Application	Vendor / Consultant	Vendor Website	What is it?	How does PTC use it?	Audience	business facing?	Comments / Description	App Type
Kofax Scan Software	Fujitsu	http://www.fujitsu.com/	Scan software used in conjunction with OnBase.	The Kofax scanner is used to scan documents for upload to OnBase.	Various Departs	yes		
Lawtrac (Legal Matter Management)	Mitrastech	https://pennturnpike.lawtrac.com/pr od/	Cloud based application, legal matter management software.	Legal department tracks legal cases, action items and contacts.	Legal Dept.	Yes	Project to Re-Platform Legal Matter Management and Implement eBilling Module was migrated to production 3/26/2018.	COTS
Leave of Absence (LOA) Application	PTC	NA	Custom developed web application for Fare Collection to enter leave of absence time.	Fare Collection uses it to track leave of absence time that is not trackable in SAP.	Fare Collection Dept.	Yes	Web application for Fare Collection to enter leave of absence time.	Internal Development
Microsoft Team Foundation Server (TFS)	Microsoft	https://www.microsoft.com/en-us/	Web-based, repository for code supported by Development team. Code previously stored in Visual SourceSafe has been moved here.	IT staff use this as a repository for storing source code for custom applications and reports. A Visual Studio license is needed.	Developers, customizers, programmers that develop / edit source code.	No		Microsoft Software product
Org Publisher Premier	Acquire	http://www.acquire.com/software/orgpublisher_premier	Commercial off-the-shelf software, used for workforce planning solution, which integrates with SAP.	Used to create Enterprise organizational charts from files directly extracted from the HCM organizational management module of SAP for publication on the PTC intranet.	HR Dept.	Yes	2/28/2018 status: Software needs to be installed in compatibility mode. Should be upgraded to newer version at some point.	COTS
Panaya	Panaya	http://www.panaya.com/	Web-based, in the Cloud software used to analyze changes in SAP versions and record test steps.	We use it to compare versions. It also has testing side to it.	Quality Assurance	No		

Application	Vendor / Consultant	Vendor Website	What is it?	How does PTC use it?	Audience	business facing?	Comments / Description	App Type
PGP Desktop	Symantec	https://www.symantec.com/	PGP is an encryption software used in conjunction with sending and receiving interface files with various vendors.	IT uses to encrypt an interface file prior to sending, or decrypt file after receiving.	IT Dept.			
Pontis	AASHTOWare	http://www.aashtoware.org/	Bridge Management System	The software is used to manage the business processes and data for the Commission's bridge infrastructure.	Eng. Dept.	Yes		
Qlik Sense	Qlik	http://qlik.com	Qlik Sense is a self-service data visualization and discovery application designed for individuals, groups and organizations.	With Qlik Sense you can analyze data and make data discoveries on your own. You can share knowledge and analyze data in groups and across organizations.	All PTC	Yes	BI Tool	COTS
Qlik View	Qlik	http://qlik.com	QlikView is a business discovery platform that provides self-service BI for all business users in organizations.	With QlikView you can analyze data and use your data discoveries to support decision making. QlikView lets you ask and answer your own questions and follow your own paths to insight. QlikView enables you and your colleagues to reach decisions collaboratively.	All PTC	Yes	BI Tool	COTS
Quality Center	HP	http://www.hp.com/hpinfo/newsroom/press_kits/2010/HPSoftwareUniverseBarcelona2010/HPQualityCenter_datasheet.pdf	Commercial off-the-shelf software, HP Quality Center Testing Application.	QA department manages test scripts, executions of runs, and results with this software. Contact Barry Stouffer for installation.	IT Dept.	No	HP Quality Center Testing Application.	COTS

Application	Vendor / Consultant	Vendor Website	What is it?	How does PTC use it?	Audience	business facing?	Comments / Description	App Type
Remote Deposit Capture	Wells Fargo	https://www.wellsfargo.com/	Web-based solution for business to make check deposits right from your desk by using a PC and scanner, creating images of checks and submitting them electronically.	Used to scan and deposit checks remotely into our Wells Fargo account. It is an application and a scanner device that the bank provides us and provides support for.	Accounting Dept.	Yes		
Right To Know app	Infologistics	http://ilogcorp.com/	Custom built automated interface that transmits purchase orders (in excess of \$5,000 and not associated with contracts) to the PA State Treasury Department, for public Right to Know reporting.	SRM data is extracted and it's related to purchase orders that are over \$5000. Files are sent to the vendor who places it on a web site for the viewing of public.		No	For purchase orders not associated with contracts in excess of \$5,000. Also known as E-Contracts.	External/Internal Development
UltraCompare	IDM Computer Solutions	https://www.ultraedit.com/products/ultracompare/	Commercial off-the-shelf application, used to compare differences in files.	A local installation is needed and can be obtained via a ServiceNow request. PTC has purchased a total of 30 licenses.	Enterprise wide	No	Used to compare differences in files.	COTS
UltraEdit	IDM Computer Solutions	https://www.ultraedit.com/	Commercial off-the-shelf application, used to edit text files.	A local installation is needed and can be obtained via a ServiceNow request. PTC has purchased a total of 30 licenses.	Enterprise wide	No	Text editor.	COTS
uPerform	Ancile Systems/RWD	http://www.ancile.com/products/uperform/	Commercial off-the-shelf software, used for third party authoring and content management tool.	Authoring and content management tool. Used to create, edit and publish business process procedures, task-based simulations, SAP User Help and eLearning courses.	IT Dept.	No	2/28/2018: Brittany works with Tony Ricks if any changes are needed	COTS
Visual Studio	Microsoft	https://www.microsoft.com/en-us/	Commercial off-the-shelf software, used as development tool.	Information Technology uses for custom development. A Visual Studio license is first assigned by the IT administrator, and then a local installation is downloaded and installed.	IT Dept.	No	Development tool.	Microsoft Software product

Application	Vendor / Consultant	Vendor Website	What is it?	How does PTC use it?	Audience	business facing?	Comments / Description	App Type
Waze Portal	WAZE	https://www.waze.com						
XrmToolBox	XrmToolBox Community	https://www.xrmtoolbox.com/	Third party Microsoft Dynamics development tool. Comes with assortment of plugins that provide ability to query, import, export, and modify Dynamics objects.	Information Technology development team uses the software for development related to Microsoft Dynamics.	IT Dept.	No	Dynamics development tool	External/Internal Development

1. General Information

1.1. Description/Purpose

The Turnpike Commission’s “*Secure Commission Online Reporting Environment*” (SCORE) is as a secure portal for commissioners and other stakeholders to access commission meeting documents and agendas, and for other initiatives requiring very limited access to specific legal documents or documents containing personal/confidential information. SCORE has been in continued use since 2011 and generally self-managed by Pennsylvania Turnpike Commission (PTC) staff.

SCORE contains an internal file upload and management feature where authorized users can add documents to other users’ folders. It also contains an internal communications feature that notifies users when new documents are added to their folder.

The SCORE system is secure. Authorized users have encrypted access and are not able to view documents in other user folders. The organization of permissions for the system follow meeting types. Permission for any given user can be granted (or denied) for being able to view documents associated with the pre-formal agenda; executive session agenda; informational session agenda; formal session agenda; press clips and other related initiatives that arise over time (such as labor relations).

A SCORE administrator structures the Commission meeting agenda through an organized structure of documents and naming formats. Documents and the agenda pass through an electronic approval process, with documents “moving” in an approval flow, including the ability to apply an electronic signature to approved documents

There is also a section of the SCORE system that serves as a repository for press clips documents, and a section for ongoing legal documents. Because there are several levels of permissions access, ILOG mostly maintains users and permissions on an on-going basis. Sometimes there are minor enhancements as needed.

The SCORE system is provided by, managed by and supported by a 3rd party provider. The Selected Proposer will receive Incident tickets and work with the 3rd party provider to resolve and restore services as well as participate in testing when changes, releases, or enhancements are implemented as part of the Change and Release processes and procedures to be defined

1.1.1. Public Facing / Private

- While the site is accessible via www.ptcscore.com, the system is a private system.
- High visibility at executive level.

1.1.2. User interface

- The UI for this is www.ptcscore.com.

1.1.3. Special /3rd Party Functions

- Spell checker, file upload utility, token authentication.

1.1.4. Outputs

- Used for distributing information to authorized stakeholders prior to Commission meetings.
- Used at Commission meetings.
- Used for other special/legal events (ad-hoc).

1.1.5. Ancillary Needs

- System requires email server availability.

1.1.6. Monitoring and QC

- System web and database monitored for availability.
- QC for availability daily.

1.1.7. Access Control

- Encrypted credentials managed by ILOG with written requests from PTC executive offices that specify user and authorized permission levels.
- Users must then change their passwords via the SCORE system so that they remain secure.
- Used with iPads and other mobile devices, so secured token communications used.

1.1.8. Secured

- Yes

1.1.9. Data Retention

- No end date for retention. All documents retained indefinitely

1.1.10. Training

- User Guide attached. Training provided initially for PTC executive staff. Subsequent training primarily performed by PTC staff, with ILOG training only when new functions or PTC system patched/updates create need for additional training.

1.1.11. Security Scans

- Automated PCI level vulnerability scans are performed monthly, and corrective actions applied as needed. System updates, patches, and scanning part of hosting/maintenance.

1.1.12. Reporting Metrics

- Access logs maintained in the system.
- No reporting metrics required.

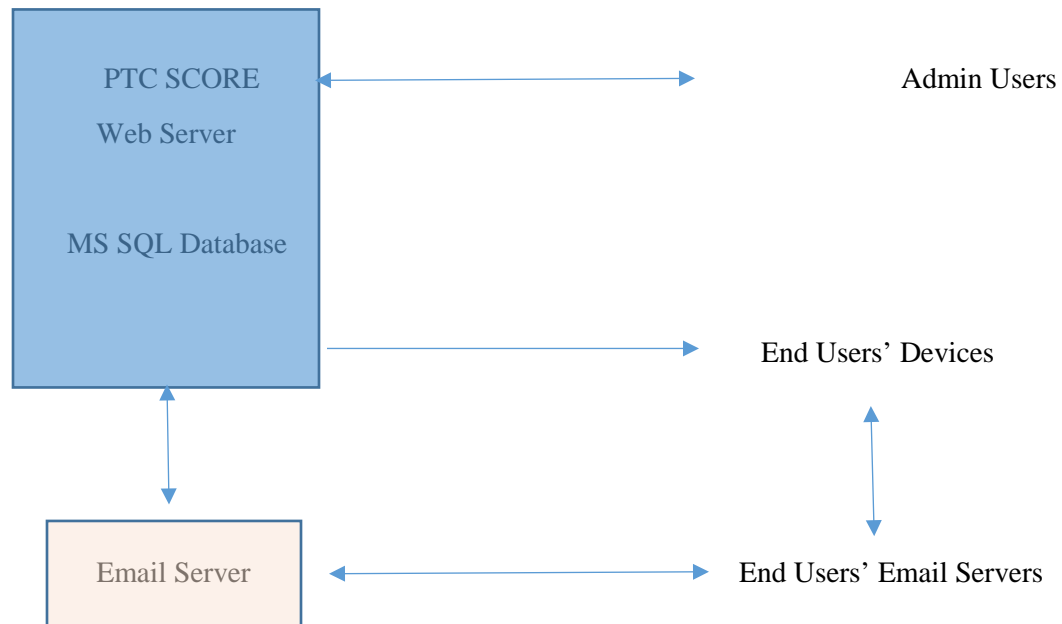
1.1.13. Content Updates

- Performed by PTC staff.

