

APPENDIX F

BLUEPRINT REPORT

Appendix F
PennDOT
System Modernization Planning
Project
Blueprint Report Document
FINAL

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System Modernization Planning – Blueprint Report

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1. MVDLS Project Blueprint Introduction

1.1 MVDLS Future Business Needs

Mathtech worked with PennDOT to create the Blueprint Diagram that reflects future business functions for the Motor Vehicle & Driver License System (MVDLS) Project. These were based on discussions with a core team of IT staff provided to work on this report. Business functions were organized into a Future System “Blueprint” that describes expected features of a new Department of Motor Vehicle (DMV) system. The Future System Blueprint consists of conceptual subsystems and serves as a planning tool for the project.

This diagram does not include functions and systems that PennDOT has already modernized or is in the process of modernizing. As a result, the following functions are out of scope for the MVDLS Project:

- ▶ Meds – Completed
- ▶ Apportioned Registration Program (ARP) – Completed
- ▶ Fleets – Completed
- ▶ Card Production System – Completed
- ▶ Placards – Completed
- ▶ Inspections – In Process
- ▶ Dealers – In Process

Requirements for some in-scope functions are separately documented as part of efforts completed during the period 2006-2008 and include business and technical requirements as well as listings of in-scope programs, products, batch programs, interfaces, letter/notices and reports. The Contractor will be expected to validate these requirements with the business community and the technical team as part of the MVDLS Project.

1.2 MVDLS Blueprint

The Blueprint depicts the future system and its components. It allows the project to define the overall scope of a potential modernization effort for the MVDLS Project and the functions and operations it will address. The Blueprint is composed of two layers. Each layer is a logical grouping of subsystems and functions.

The Blueprint layers are as follows:

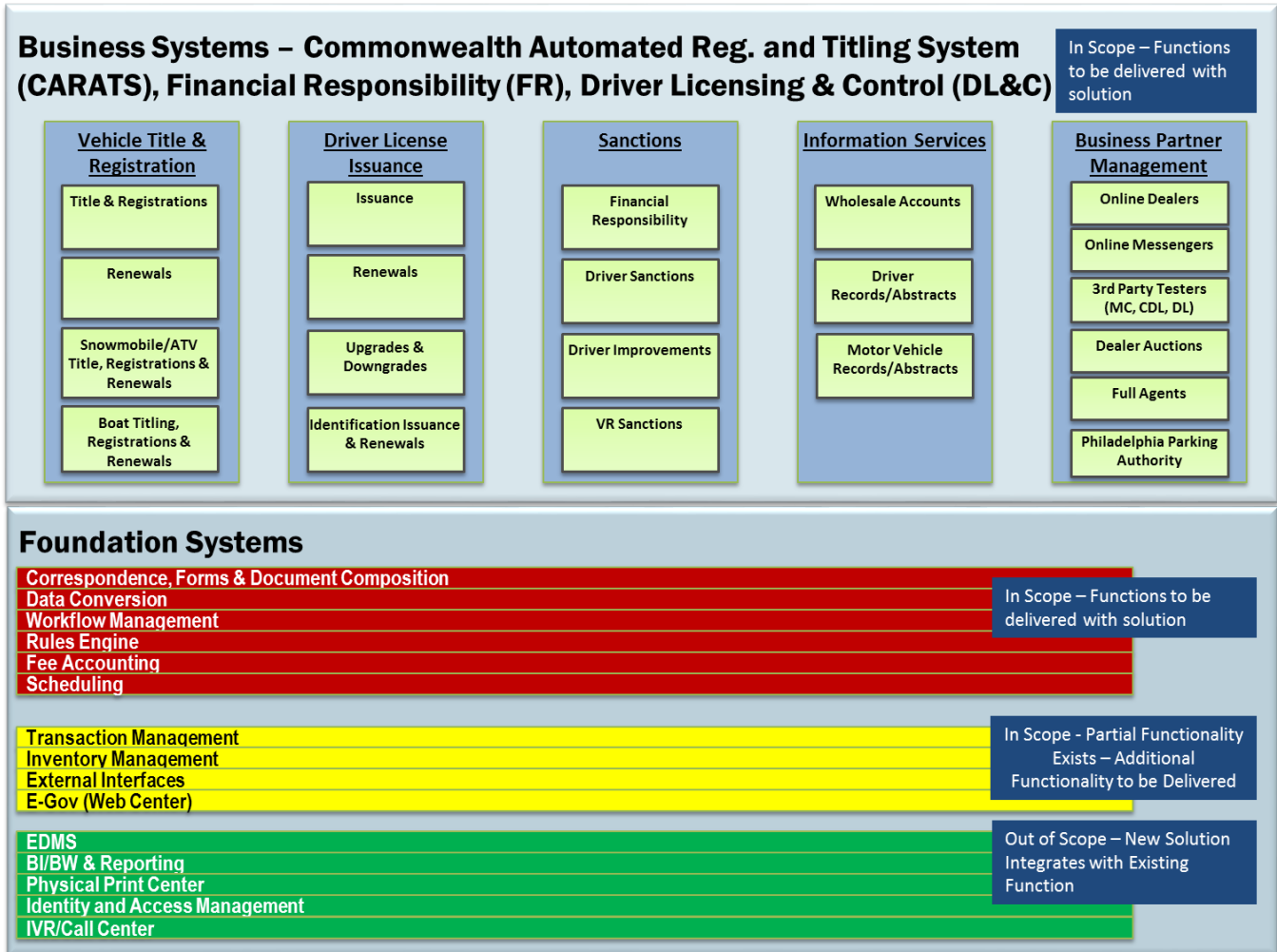
- ▶ **Business Systems Layer** – This layer contains subsystems and functionality which are specific and unique to each business area.
- ▶ **Foundation Systems Layer** – This layer contains technologies and tools that could be used to consistently build common systems and functions. The creation of a common toolset for system modernization allows IT staff to maximize effort and create a system that is easier to maintain and is naturally more integrated. This layer also contains subsystems and functionality which are commonly required by most business areas such as Document Imaging & Retrieval and Fee Accounting. Subsystems in this layer might be purchased as “off-the-shelf” products or custom developed for/by PennDOT.

System Modernization Planning – Blueprint Report

The following diagram is the Blueprint for the MVDLS Solution. It contains the layers as described above. Each layer contains a number of subsystems. All the business layer functions depicted are in scope for the MVDLS Project. Foundation Subsystems are color-coded to express the status and scope. The color definitions are as follows:

- ▶ **Red** – This function/subsystem is in scope for the MVDLS project and is not meeting the defined requirements today.
- ▶ **Yellow** – This function/subsystem is in scope for the MVDLS project and is partially meeting