1.1.14. Data Feeds/Affiliated Data

- All data is manually entered into the system.
- No feeds entering the system or output from the system.
- No other associated systems, apps, sites, etc. consume this information or are required for input to this system.
- SCORE data is intended only for PTC authorized users.

1.2. Systems Overview Diagram



1.3. Code

- Programmed primarily in VB.net web forms, Java script
- Inline documentation.
- List of associated web services:
 - None.

1.4. Own or rent

- PTC-Owned
 - Code owned by PTC.
 - Data owned by PTC.
- Not PTC-Owned (part of hosting)

- Networking, systems, system maintenance and QC included in hosting (not owned by PTC).
- Monitoring systems part of hosting (not owned by PTC).
- Email servers hosted (not owned by PTC).

1.5. Hosting

- Hosted on secure web servers, with secured database connection.
- All systems and database backed up daily, in 7-day retention rotation.
- Minimal bandwidth requirements.
- Minimal email sent/received.
- Moderate storage requirements, however, a growing data storage repository.
- Uses hosted email server.
- No streaming requirements.
- Scalability not required (very limited access).
- There is no preview SCORE system (dev and live only).

1.5.1. Skills required to maintain the system:

- Programming .NET, web forms, java script.
- Database MS SQL.
- Secure access techniques (http certificate application, token authentication, encryption).
- PCI scanning.
- Familiarity with utilities for file uploads and management, and spell checking.
- No GIS, no data feed, no outside VPN, no IP restrictions, no web service calls)

1.5.2. Special Details

1.5.2.1. Database Overview

- Each meeting has a representation in the comm_meeting_types table.
 - Under this, each folder in the "categories" table has an associated meeting_type and meeting_date id. Along with this, it stores which folder is the parent of the entry and which category is the top-level parent of the current item (top level folders have themselves for these values).
 - The "file_info" table contains the actual uploaded files which can be seen/downloaded by users and are directly associated with a category_id.

- A similar setup exists for personal folders, with the additional functionality of uploading to other users' folders (based on permissions).
- Multiple levels of permissions exist:
 - Press Clips Only (set by user type).
 - Any permutation of available meetings with read only/regular/admin levels. (set in "mtg_read_only_access", "mtg_user_access", "mtg_admin_access").
 - Executive meeting has its own permission level for viewing, in mtg_exec_legal_access which limits some types of files that are visible (tagged by admins as such).
 - Personal folders have the same admin/user permissions as meetings (no read only).
- Labor negotiations is a separate section (like press clips) with its own permissions in user_lab_negot_access.

1.5.2.2. Adding Users

Adding/removing users is the most frequent request on this system.

- Add the user into the users table, noting down their ID.
- Provide them a type in the user_useR_types table, and depending on the type of user (permissions needed), this can sometimes need additional work/definition of a new type.
- If adding a basic user that will simply need access to some meetings, it is sufficient to just put the permissions as listed above for the relevant meetings.
- Confirm that the new user is not (and should not be) set up as "Press Clip Admin" or any other restrictive role that might limit their access to only one area of the site. A press clip admin can only post press clips and has no other site access privileges.
- Commissioners are added with the above steps as well, but a personal folder must be configured as well, utilizing the comm_pf table to add in a new folder, and then looking in the PF (www/ptcscore/files/PF0 subfolder on the filesystem) to add the correct folder ID to that area.
 - Add in permissions in pf_admin, upload_access, and user_Access as needed for other users who might need the respective permissions to this new commissioner's folder.
 - Upload access gives other users with personal folders the ability to send files to other personal folders in the system. If you can't figure out how one should be set up, just pick an old commissioner ID from the users table and make sure they have similar folder setups.
- Removing users is as simple as setting enabled to zero (0) in the users table, and as an added precaution, enter random characters (jibberish) in the password field to ensure a login will not be successful.

a. Special Ad-Hoc Additions (Aside from Meeting Agendas)

- **OPEB (Medical Trust)**

- The Medical Trust section of SCORE currently allows for management of meeting files, which auto-archive by meeting. It has been requested that an additional area be set up to load and manage “Important” OPEB documents, with a preference for authorized PTC staff to manage these documents themselves.
- For ease of use and economy, an additional Navigation item (a new “block”) was added for Medical Trust users. This new block is located next to the “Labor Negotiations” block, and only appears for those users who are currently authorized to access Medical Trust items.
- The new block is called “Medical Trust Reference.” Administrators can add and delete documents from this section. No auto-archiving is planned for these documents at this time. If archiving is needed in the future, the PTC would need to state the period for auto-archiving (monthly, annually, etc.).
- Documents display via links, consistent with the other sections of SCORE.
- **Labor Negotiations**
 - The Labor Negotiations section of SCORE currently allows for management of monthly files, which auto-archive by month. An additional area has been provided up to load and manage “Important” Labor Negotiations documents, with a preference for authorized PTC staff to manage these documents themselves.
 - An additional link was added to the Labor Negotiations file-listing section, which says “Add an Important Document.” This new link appears near the current “Add a Labor Negotiation Item” link.
 - When clicked, the “Add an Important Document” link allows the administrator to upload a file and give it a display name and a file description, just as it does for the current Labor Negotiation file upload. However, these files are tagged as “Important” and are listed separately from the standard monthly negotiation files.
- PTC administrators can upload or delete “Important” files just as they do the standard files. No auto-archiving is planned for these documents at this time. If archiving is needed, the PTC would need to state the period for auto-archiving (monthly, annually, etc.).

2. ADMINISTRATOR USER GUIDE

I. LOGIN PROCESS

1. Go to www.ptcscore.com
2. Enter your user name and password as required

II. NEW MEETING DATES

To add a New Meeting

1. To add a new meeting, Click the MTG ADMIN button
2. Click “Create New Meeting.” Select a date and click “Add Meeting”

To remove a Meeting

3. To remove a meeting date, Click the MTG ADMIN button
4. Select the meeting to remove and Click “Remove Meeting”

III. SELECT THE MEETING TYPE

The ability to administer different types of meetings is based on user permissions.

1. Select Pre-formal, Executive, Informational , Formal or Post Formal
2. Click the MTG ADMIN button
3. The Formal meeting administration will be used as the example for this guide. The same steps should be followed for all other meeting types.

IV. FORMAL MEETING PROCESS

To enter documents for a new FORMAL meeting

1. After selecting the FORMAL MEETING from the top navigation, Click the MTG ADMIN button
2. Click Document Administration

To Set up the outline of folders

1. To create a new Top-Level Folder, Click the words “New top-Level Folder” in the white box
 - a. Type the folder name in the box labeled folder name. Use the tools to add a bullet list or numbered list, or to add a table in the folder name
 - b. Indicate this is a top-level folder and click “Add Folder”
2. To create a new Sub Folder, Click the name of the parent folder listed in the white box
 - a. Type the sub folder name in the box labeled folder name. Use the tools to add a bullet list or numbered list, or to add a table in the folder name
 - b. Indicate this is a sub folder of the selected parent folder and click “Add Folder”
3. To create a special formatted folder name
 - a. Use the tools in the white box to create bullet lists or tables as part of the folder name.
 - b. Remember that there is an 8,000-character limit per folder name

Note: If you are copying and pasting text from MS Word, please use the MS Paste tool in the white box tools . By pasting with this MS Paste tool, many of the extraneous “TAGS” used by MS Word will be stripped from the pasted text automatically. Please review all folder names for inaccurate characters and use the EDIT link in the “Meeting Files” tab.

To Edit the outline of folders

1. Selecting the FORMAL MEETING (or appropriate meeting) from the top navigation

2. Click the MEETING FILES button
3. Click the link EDIT next to the name of the folder you wish to change. A box will appear for making the changes. Make any corrections and click the “Save Changes” button

To Upload Supporting Documents

1. Select the folder listed in the white box that should contain the supporting document
2. Click the “Add Files” button and browse to find the file you wish to upload.
 - a. Click upload from the file browsing dialogue box
 - b. Repeat for all the files to be uploaded for the specified folder
3. Click the “Upload” button. The files will be uploaded.
4. **Exception: Executive Meeting**
 - a. Certain users may view all attachments and others may view all attachments EXCEPT legal attachments. To let the system know that a file being uploaded is a LEGAL file, on step 2, click the first checkbox that says, “Check this box if the file(s) being uploaded are Legal files, which will restrict access for some users.”
 - b. To be sure that all users CAN view a file (like an agenda file) click the second box on step 2, which says, “Check this box if the file(s) being uploaded CAN be accessed by those who otherwise do not have access”

Exception: Informational Meeting

- a. Certain users have restricted access. To be sure that all users CAN view a file (like an agenda file) click the second box on step 2, which says, “Check this box if the file(s) being uploaded CAN be accessed by those who otherwise do not have access”
5. To check the folders and files that you uploaded, click the “MEETING FILES” top menu selection and preview the commissioner view

To Remove Supporting Documents

1. To remove a supporting document, click to the MEETING FILES tab on the top navigation.
2. Locate the file to remove and click the “Remove File” link next to the file name selected.

To Upload a Master File

1. Create your master file by using Adobe Pro to combine all the PDFs into one pdf document.
2. On Left navigation, Click “Master File Upload”
 - a. Click the BROWSE button and locate the Master PDF you created. Click open from the BROWSE dialogue box
 - b. Click the UPLOAD button and the Master file will be uploaded.
3. To check your work, the Master file Top navigation should now have a picture of a briefcase, indicating that the Master file is now available.

To Change the ordering of folders

1. Click the “reorder this folder” link next to the folder that is in the wrong place.
2. A popup box will appear listing all the folders on the same level as the one to be re-ordered.
3. Drag and drop the folder to its correct location.
4. Click the UPDATE button.
5. The system will automatically move the folder and all its sub folders and attachments to the new location
6. The window will automatically disappear from the screen.
7. To cancel moving the folder before clicking the update button, simply click the “X” in the top right corner of the box to close the window.

V. ALL OTHER TYPES OF MEETINGS

To enter documents for all other meeting types

1. Select the appropriate MEETING TYPE from the top navigation.
2. Follow all steps described for the FORMAL meeting.
3. TWO EXCEPTIONS

VI. CONTACT LISTS

To enter an address book entry in the Contact List

1. Click the “CONTACT LIST” button from the top navigation.
2. Click the [Add A Contact](#) link
3. Enter contact information in the new window, and click the “add Contact” button

To view all the details of an address book entry in the Contact List

1. Click the “CONTACT LIST” button from the top navigation.
2. Locate the contact to change and click the [View Full Info](#) link
3. A window will appear with the details. Click the “X” in the upper right corner to close this box.

To edit an address book entry in the Contact List

1. Click the “CONTACT LIST” button from the top navigation.
2. Locate the contact to change and click the [EDIT](#) link
3. Change any information and click the “save Changes” button
To delete an address book entry in the Contact List
4. Click the “CONTACT LIST” button from the top navigation.

5. Locate the contact to change and click the DELETE link
6. A confirmation box will appear. Click ok to continue with the deletion or cancel to stop the deletion.

Note: This will add a contact into your current active address book selected from the address book dropdown, if multiple address books are available.

VII. NEWS ITEMS

To upload news clips

1. Create your news clips PDF file by using Adobe Pro to combine all the PDFs into one pdf, or by using ONBASE to generate the PDF file of clippings.
2. Re-name the file on your local computer in a **MM_DD_YYYY** Format.
For example, for May 18, 2011, name the file: **05_18_2011**
The format of the name is important because it will allow the commissioners to view the news clips in correct date-order on their iPads.
3. On TOP navigation, Click “PTC News Items”
4. Click the “Add a Press Item” link
 - a. Click the BROWSE button and locate the clipping PDF you created. Click open from the BROWSE dialogue box
 - b. Enter a Display Name, for example **05_18_2011** would be the Display name for the file that contains the press clippings for May 18, 2011. The name entered here is the name that the commissioners will see when they access the system.
 - c. The file description field you will see is not currently used.
 - d. Click the UPLOAD button and the clipping PDF file will be uploaded.
The file will also be automatically posted to the SFTP site so the commissioners can view it on their iPads.
5. Double-check that the file uploaded properly (click to view it and check that name is correct)
 - a. If you accidentally upload a file twice, or need to delete/re-upload a file, contact an SFTP administrator to remove the file from the SFTP folder (it will not delete automatically when it is deleted in SCORE).

To delete news clips

1. On TOP navigation, Click “PTC News Items”
2. Locate the clipping file to be deleted
3. Click the “Delete” link next to the file to be deleted
4. A confirmation box will appear. Click ok to continue with the deletion, or cancel to stop the deletion

- a. If you delete a file, contact an SFTP administrator to remove the file from the SFTP folder (it will not delete automatically when it is deleted in SCORE).

VIII. Personal Folders

Personal folders are a place to access or share documents with other executive staff.

To review the contents of your personal folder

1. After logging in to the SCORE system, look at the Executive Corner on the top right side of the page. There will be a drop-down box with your name in it.
2. Click the word OPEN.
3. A listing of the files in your inbox, sorted by date posted, will appear.
4. To read a document, click the document name.
5. To delete a file from your personal folder, click the words “Remove File” next to the file you want to delete.

To send a document(s) to other executive’s personal folders

1. After logging in to the SCORE system, look at the Executive Corner on the top right side of the page. There will be a drop-down box with your name in it.
2. Click the word OPEN.
3. Click the tab that says, “Send Files.”
4. Click the button “Add Files”
5. In the window that appears, locate the file(s) to upload, and click OPEN. The files will be listed on the screen.
6. Check of the checkboxes of the names of all the people who should receive this document.
7. Click the “Upload” button. This will place the selected files in the Personal folder of each selected recipient.
8. Each recipient (who has supplied an email address) will receive an email notification that there is a new document in their SCORE inbox, and it will say who uploaded it. (Ex. “You have a new file in your personal folder. Document.doc was added to your inbox by Commissioner ABC.”)

IX. Temporary Approval Stamp Process (only current date and time)

To set up Adobe to have a new stamp (to approve commission items):

Part 1

- a. Create your stamp.
- b. Save or Export that document as a PDF
- c. Open it in Acrobat.

- d. Go to Forms ... Start Forms Wizard (this converts it to a form)
- e. Save (with a name you will remember). Keep the document OPEN

Part 2.

- a. Open the file "Dynamic.pdf. likely found in folder with ENU in it.
- b. Go to Forms ... Add or Edit Fields command. That allows you to select a form field. Once the field is selected copy it and paste it into your first document. Save your document.

Part 3.

- a. Go to Add or Edit Fields to change the field to the right format.
- b. Right click the field and chose Properties
- c. Change the appearance or the content of the field
- d. Save and close the new dynamic form.

Part 4.

- a. Go to Tools... Comment and Markup... Stamps... Create Custom Stamp
- b. Select Image for Custom Stamp dialog box.
- c. Use the browse button to find your file, click OK and the Create Custom Stamp dialog box opens.
- d. Select an existing Category or create a new one and name your stamp.
- e. If your stamps are already PDF's do not check the Down Sample check box

To use the new stamp:

1. Open the document to stamp
2. From top Menu -
Go to Comments ... Comments and Markup Tools ... Stamps ... and click the category.
The proper stamp should show in the sample window. Click the actual stamp.
3. As you move your mouse down, it will carry the stamp with it. Place the stamp where you want it on the document and click the mouse.
4. When done stamping the document, click FILE, SAVE AS, and enter the proper name and directory for the newly approved document. (e.g. 03_03_2011_F1.pdf).

X. RECOMMENDED Alternate Approval Stamp Process (any date)

To set up Adobe to have a new stamp (to approve commission items):

Part 1

- a. Locate the Adobe form
“form Approved_Small_Form_A.pdf “ and open it in Adobe Pro.

- b. Click the form box that contains the old date and change the date to the approval date you want.
- c. Save the file and close it

Part 2.

- a. Go to Tools... Comment and Markup... Stamps... Manage stamps
- b. Click on the last weeks stamp (likely under a Commission category)
- c. Click EDIT
- d. Click “Select Image for custom stamp”
- e. Use the browse button to find the file you just changed (it will likely already have the correct file name listed -- (“form Approved_Small_Form_A.pdf”)
- f. click OK
- g. Click ok again The revised stamp now replaced last meeting’s approved stamp

To use the new stamp:

1. Open the document to stamp
2. From top Menu - Go to Comments ... Comments and Markup Tools ... Stamps ... and click the category. The proper stamp should show in the sample window. Click the actual stamp.
3. As you move your mouse down, it will carry the stamp with it. Place the stamp where you want it on the document and click the mouse.
4. When done stamping the document, you can click FILE, SAVE AS, and enter the proper name and directory for the newly approved document with all pages. (e.g. 03_03_2011_F1.pdf).

You can also just PRINT page 1 to Adobe PDF and name the printed PDF to the appropriate file name for further posting to the intranet or internet

3. SCORE Labor Negotiations Management- Administrator

1. Log in to SCORE with your Username and Password <http://www.ptcscore.com>
2. If you currently have SCORE access, you will still be able to see the same options that were previously available to you. If the Labor Negotiations user does not have prior access to SCORE, the Meeting Types and Meeting Items will be unavailable (the boxes will be non-clickable or empty).
3. You will now see a new box in the center of the menu called “Labor Negotiations”
4. Click on the LABOR ITEMS link to go to the Labor Negotiation Files page.
5. There are 3 levels of access available for the Labor Negotiations users:
 - a. Users who can only view files in the folder

- b. Users who can view files in the folder, and can add new files in the folder
 - c. Users who can view, add, and delete files in the folder.
6. To View a file, click on the File name. Files are listed in date-order, with the most recently added files at the top. Prior months' files will be archived folders with the associated months' names.

A dialog box will open which will allow you to Open, Save, Cancel. You may choose to Open (and save from Word) or just immediately save the file.

7. To add a file, click “Add a Labor Negotiation Item” A file upload box will appear. Click on the Browse button to select the file you would like to upload from your local computer.

Select your file and click on the Open button.

The path will now be displayed in the file upload box.

Type the name of the file in the “Display Name” field. Click the Upload button when complete.

You will see a confirmation message at the top of the screen and your file will be listed at top of the list of current files. Your uploaded file will be available for all other Labor Negotiation Users to view.

To delete a file, click on the “Delete” link to the right of the file you would like to delete. Files will remain in the SCORE Labor Negotiations Files listing until they are deleted.

4. DAILY NEWS CLIPS – SCORE UPLOAD PROCESS

To upload news clips

1. Create your news clips PDF file by using Adobe Pro to combine all the PDFs into one pdf, or by using ONBASE to generate the PDF file of clippings.
2. Re-name the file on your local computer in a **MM_DD_YYYY** Format.
For example, for May 18, 2011, name the file: **05_18_2011**
The format of the name is important because it will allow the commissioners to view the news clips in correct date-order on their iPads.
3. On TOP navigation, Click “PTC News Items”
4. Click the “Add a Press Item” link
 - a. Click the BROWSE button and locate the clipping PDF you created. Click open from the BROWSE dialogue box
 - b. Enter a Display Name, for example **05_18_2011** would be the Display name for the file that contains the press clippings for May 18, 2011. The name entered here is the name that the commissioners will see when they access the system.
 - c. The file description field you will see is not currently used.
 - d. Click the UPLOAD button and the clipping PDF file will be uploaded.
The file will also be automatically posted to the SFTP site so the commissioners can view it on their iPads.
5. Double-check that the file uploaded properly (click to view it and check that name is correct)

- a. If you accidentally upload a file twice, or need to delete/re-upload a file, contact an SFTP administrator to remove the file from the SFTP folder (it will not delete automatically when it is deleted in SCORE).

To delete news clips

1. On TOP navigation, Click “PTC News Items”
2. Locate the clipping file to be deleted
3. Click the “Delete” link next to the file to be deleted
4. A confirmation box will appear. Click ok to continue with the deletion, or cancel to stop the deletion
 - a. If you delete a file, contact an SFTP administrator to remove the file from the SFTP folder (it will not delete automatically when it is deleted in SCORE).

Manual Approval Stamp Process *(bypassing automated process)*

To set up Adobe to have a new stamp to approve commission items:

1. Open the approved document with Adobe Acrobat Pro.
2. From top Menu - Go to Comments ... Comments and Markup Tools ... Stamps ... Manage Stamps
3. Click Create
4. Click Browse, (you may need to change the type of files from .pdf to .bmp) and locate the approved stamp file. It will appear in the SAMPLE window. Click “OK”
5. Type a category and name for the new stamp.
6. Click OK.

(If a window pops up asking for Signature information, just click the “DO NOT SHOW THIS AGAIN” checkbox, and then click the button that says COMPLETE.) This should not happen again

To use the new stamp:

1. Open the document to stamp
2. From top Menu - Go to Comments ... Comments and Markup Tools ... Stamps ... and click the category. The proper stamp should show in the sample window. Click the actual stamp.
3. As you move your mouse down, it will carry the stamp with it. Place the stamp where you want it on the document and click the mouse.
4. When done stamping the document, click FILE, SAVE AS, and enter the proper name and directory for the newly approved document. (e.g. 03_03_2011_F1.pdf).

5. ORIGINAL SPECIFICATIONS FROM PTC

Formal Agenda Specifications

Security and Functions

Commissioners/Executives Functions:

1. Commissioners
 - a. View- Meeting Outline with PDFs all over, Master meeting file, Date dropdown (we need to rename this PTC meeting date, PTC News Items (currently “press clips), Executive Level contact list, personal folder
 - a. Administer – Personal folder (mostly delete), user information

Secretaries Functions

1. Personal Secretary to a commissioner
 - a. Admin
 - i. the personal folder of their own commissioner
 - ii. their own personal info
 - b. View
 - i. The Meeting outline
 - ii. Master meeting file
 - iii. Press Clips
 - iv. Contact List
2. Meeting Coordinator Secretary
 - a. Admin
 - i. Their own personal info
 - ii. The Meeting outline
 - iii. Master meeting file
 - iv. Press Clips
 - v. Contact List

Other executive content

Press Clip Coordinators

- b. Admin
 - i. their own personal info

ii. Press Clips

Other Executives (*12 of them*)

- a. To be decided: View only meeting agenda files specific permissions set by meeting admin
- b. To be decided: Are they always allowed to see everything in the formal meeting? If so, they can have a master file link.

Meeting Types: Pre-Formal, Executive, Informational and Post-Formal Agenda

Specifications for each, Security and Functions and Specific items to see/not see will be based on permissions and will be grouped into:

Commissioners/Executive Functions, Meeting Admins, Personal Admins, Other Executives,
Press Clipping Access

Overview

The following details the “System Environments,” or may also be known as “Instances,” that are within the scope of this RFP. The Selected Proposer will provide the support and other duties as defined within this RFP to the following Environments / Instances:

Supported Environments / Instances

System	Environments	Infrastructure	Notes
SAP	<ol style="list-style-type: none"> 1. Sandbox 1 2. Sandbox 2 3. Development 4. QA 5. Production 6. Training 	<p>On-Premise</p> <p>PTC Managed & Supported</p>	For additional details refer to appendix K
ServiceNow	<ol style="list-style-type: none"> 1. Sandbox 2. Development 3. Staging 4. Production 	<p>MID Server On-Premise</p> <p>Remainder In The Cloud</p>	For additional details refer to appendix L
MS Dynamics	<ol style="list-style-type: none"> 1. Sandbox 2. Sandbox 7 3. Development (Cloud and On Prem Servers) 4. QA / UAT 5. Production (Cloud and On Perm Servers) 	In The Cloud	For additional details refer to appendix M
OnBase	<ol style="list-style-type: none"> 1. Sandbox 2. Development 3. QA (Staging) 4. Production 	In The Cloud	For additional details refer to appendix N
Informatica_Cloud	<ol style="list-style-type: none"> 1. Sandbox 1 / Test 2. Sandbox 2 / Development 3. Production 	In The Cloud	For additional details refer to appendix O
GeoAnalytics	<ol style="list-style-type: none"> 1. Sandbox1 2. Sandbox 2 3. Development 4. Staging 5. Production 6. Training 	<p>On-Premise</p> <p>PTC Managed & Supported</p>	For additional details refer to appendix P
AgileAssets	<ol style="list-style-type: none"> 1. UFA (<i>User Familiarization Environment</i>) 2. Master Dev 3. UAT 4. Production 5. Training 	In The Cloud	For additional details refer to appendix Q
SCORE	<ol style="list-style-type: none"> 1. Development 2. Production 	<p>On-Premise</p> <p>PTC Managed & Supported</p>	For additional details refer to appendix S

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Notes

Note 1: The sample position descriptions within this Appendix (U) are to be used in correlation with the “Rate Card” tab of the Cost Matrix (Appendix G).

Note 2: Projects and Work Order based requests may require additional skills that those listed here. They will be detailed as part of the work Order and the related Statement Of Work.

1. Enterprise Business Solutions Technical Lead

Responsibilities

- 1.1. Manages, plans and organizes the performance of the Proposer Enterprise Development and Maintenance resources including supervision, performance management, delegation of work assignments, and review of work product.
- 1.2. Responsible for all facets of maintaining enterprise systems/software including integration layer component systems/solutions and mobile applications. Oversees the installation, updates, configuration, integration, system administration, and tuning.
- 1.3. Maintains application designs and standards for the enterprise business solutions. Ensures technical fit with the business architecture design and recommends changes to enhance performance and reliability.
- 1.4. Responsible for the Proposer’s resources’ deliverables. Ensures that maintenance work addresses the PTC’s needs, fits within the overall capacity and budget, is completed timely and that users are satisfied.
- 1.5. Troubleshoots system software and programs through investigating, diagnosing, and documenting workarounds to resolve errors/issues. Responds to tier 1, 2 and tier 3 support requests. Works with vendors to resolve technical issues when needed.
- 1.6. Participates in short and long-term planning and strategic development meetings. Makes recommendations for hardware/software upgrades and other opportunities to improve business processes. Develops and presents support for new enhancement recommendations including evaluation of other alternatives and analysis of costs.
- 1.7. Communicates project progress, exceptions and issues to Proposer Project Manager.
- 1.8. Ensures compliance with policies and procedures.
- 1.9. Maintains an awareness of industry trends and emerging technologies that may impact business. Determines the changes that may be necessary to incorporate within the maintenance of enterprise business solution/systems.
- 1.10. Utilizes software and/or technology tools to perform job duties.
- 1.11. Uses situational awareness to anticipate and prevent incidents.
- 1.12. Performs related duties as assigned.

Minimum Requirements

- 1.13. Bachelor’s degree in Information Technology (IT) or related field. Equivalent combination of education and/or experience may be accepted.

- 1.14. Eight (8) years of experience in the systems development, systems integration and/or systems administration for an enterprise custom system or enterprise custom objects. Equivalent combination of education and/or experience may be accepted.
- 1.15. Five (5) of the years of experience must be in a supervisory capacity.

2. GIS/BIDA Lead

Responsibilities

- 2.1. Responsible for the supervision of the Proposer’s GIS/BIDA resources, their performance management, delegation of work assignments, and review of work product.
- 2.2. Identifies and resolves issues. Ensures proper monitoring and reporting of any deviations from the SLA.
- 2.3. Responsible for the maintenance of GIS integrated business solutions and geospatial solutions including geo-database design, business workflow programming, web applications and mapping.
- 2.4. In the context of managed services, leads Proposer’s resources in coding, editing, installing, and verifying programs for accessing, maintaining, linking and populating databases. Maintains layer files, labeling expressions, and definition queries. Maintains integrated GIS elements with other technology for web-based communication.
- 2.5. Ensures the accuracy and reliability of GIS products and services in accordance with established standards. Coordinates with other internal staff to maintain enterprise-wide GIS database integrity and recovery procedures.
- 2.6. Participates in short and long-term planning and strategic development meetings. Makes recommendations for hardware/software upgrades and other opportunities to improve business processes. Develops and presents support for new enhancement recommendations including evaluation of other alternatives and analysis of costs.
- 2.7. Analyzes business operations to identify opportunities for improvement for the PTC.
- 2.8. Troubleshoots system software and programs through investigating, diagnosing, and documenting workarounds to resolve errors/issues. Responds to tier 1, 2 and tier 3 support requests. Works with vendors to resolve technical issues when needed.
- 2.9. Ensures proper documentation of GIS workflows and procedures.
- 2.10. Communicates project progress, exceptions and issues to Proposer Project Manager.
- 2.11. Ensures compliance with policies and procedures.
- 2.12. Maintains an awareness of industry trends and emerging technologies that may impact business. Determines the changes that may be necessary to incorporate within the maintenance of enterprise business solution/systems.
- 2.13. Utilizes software and/or technology tools to perform job duties.
- 2.14. Uses situational awareness to anticipate and prevent incidents.
- 2.15. Performs related duties as assigned.

Minimum Requirements

- 2.16. Bachelor’s degree in Information Technology (IT) or equivalent combination of education, training and experience. GIS coursework or certification is preferred.

- 2.17. Seven (7) years of experience in a Geographic Information Systems (GIS) or Information Technology (IT) field, which includes four (4) years of experience managing GIS solutions.
- 2.18. Experience working with geospatial data collection, analysis, conversion and maintenance, as well as, experience leading IT support initiative and/or project teams is preferred. Advanced proficiency in Esri GIS software, including ArcGIS desktop and ArcGIS server is desired.
- 2.19. Five (5) of the years of experience must be in a supervisory capacity.

3. Business Intelligence Specialist

Responsibilities

- 3.1. Leads, advises and/or coordinates multiple cross-functional initiatives and projects that range from simple to moderately complex. Plans and executes requests for change submitted by the user(s).
- 3.2. Deploys business intelligence (BI) applications and solutions.
- 3.3. Maintains new, revised and custom reports.
- 3.4. Works to resolve moderately complex business problems. Performs predictive analysis and assists customers through the use of statistical, algorithmic, data mining and visualization techniques. Escalates higher-level issues to a senior specialist or supervisor when needed.
- 3.5. Provides technical direction regarding the planning, designing and execution of testing efforts. Develops, executes and documents test plans. Assists with testing the system for accuracy.
- 3.6. Monitors, modifies and optimizes BI applications continuously. Performs report and query tuning to improve performance. Recommends improvements for BI applications.
- 3.7. Maintains data warehouses to ensure interoperability with BI solutions. Coordinates with the basis team and provides guidance in the configuration and implementation of enterprise data warehouse software.
- 3.8. Responds to support calls and provides guidance to users with questions related to reports and other aspects of the data warehouse across multiple business processes.
- 3.9. Assists with developing and updating technical and functional specifications for reports and documents in a standard format.
- 3.10. Communicates project progress, exceptions and issues to Proposer Project Manager.
- 3.11. Ensures compliance with policies and procedures.
- 3.12. Utilizes software and/or technology tools to perform job duties.
- 3.13. Uses situational awareness to anticipate and prevent incidents.
- 3.14. Performs related duties as assigned.

Minimum Requirements

- 3.15. Bachelor's degree in Information Technology (IT) or other related technical field. Equivalent combination of education, experience and/or training may be accepted.
- 3.16. Five (5) years of experience developing BI reports. Equivalent combination of education, experience and/or training may be accepted.

4. Enterprise Development Specialist

Responsibilities

- 4.1. Performs various enterprise development and integration duties and responsibilities, which include working on support teams to support enterprise systems and their integration.
- 4.2. Designs, develops, analyzes, integrates and deploys enterprise applications, configurations and solutions. Develops detailed specifications that describe system changes.
- 4.3. Integrates programs and objects for enterprise applications and solutions. Participates in and/or executes process designs and technical configurations.
- 4.4. Provides technical assistance and resolves defects in development objects. Analyzes and assesses current processes to define and document improvements.
- 4.5. Works closely with customers, peers and process owners to ensure that development objects meet business requirements.
- 4.6. Participates in the technical preparation of business process procedures, test scenarios, end-user documentation and user manuals. Participates and documents tests that are necessary to ensure the application or technical environment meet performance requirements.
- 4.7. Monitors and repairs development and technical objects to maintain performance according to technical and functional specifications. Provides user support and assists in the identification of configuration and program changes.
- 4.8. Responds to service requests and issues that require trouble shooting, coding, configuration, data and/or security maintenance.
- 4.9. Performs system documentation and administrative tasks as needed.
- 4.10. Communicates project progress, exceptions and issues to Proposer Project Manager.
- 4.11. Ensures compliance with policies and procedures.
- 4.12. Utilizes software and/or technology tools to perform job duties.
- 4.13. Uses situational awareness to anticipate and prevent incidents.
- 4.14. Performs related duties as assigned.

Minimum Requirements

- 4.15. Bachelor's degree in Information Technology (IT) or closely related field. Equivalent combination of education and/or experience may be accepted.
- 4.16. Five (5) years of experience developing enterprise custom objects in at least one of the areas/environments listed below, or any combination thereof:
- 4.17. SAP Environment (i.e. ABAP, SAP/PI, SAP workflow, forms development, etc.)
 - 4.17.1. ServiceNow
 - 4.17.2. Microsoft Dynamics
 - 4.17.3. Web Development
 - 4.17.4. Mobile Development
 - 4.17.5. .net Development
 - 4.17.6. Integration Development

5. Enterprise Development Analyst

Responsibilities

- 5.1. Performs various enterprise development and integration duties and responsibilities, which include working on support teams to support enterprise systems and their integration.
- 5.2. Designs, develops, analyzes, integrates and deploys enterprise applications, configurations and solutions. Develops detailed specifications that describe system changes.
- 5.3. Integrates programs and objects for enterprise applications and solutions. Participates in and/or executes process designs and technical configurations.
- 5.4. Provides technical assistance and resolves defects in development objects. Analyzes and assesses current processes to define and document improvements.
- 5.5. Works closely with customers, peers and process owners to ensure that development objects meet business requirements.
- 5.6. Participates in the technical preparation of business process procedures, test scenarios, end-user documentation and user manuals. Participates and documents tests that are necessary to ensure the application or technical environment meet performance requirements.
- 5.7. Monitors and repairs development and technical objects to maintain performance according to technical and functional specifications. Provides user support and assists in the identification of configuration and program changes.
- 5.8. Responds to service requests and issues that require trouble shooting, coding, configuration, data and/or security maintenance.
- 5.9. Performs system documentation and administrative tasks as needed.
- 5.10. Utilizes various software and/or technology tools to perform job duties.
- 5.11. Uses situational awareness to anticipate and prevent accidents.
- 5.12. Performs related duties as assigned.

Minimum Requirements

- 5.13. Bachelor’s degree in information technology or closely related field. Equivalent combination of education and/or experience may be accepted.
- 5.14. Five (5) years of experience developing enterprise custom objects in at least one of the areas/environments listed below, or any combination thereof:
 - 5.14.1. SAP Environment (i.e. ABAP, SAP/PI, SAP workflow, forms development, etc.)
 - 5.14.2. ServiceNow
 - 5.14.3. Microsoft Dynamics
 - 5.14.4. Web Development
 - 5.14.5. Mobile Development
 - 5.14.6. .net Development
 - 5.14.7. Integration Development
 - 5.14.8. Equivalent combination of education and/or experience may be accepted.

6. Business Process Specialist

Responsibilities

- 6.1. Participates on project teams for system work efforts to enterprise systems. Gathers information from user departments to determine how to best support the needs of end users.
- 6.2. Participates in the configuration and maintains enterprise systems and software to support end users and PTC business processes. Reviews and corrects configuration issues to restore solutions and ensure proper operation.
- 6.3. Develops and maintains Business Process Procedures (BPPs) and other documentation.
- 6.4. Provides technical assistance to end users by troubleshooting, analyzing and resolving concerns regarding enterprise systems, solutions and processes.
- 6.5. Participates in the development, maintenance, execution and validation of test scripts and the testing process. Coordinates with other business units to accomplish successful implementation of changes.
- 6.6. Assists with reviews and comparisons of current business processes with best practices to determine where business process or system changes are necessary.
- 6.7. Monitors business systems and business processes to identify and recommend opportunities for process improvement.
- 6.8. Utilizes various software and/or technology tools to perform job duties.
- 6.9. Uses situational awareness to anticipate and prevent accidents.
- 6.10. Performs related duties as assigned.

Minimum Requirements

- 6.11. Bachelor's degree in business management or information systems. Equivalent combination of education and/or experience may be accepted.
- 6.12. Eighteen (18) months as an EBS Programs Specialist or IT Support Analyst with the PTC;
OR
- 6.13. Four (4) years of enterprise system experience in configuring enterprise software, providing technical assistance, conducting system testing and developing end user procedures. Equivalent combination of education and/or experience may be accepted.

7. Programs Specialist

Responsibilities

- 7.1. Provides support to higher-level IT professional staff in any of the EBS areas of specialization.
- 7.2. Assists in the analysis of the requirements to support enterprise data warehouse solutions and designing data models.
- 7.3. Provides support in developing detailed functional specifications that describe the custom changes that are needed to support Commission enterprise data warehouse solutions.
- 7.4. Participates in developing programs and objects for integration of technical and application components.
- 7.5. Assists with maintaining/repairing development objects to maintain performance according to technical and functional specifications.
- 7.6. Writes and maintains basic Business Process Procedures (BPPs) and other documentation to reflect current production processes and configuration.
- 7.7. Assists with developing test scripts, executing and documenting tests necessary to ensure the application or technical environment meets performance requirements.
- 7.8. Provides user support and assists in identification of configuration changes. Responds to support calls and provides guidance to users' questions originating from call scripts, BPPs, reports, job aids and frequently asked questions.
- 7.9. Participates in performing unit tests on all objects in development or under maintenance.
- 7.10. Participates in process design, configuring specific modules or cross-module business processes and providing support in documentation, system testing and authorities.
- 7.11. Creates reports and uses report variants to produce repeatable reports with specific user criteria. Participates in the development of instructions for user executed reports.
- 7.12. Records activities in the enterprise service request tracking tool. Records and resolves defects in development objects.
- 7.13. Utilizes various software and/or technology tools to perform job duties.
- 7.14. Uses situational awareness to anticipate and prevent accidents.
- 7.15. Performs related duties as assigned.

Minimum Requirements

- 7.16. Bachelor's degree in information technology or related field. Equivalent combination of education and/or experience may be accepted.

8. Integration Specialist

Responsibilities

- 8.1. Performs various integration and enterprise development duties and responsibilities, which include working on support teams to support enterprise systems and their integration.
- 8.2. Designs, develops, analyzes, integrates and deploys enterprise applications, configurations and solutions. Develops detailed specifications that describe system changes.
- 8.3. Integrates programs and objects for enterprise applications and solutions. Participates in and/or executes process designs and technical configurations.
- 8.4. Provides technical assistance and resolves defects in development objects. Analyzes and assesses current processes to define and document improvements.
- 8.5. Works closely with customers, peers and process owners to ensure that development objects meet business requirements.
- 8.6. Participates in the technical preparation of business process procedures, test scenarios, end-user documentation and user manuals. Participates and documents tests that are necessary to ensure the application or technical environment meet performance requirements.
- 8.7. Monitors and repairs development and technical objects to maintain performance according to technical and functional specifications. Provides user support and assists in the identification of configuration and program changes.
- 8.8. Responds to service requests and issues that require trouble shooting, coding, configuration, data and/or security maintenance.
- 8.9. Performs system documentation and administrative tasks as needed.
- 8.10. Utilizes various software and/or technology tools to perform job duties.
- 8.11. Uses situational awareness to anticipate and prevent accidents.
- 8.12. Performs related duties as assigned.

Minimum Requirements

- 8.13. Bachelor’s degree in information technology or closely related field. Equivalent combination of education and/or experience may be accepted.
- 8.14. Five (5) years of experience developing enterprise custom objects in at least one of the areas/environments listed below, or any combination thereof:

<ul style="list-style-type: none"> 8.14.1. SAP Environment (i.e. ABAP, SAP/PI, SAP workflow, forms development, etc.) 8.14.2. ServiceNow o Microsoft Dynamics 8.14.3. Web Development 	<ul style="list-style-type: none"> 8.14.4. Mobile Development 8.14.5. .net Development 8.14.6. Integration Development 8.14.7. Equivalent combination of education and/or experience may be accepted.
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9. Senior Business Process Specialist

Responsibilities

- 9.1. Leads lower-level IT staff including delegation of work assignments, review of work product and providing support/guidance in daily assignments.
- 9.2. Leads and/or participates on project teams for system work efforts to enterprise systems. Gathers information from user departments to determine how to best support the needs of end users.
- 9.3. Configures and maintains enterprise systems and software to support end users and PTC business processes. Identifies and corrects configuration issues to restore solutions and ensure proper operation.
- 9.4. Develops and maintains Business Process Procedures (BPPs) and other documentation.
- 9.5. Provides assistance to end users by troubleshooting, analyzing and resolving concerns regarding enterprise systems, solutions and processes. Participates and/or assists in training of end users regarding their specific systems and processes.
- 9.6. Develops, maintains, executes and validates test scripts and the testing process. Coordinates with other business units to accomplish successful implementation of changes.
- 9.7. Conducts reviews and comparisons of current business processes with the best practices to determine where business process or system changes are necessary.
- 9.8. Monitors business systems and business processes to identify and recommend opportunities for process improvement.
- 9.9. Reviews changes to legislation, contracts, regulations, business operational procedures or systems that may impact the PTC. Determines what changes may be necessary to incorporate within enterprise systems.
- 9.10. Utilizes various software and/or technology tools to perform job duties.
- 9.11. Uses situational awareness to anticipate and prevent accidents.
- 9.12. Performs related duties as assigned.

Minimum Requirements

- 9.13. Bachelor's degree in business management or information systems. Equivalent combination of education and/or experience may be accepted.
- 9.14. Two (2) years as a Business Process Specialist with the PTC. OR
- 9.15. Five (5) years of enterprise system experience in configuring enterprise software, providing technical assistance, conducting system testing and developing end user procedures. Equivalent combination of education and/or experience may be accepted.

10. Senior Enterprise Development Analyst

Responsibilities

- 10.1. Leads lower-level staff involved in various enterprise development and/or integration duties and tasks.
- 10.2. Leads and facilitates meetings and task groups. Tracks and influences the task group’s progress and project deliverables.
- 10.3. Leads, designs, analyzes, integrates and deploys complex enterprise applications, configurations and solutions. Develops detailed specifications that describe system changes.
- 10.4. Leads and/or integrates programs and objects for enterprise applications and solutions. Leads, participates and/or executes process designs and technical configurations.
- 10.5. Provides level of effort estimates for complex change requests and resolves defects in development objects.
- 10.6. Maintains, tunes and repairs development and technical objects to maintain performance according to technical and functional specifications. Provides user support and assists in identification of configuration and program changes.
- 10.7. Conducts code reviews and knowledge transfers to ensure compliance with departmental standards and requirements.
- 10.8. Responds to service requests and escalated issues that require trouble shooting, coding, configuration, data and/or security maintenance.
- 10.9. Leads and/or participates in the technical preparation of business process procedures, test scenarios, end-user documentation and user manuals. Executes and documents tests that are necessary to ensure the application or technical environment meet performance requirements.
- 10.10. Utilizes various software and/or technology tools to perform job duties.
- 10.11. Uses situational awareness to anticipate and prevent accidents.
- 10.12. Performs related duties as assigned.

Minimum Requirements

- 10.13. Bachelor’s degree in information technology or closely related field. Equivalent combination of education, experience and/or training may be accepted.
- 10.14. Six (6) years of experience developing enterprise custom objects or enterprise solutions, or developing integration solutions, in at least one of the areas/environments listed below, or any combination thereof:

<ul style="list-style-type: none"> 10.14.1. SAP Environment (i.e. ABAP, SAP/PI, SAP workflow, forms development, etc.) 10.14.2. ServiceNow 10.14.3. Microsoft Dynamics 10.14.4. Web Development 	<ul style="list-style-type: none"> 10.14.5. Mobile Development 10.14.6. .net Development 10.14.7. Integration Development 10.14.8. Equivalent combination of education, experience and/or training may be accepted.
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11. Senior Integration Specialist

Responsibilities

- 11.1. Leads lower-level staff involved in various integration and/or enterprise development duties and tasks.
- 11.2. Leads and facilitates meetings and task groups. Tracks and influences the task group’s progress and project deliverables.
- 11.3. Leads, designs, analyzes, integrates and deploys complex enterprise applications, configurations and solutions. Develops detailed specifications that describe system changes.
- 11.4. Leads and/or integrates programs and objects for enterprise applications and solutions. Leads, participates and/or executes process designs and technical configurations.
- 11.5. Provides level of effort estimates for complex change requests and resolves defects in development objects.
- 11.6. Maintains, tunes and repairs development and technical objects to maintain performance according to technical and functional specifications. Provides user support and assists in identification of configuration and program changes.
- 11.7. Conducts code reviews and knowledge transfers to ensure compliance with departmental standards and requirements.
- 11.8. Responds to service requests and escalated issues that require trouble shooting, coding, configuration, data and/or security maintenance.
- 11.9. Leads and/or participates in the technical preparation of business process procedures, test scenarios, end-user documentation and user manuals. Executes and documents tests that are necessary to ensure the application or technical environment meet performance requirements.
- 11.10. Utilizes various software and/or technology tools to perform job duties.
- 11.11. Uses situational awareness to anticipate and prevent accidents.

Minimum Requirements

- 11.12. Bachelor’s degree in information technology or closely related field. Equivalent combination of education, experience and/or training may be accepted.
- 11.13. Six (6) years of experience developing enterprise custom objects or enterprise solutions, or developing integration solutions, in at least one of the areas/environments listed below, or any combination thereof:

11.13.1. SAP Environment (i.e. ABAP, SAP/PI, SAP workflow, forms development, etc.)	11.13.5. Mobile Development
11.13.2. ServiceNow	11.13.6. .net Development
11.13.3. Microsoft Dynamics	11.13.7. Integration Development
11.13.4. Web Development	11.13.8. Equivalent combination of education, experience and/or training may be accepted.

12. Systems Administrator

Responsibilities

- 12.1. Participates in the research, design, testing, configuration, installation and maintenance of enterprise system component software, upgrades, service packs, patches, enhancements and third-party add-on software.
- 12.2. Establishes and maintains connections between various enterprise system components. Identifies and resolves problems with system connectivity.
- 12.3. Supports and maintains enterprise system client environments including production, quality assurance, development, sandbox and training environments.
- 12.4. Transports system configuration, customization and other program changes from the development environment to the quality assurance, training and production environments under the guidance of a higher-level administrator or manager.
- 12.5. Configures, schedules and monitors batch jobs to ensure the timely and reliable operation of systems using established procedures.
- 12.6. Installs, configures and troubleshoots problems with printers used with enterprise systems.
- 12.7. Monitors system logs, operating system statistics, work processes, spools and background jobs.
- 12.8. Creates, maintains and performs systems administration, enterprise component documentation and other various administrative tasks.
- 12.9. Participates in the design, implementation and testing of enterprise system backup, refresh, data masking and recovery procedures.
- 12.10. Provides technical support to technology infrastructure staff involving the planning and implementing of enterprise systems, monitoring, configuring and tuning of server, storage and operating systems.
- 12.11. Provides technical advice to functional and development teams on the design, use and performance of application components.
- 12.12. Responds to service requests that require systems administration activities and/or troubleshooting.
- 12.13. Adheres to technical policies and procedures to preserve a stable and productive computing environment.
- 12.14. Utilizes software and/or technology tools to perform job duties.
- 12.15. Uses situational awareness to anticipate and prevent accidents.
- 12.16. Performs related duties as assigned.

Minimum Requirements

- 12.17. Bachelor's degree in business administration or information technology. Equivalent combination of education and/or experience may be accepted.
- 12.18. Five (5) years of experience in information technology which includes a minimum of two (2) years of experience providing system administration services such as installing, updating,

configuring, monitoring and tuning enterprise systems in at least one of the areas/environments listed below, or any combination thereof:

- 12.18.1. SAP Environment
- 12.18.2. ServiceNow
- 12.18.3. Microsoft Dynamics

12.18.4. Equivalent combination of education and/or experience may be accepted.

13. Senior Systems Administrator

Responsibilities

- 13.1. Functions as a lead worker over lower-level employees.
- 13.2. Leads and participates in the research, design, testing, configuration, installation and maintenance of enterprise system component software, upgrades, service packs, patches, enhancements and third-party add-on software.
- 13.3. Establishes and maintains connections between various enterprise system components. Identifies and resolves problems with system connectivity.
- 13.4. Supports and maintains enterprise system client environments including production, quality assurance, development, sandbox and training environments.
- 13.5. Leads and transports system configuration, customization and other program changes from the development environment to the quality assurance, training and production environments.
- 13.6. Configures, schedules and monitors batch jobs to ensure the timely and reliable operation of systems using established procedures.
- 13.7. Installs, configures and troubleshoots problems with printers used with enterprise systems.
- 13.8. Monitors system logs, operating system statistics, work processes, spools and background jobs.
- 13.9. Leads and participates in the design, implementation and testing of system backup, refresh, data masking and recovery procedures.
- 13.10. Provides technical support to technology infrastructure staff involving the planning and implementing of enterprise systems, monitoring, configuring and tuning of server, storage and operating systems.
- 13.11. Provides technical advice to functional and development teams on the design, use and performance of application components.
- 13.12. Responds to complex service requests that require systems administration activities and/or troubleshooting.
- 13.13. Creates and adheres to technical policies and procedures to preserve a stable and productive computing environment.
- 13.14. Utilizes software and/or technology tools to perform job duties.
- 13.15. Uses situational awareness to anticipate and prevent accidents.
- 13.16. Performs related duties as assigned.

Minimum Requirements

- 13.17. Bachelor's degree in business administration, information technology or related field. Equivalent combination of education and/or experience may be accepted.
- 13.18. Six (6) years of experience in information technology which includes a minimum of three (3) years of experience providing system administration services such as installing, updating, configuring, monitoring and tuning enterprise systems in at least one of the areas/environments listed below, or any combination thereof:

- 13.18.1. SAP Environment
- 13.18.2. ServiceNow
- 13.18.3. Microsoft Dynamics
- 13.18.4. Equivalent combination of education and/or experience may be accepted.

The following are the licenses and quantities that will be provided by the **Commission** to the selected proposer to provide the support and projects with the scope of this project.

Additional licenses may be provided at the sole discretion of the **Commission**. If the **Selected Proposer** requires licenses above the below listed quantities, the **Selected Proposer** will credit the Commission \$50.00 per month per additional license.

Assignment of Licenses and User Identifications will remain a duty and function performed by the Commission. These licenses are not to be used for non-Commission work.

Note: In all cases the licenses will be provided to the Selected Proposer for use on Commission licensed software. The provided licenses will remain an asset of the Commission.

Provided Licenses

License	License Description	Commission Provided Quantity
ServiceNow – Developer	Allows for administrative and developer capabilities in the ServiceNow systems.	3
ServiceNow – ITIL User	Allows for Incident Management, Change Management, Knowledge Mangere, Problem Management tickets and reports to be created, updated, resolved, etc.	15
SAP – Developer	Allows for administrative and developer capabilities in the SAP systems.	5
MS Dynamics – O365		10
MS Dynamics – Developer		5
OnBase – Unity Client		10
OnBase – Various Developer Licenses		5
AgileAssets	A Road Infrastructure Software as a Service (SaaS) application.	There is no specific per user license for this application. The Commission will provide access as needed.
Informatica Cloud	A data integration software tool hosted in the cloud. Provides common APIs to relate differing systems to integrate.	There is no specific per user license for this application. The Commission will provide access as needed.
ARCGIS Licenses Suite	A grouping of licenses needed to support and modify the ARCGIS application and its configurations	10
Qlik License Suite	A Business Intelligence application where raw data is massaged into useful reports and information	10

License	License Description	Commission Provided Quantity
SAP Business Warehouse	A Business Intelligence application specifically for SAP where raw data is massaged into useful reports and information	5
BEX (SAP Business Explorer) Tools Licenses	A Business Intelligence application specifically used for the commission's ARCIG system where raw data is massaged into useful reports and information Reference: https://help.sap.com/doc/saphelp_nw73ehp1/7.31.19/en-US/5b/30d43b0527a17be10000000a114084/frameset.htm	15
HP Quality Center	Testing Tool for application verification	10
WebEx	Collaboration Tool to help support the end users	20

Change Management

The following tables represents the number and trends for the 2018 change management for the Commission.

All 2018 Changes Requests

All Change Requests Created in 2018	Count
Jan	104
Feb	83
Mar	122
Apr	106
May	115
Jun	83
Jul	106
Aug	102
Sep	90
Oct	144
Nov	109
Dec	116
Grand Total	1,280

Related Change Requests

The following table represents the number of changes by group that are directly related to the services needed within this RFP.

Priority -->	1 - Critical	2 - High	3 - Medium	3 - Moderate	4 - Low	5 - Planning	Grand Total	Percentages
SM_Basis		2	1		13		16	3.0%
SM_BI			7	1	28		36	6.7%
SM_CRB		1			3		4	0.7%
SM_Database					2		2	0.4%
SM_EA_Policy		1					1	0.2%
SM_EBS_Tech_Serv-11292605934					1		1	0.2%
SM_Enterprise_Development		7	14	5	125	3	154	28.5%
SM_GIS		3	1		37		41	7.6%
SM_OnBase					4		4	0.7%
SM_ProjSys_PlantMaint_InvestMgt		2	5		26		33	6.1%
SM_Qual_Assur					3		3	0.6%
SM_SAP_Financial	2	6	7		31		46	8.5%
SM_SAP_HCM	3	30	20		29		82	15.2%
SM_SAP_Release_Manager		1					1	0.2%
SM_SAP_Security					59		59	10.9%
SM_SAP_SRM_MaterialsMgt	1	3	3	8	39		54	10.0%
SM_ServiceNow Roadmap Team		3					3	0.6%
SM_ServiceNow_Security					1		1	0.2%
Grand Total	6	59	58	14	401	3	541	

Incident Management

Closed Tickets during 2018 by Assignment Group (ALL)

Assignment Group Name	Count	Assignment Group Name	Count
First Level Support	1		
PTC Project Manager	1	SM_Qual_Assur	4
SM_Backup_and_Restore	6	SM_SAP_Financial	108
SM_Basis	64	SM_SAP_GRC_Admin	1
SM_BI	33	SM_SAP_HCM	111
SM_Communication_Cabling	9	SM_SAP_PM_Interfaces	3
SM_Communications	115	SM_SAP_Security	116
SM_Data_Network	9	SM_SAP_SRM_MaterialsMgt	226
SM_Database	2	SM_Security	148
SM_EBS_Tech_Serv-11292605934	1	SM_Servers_Storage_Mgt	214
SM_ECM - Enterprise Content Management	3	SM_Service_Desk	3,908
SM_Email	264	SM_ServiceNow Roadmap Team	45
SM_End_User_Support	1,495	SM_ServiceNow_Security	25
SM_Ent_Dev_Tech-1581622125	1	SM_SMP_WM_Support	1
SM_Enterprise_Development	199	SM_Telephone_Unified_Communications	338
SM_GIS	15	SM_Telephone_Unified_Communications-1153	1
SM_Intercom_Systems	1	SM_Video_Conferencing	1
SM_Land_Mobile_Radio	9	SM_Wi-Fi	2
SM_Network_Control	81	(blank)	1
SM_Network_Management	12	Grand Total	7,694
SM_OnBase	44		
SM_ProjSys_PlantMaint_InvestMgt	76		

Closed Tickets during 2018 by Assignment Group (Selected Proposer Related)

Assignment Group Name	1 - Critical	2 - High	3 - Moderate	4 - Low	5 - Planning	Grand Total
SM_Basis		2	50	9	3	64
SM_BI		1	22	2	8	33
SM_EBS_Tech_Serv-11292605934			1			1
SM_ECM - Enterprise Content Management			2		1	3
SM_Ent_Dev_Tech-1581622125			1			1
SM_Enterprise_Development	1	5	135	27	31	199
SM_GIS			7	5	3	15
SM_OnBase		1	33	6	4	44
SM_ProjSys_PlantMaint_InvestMgt		3	55	6	12	76
SM_Qual_Assur		1	3			4
SM_SAP_Financial	4	5	85	7	7	108
SM_SAP_GRC_Admin				1		1
SM_SAP_HCM	13	2	79	8	9	111
SM_SAP_PM_Interfaces			3			3
SM_SAP_SRM_MaterialsMgt			160	25	41	226
SM_ServiceNow Roadmap Team		1	39	3	2	45
SM_SMP_WM_Support			1			1
Grand Total	18	21	676	99	121	935

Configuration Items

CI's related to the services provided within this contract

Name	Class	Status
Agile Assets Pavement Management System	Workstation Software	Installed
Agile Assets Sign Management System	Workstation Software	Installed
CACTUS	Workstation Software	Installed
Gasboy/EKOS Fuel Management System	Workstation Software	Installed
Genetec Security Center 5.4	Workstation Software	Installed
ITMS (Integrated Toll Management System)	Workstation Software	Installed
MS Dynamics	Workstation Software	Installed
OnBase	Workstation Software	Installed
QlikView x64	Workstation Software	Installed
Records Retention Service	Workstation Software	Installed
SAP BI	Workstation Software	Installed
SAP ECC	Workstation Software	Installed
SAP Finance	Workstation Software	Installed
SAP GRC	Workstation Software	Installed
SAP HCM	Workstation Software	Installed
SAP Materials Management	Workstation Software	Installed
SAP Plant Maintenance	Workstation Software	Installed
SAP Portal	Workstation Software	Installed
SAP Project Systems	Workstation Software	Installed
SAP SRM	Workstation Software	Installed
SAP Syclo (Work Manager)	Workstation Software	Installed
SAP Work Order Management	Workstation Software	Installed
ServiceNow	Workstation Software	Installed

Total Number of CI's by Type in ServiceNow

Class	Count
Application	1
Communication Device	626
Computer	1,454
Configuration Item	5
Disk	1,583
Disk Partition	4,044
DNS Name	1,703
Exit Interface Routing Rule	1,430
File System	4,162
IIS Virtual Directory	62
IP Address	7,047
Memory Module	2,161
Microsoft iis Web Server	25
MongoDB Instance	3
MS SQL DataBase	180
MSFT SQL Instance	167
NAS File System	5
Network Adapter	2,074

Class	Count
Next Hop Routing Rule	1,536
Print Queue	42
Printer	420
Router Interface	2,321
SQL Server Analysis Services	1
Tomcat	1
Tomcat WAR	6
Tracked Configuration file	124
UPS Alarm	1
UPS Input	2
UPS Output	2
VMware Virtual Machine Instance	1
Web Service	1
Web Site	25
Workstation Software	39
Grand Total	31,254

Problem Management

Count of Problems During 2018 by Month

Month	Count of Problems
Jan	11
Feb	7
Mar	7
Apr	5
May	15
Jun	14
Jul	13
Aug	4
Sep	12
Oct	8
Nov	6
Dec	9
Grand Total	111

Count of Problems During 2018 by Assignment Group

Assignment Group	Closed/Resolved	Known Error	Open	Pending Change	Grand Total
			3		3
PTC Project Manager			1	1	2
SM_Basis	4			1	5
SM_Change_Manager			1		1
SM_Communications	2				2
SM_Email	2				2
SM_End_User_Support	12		2		14
SM_Enterprise_Development	19		3	1	23
SM_GIS			1		1
SM_ProjSys_PlantMaint_InvestMgt	16		2		18
SM_SAP_Financial	4		2		6
SM_SAP_HCM	9		1		10
SM_SAP_SRM_MaterialsMgt	8		1	1	10
SM_Security	4				4
SM_Servers_Storage_Mgt	3				3
SM_Service_Desk	2	1	2		5
SM_ServiceNow Roadmap Team			1		1
SM_ServiceNowAdmins	1				1
Grand Total	86	1	20	4	111

Knowledge Management

Knowledge Articles Updated by Month During 2018

Month	Count of Articles
Mar	3
Jun	10
Jul	5
Aug	3
Sep	6
Oct	37
Nov	20
Dec	64
Grand Total	148

Projects

The current list of project and Work Items as of February 4, 2019.

The following listing of projects is a snapshot of the activities currently ongoing within, or related to, the in-scope applications. This list changes regularly and is included for informational purposes to provide the Proposer with an idea of the amount activity associated with the in-scope applications.

Enterprise Business Solutions' Project Listing:

#	Work Item / Project Description
1.	ITMS project (CMDB changes, new approval request forms, new inventory reports)
2.	Automate straight forward FI support team activity
3.	Budgeting tool requirements gathering and implementation
4.	Build BAI2 Interface with PNC Custody to bring in the investment transactions from PNC into SAP to help with reconciliation.
5.	Fiscal Year-End 2019 Testing
6.	HCM Replacement - FI representative
7.	HR - FI Payment Posting Program change
8.	Implement B2P mobile payment to reduce checks printed for Customer Refunds, and fix some of the other smaller issues with the phase 1 of Customer Refund and COP WriteDown Automation Project
9.	ServiceNow Mobile app upgrade
10.	Implement ATE automated testing tool within ServiceNow
11.	Utilize the New workflow tool available in <i>ServiceNow</i> London release to create service Catalog Items
12.	Implement Project Management Module after ServiceNow London Upgrade. Project in the planning phase.
13.	<u>MS Dynamics Contact Management System (CRM):</u> Overview: Various business groups have expressed their need to have a single source of current and accurate external contact information to use for various correspondence campaigns such as traffic incident reporting, redistribution of statewide alerts, PTC public and targeted announcements, public relations events, or simply to find a specific vendor, state office or consumer.
14.	<u>MS Dynamics Property Damage System Enhancements:</u> Requirements being gathered at this time
15.	<u>Annual MS Dynamics Upgrade:</u> Expected to occur during April or May – currently in planning stage.
16.	Improve AR reconciliation process for collections agency.
17.	Improve Usability of existing tools and solution. Most users don't have issues with SAP's solution, however, they have issues about the usability of SAP. They don't believe its user friendly and that causes things to take much longer to accomplish. We would like to see how we can address that. SAP provides free tools like SAP Personas and SAP Fiori that we can potentially look at, but we need to be at least at EHP7 to be able to make use of these free tools.

#	Work Item / Project Description
18.	Invoices for employees who did not complete the Wellness requirements and have to pay 5% of the benefit cost but are currently on LOA. As they are on LOA, payroll cannot deduct the 5% every month or every pay period, so the business would like to be able to generate an invoice that would have to be sent to the employee for them pay.
19.	Problems posting a parked invoice for a vendor. (4th priority for AR)
20.	Production problems that should have been fixed as part of Treasury Project
21.	Security Role Redesign in ServiceNow
22.	Treasury - Long Term - Evaluate tools
23.	Treasury - Long Term - Implement Solution
24.	Vendor Portal
25.	Resolve issue with Sign Manager Interface C abending when SAP WO Long Text > 4,000 characters
26.	Resolve issue with PAMS "Pavement Structure -> Pavement Partitions" milepost values
27.	Telematics Application Implementation
28.	<p>OnBase eSignature (workflow) project:</p> <p>PRIMARY GOAL: Document requirements and procure an automated workflow solution for PTC Internal Audit's audit workpaper review process that includes electronic signature from preparer and reviewers.</p> <p>The Internal Audit department conducts audits regularly throughout the year.</p> <ul style="list-style-type: none"> • The completed audit documents are printed, signed by the Preparer, then forwarded to multiple reviewers for validation. • These reviewers sign the approved documents alongside the Preparer's signature. • When all reviewers have approved and signed the documents, they are returned to the preparer to be filed. <p>Internal Audit is requesting an automated workflow with electronic signature capability that will alleviate the need to print, manually deliver, and physically sign the documents.</p> <ul style="list-style-type: none"> • This will reduce materials costs (printed documents) as well as processing time (printing and sorting). • It will also reduce risk of the physical documents getting lost or damaged, or of them falling into unauthorized person's possession.
29.	Implement an Enterprise Vendor Portal Solution
30.	Lawtrac E-Billing Interface
31.	SMP Work Manager Application upgrade (WM 6.4)
32.	Diverse Business Participant Reporting
33.	Stormwater Management Application Implementation
34.	Safety Management System Implementation
35.	Mobile Cashless Tolling
36.	Construction Documentation System Rewrite
37.	Enterprise Asset Management - Asset Tagging Project
38.	Enterprise Asset Management - Asset Tagging Project
39.	Oversized Vehicles Application Implementation
40.	Roads & Highways (LRS Update Automation Implementation)
41.	Audit Workflow Automation

#	Work Item / Project Description
42.	Electric Utilities Invoicing (FEMO) Implementation
43.	Sending Vendor Invoices as PDF from OnBase using SAP to EngeryCAP for energy bills.
44.	ServiceNow Upgrades support
45.	Modify Secondary Supplying Plant functionality
46.	Physical Records Management Solution Implementation
47.	Property Damage Claim System Dynamics Backlog
48.	Tunnel Management Application Implementation
49.	Production problems that should have been fixed as part of Treasury Project
50.	Production problems that should have been fixed as part of Treasury Project
51.	RITM0015075 - Default \$1.00 in the "Price" field within a Project Systems Network Activity. This field may continue to be editable.
52.	Improve online payments reconciliation.
53.	Need SUI report is using the principle 'taxes are deducted when paid' to like that of the MWR report which is using the simpler principle of Active employees in the quarter for its employee count. This was converted from INC0010018
54.	SAP changes to support handling of Employee's on leave receiving Domestic Partner Benefits
55.	Need to make changes to the related function modules that are used to create the ACH files to start populating the DME number from Reference Number field of the Regut table to the ACH file.
56.	Improve remote deposit capture check payments.
57.	Have report that generates from SAP to upload into Org Publisher to include employee salaries.
58.	Create billing statement for employees on LOA and not participating in the Wellness program
59.	SAP Transaction: /EHR/SOL71_ORGPUB - OrgPublisher for SAP Solutions Add filter to allow us to be able to remove summer employees during inactive months prior to publishing
60.	Improve AR reconciliation process for the Coin and Currency account. (3rd priority for AR)
61.	Add reason code to SAP Family status change action for dependents changing names (marriage)
62.	Requesting to add HAY scores to each Management and Local 30S jobs in SAP. Local 30P, 77 & 250 would not have a HAY score.
63.	Update ZLPM_TOTAL_MILES table (LAM)
64.	Pcard Remittance Payments
65.	HR would like to use field name Ref.Pers.No in infotype 0002 to track married employees.
66.	Production problems that should have been fixed as part of Treasury Project
67.	Add New supplying plant and storage location for new warehouse to be located at the Jefferson Hills PSP site
68.	Modify the output of the EEO-4 report using transaction p0000_m10_eeo_pbs
69.	Ability for Lynn and Ted to assign Vendor Invoices to different individuals if a member of her team is out of office.
70.	Create a pay code for management positions that could be used when someone is working out-of-class pay.
71.	Upgrade OrgPublisher application
72.	Do not allow Goods receipts to be posted (manually "SET") against PO's through MIGO transaction when the "Delivery Complete" indicator is checked

#	Work Item / Project Description
73.	Automate termination file for Financial Disclosure Interface to OA
74.	Need additional type of disciplinary action and offense code for IT0743 Type of disciplinary action...
75.	Create two disability retirement SAP medical plan for management retirees who are qualify for retiree benefits due to disability only.
76.	Record in SAP HCM the State Employee Retirement System's (SERS) years of service for each employee from the quarterly electronic REC75 report the Turnpike receives
77.	The Deferred Compensation outbound file to Empower has capability to pass additional data and with that data the Empower system can be set to accept this data as change data to update their system via this interface. This requires a rewrite of the outbound program ZHBN_I007_DEFERRED_COMP to broaden existing name fields and add additional fields as provided by the Empower system. This was previously in ServiceNow under Demand DMND0001271 which will be closed with this request.
78.	Automate weekly AP check and ACH runs
79.	Display the valid contracts based on document creation date along with delivery date in Sources of Supply screen
80.	Contract Management Dynamics - PTC Engineering is required to start tracking MS4 permits for EPA reporting.
81.	Request to have all employees with the newly created ADA Online Training qualification
82.	Populate the purch.doc. field on the vendor line item display
83.	For monthly reports regarding Property Management Lease Open Items, SAP transaction FBL5N only provides half the data needed. It does not include address lessee information, as that is contained in a separate table. If possible, I need a transaction that will combine the two tables into a single output that I can run monthly. For the variable screen, I need to be able to specify the range of customers and the date (month/year).
84.	SAP-OnBase interface needs enhancement for personnel number (re-indexing), document name changes and document type changes done in SAP but OnBase does not update.
85.	Provide solution to identify the "Primary" vendor contact person in the vendor master
86.	Provide a solution to monitor SRM output status stating "not processed successfully"
87.	Update AgileAssets Sign Manager to filter out Retired signs in Inventory and on Map
88.	Update AgileAssets Sign Manager Interface D so that "Date Update" and "User Update" are not updated by the program
89.	Enhance program zhte_c003_create_reqs_profile to produce error reporting such as when the input file format is incorrect and allow for multiple qualifications to be loaded
90.	Enhance changes to direct deposit in the middle of the pay period so it does not result in old and new amounts being deducted in same pay. This also happens with changes to W4s. ESS changes to direct deposit and/or W4 does not provide the user to make the change on first pay period of the month. No date parameters are provided in ESS. Payroll processing needs to be enhanced to only deduct the most current deduction election.
91.	Automation of the Federal Reserve Bank File.
92.	Change the Chairman and Commissioner's salary to be calculated on an annual basis instead of hourly. This will be needed for the next year when PTC has 27 pay periods
93.	Import Sign data and attachments into AgileAssets Sign Manager for I-95, etc.

#	Work Item / Project Description
94.	Hard stop error message in MIGO to prevent a goods receipt from being backed out when invoice is posted
95.	Requesting ESS be able to: 1) Show one's latest accrual rate. 2) Show historical list of time, if approved, and approval date. 3) Allow access to W-2. 4) Allow access to 1095-C. 5) Lock employees out when in Released for Payroll mode. 6) Have better functionality to reset password when forgot or wrong. 7) Show off-cycle payments. 8) Incorporate necessary W-4 changes for 2019.
96.	Create action to facilitate reinstatement from termination (evaluate expunging terminations if possible).
97.	Add district number in SAP to organizational unit assignments so that reports can be run and filtered / sorted by district for departments such as Maintenance and Fare Collection
98.	Create new reason code for LOA Paid Action "Vacation to Retirement" system should not allow salary increases, not eligible for performance evaluations, holiday pay or vacation/sick accruals after this action is entered. This would allow for eligibility reports to show these employees.
99.	Add end introductory period for management employees under infotype 0041 (Date Specifications) to determine when to issue introductory evaluations
100.	Upgrade AgileAssets version 7.3
101.	FI requires to post benefits (from the SAP payroll postings) to individual fund center / cost center instead of posting to just one fund center / cost center. Historically we have always posted benefits to one cost center.
102.	ATMS system – a new system used within Commission Road Operations – system under development and selected Proposer will need to support only via ServiceNow changes and for awareness. The details will be provided when system is ready to implement. Currently being built.
103.	Following wage types need to be made available through Info types 221 & 267 for Payroll Processing (yearend adjustments) 1101-Military Stipend 1102-Military Differential 4006-Taxable Fringe - Car 4056-Tax Fringe - Car FED SUPP 4057-Tax Fringe - Car No FED 5075-Tuition Reimbursement
104.	RITM0033244 - Add 2 new BAI Codes for RTP.
105.	Access Card Management System – replacement for the MS Dynamics application into a new system. Currently in the early planning stages.
106.	Review email-based business processes and write them into ServiceNow
107.	Implement Service Levels within ServiceNow for other parts of the Commission

#	Work Item / Project Description
108.	Print on Demand – a new capability where print queues are managed within a virtual environment and users will enter a code or swipe an ID Badge at the printer to retrieve their printouts. The Selected Proposer will have to support this functionality within the in-scope applications with scope of this RFP (reference Appendix H and T). No printer support is needed from this contract.
109.	Class 9 (over-dimensional vehicles) application being redesigned. This may be a future application to be included within this agreement. Early Planning is occurring at this time – not enough detail to provide requirements for this RFP.
110.	Toll and Fee Calculation Engine Web Service – a proposed application that is in the early definition stages and may become part of this RFP at the appropriate time.
111.	Administrative Forms rewrite into Version 2.0 within ServiceNow
112.	Implement the full suite of Mobile capabilities into ServiceNow including push notifications, native modules
113.	Move to new Incident State model within ServiceNow
114.	Implement the Out of the Box version of Change Management away from the current custom process within ServiceNow.

GeoAnalytics’ Project Listing:

#	Project Name	Project Status	Project Priority
1.	Construction - Version 1	In Development	High
2.	Customer Service - Version 1	In Development	High
3.	Procurement - Version 1	Planned	High
4.	Executive Safety - Version 1	Planned	Medium
5.	Executive Infrastructure - Version 1	Planned	Medium
6.	Executive Mobility - Version 1	Planned	Medium
7.	Executive Finance - Version 1	Planned	Medium
8.	TEO Data capable - Version 1	In Development	Medium
9.	Storm Water Data Compilation - Version 1		Medium
10.	GeoEnable Utility Crossing App - Version 1	Planned	Medium
11.	Property Management App - Version 1	Planned	Medium
12.	Fleet Telematics Solution - Version 1		Medium
13.	GIS Application Development - Version 1	Planned	Medium
14.	Field Data Collection Strategy and SOPs - Version 1	In Production	Medium
15.	Roads and Highways LRS - Version 1		Medium
16.	Straight Line Diagram / Road Analyzer - Version 1		Medium
17.	GIS Program Support		Medium
18.	Storm Water Data Compilation and Field Tool	Planned	Medium
19.	Field Data Collection Strategy and SOPs	Planned	Medium
20.	TIMS Enhancements V1	In Development	Medium
21.	TraCS Enhancements	Planned	Medium
22.	TOCSA Mobile App	Planned	Medium
23.	IT Dashboard	Planned	Medium
24.	Human Resources	Planned	Medium
25.	Facilities Operations	Planned	Medium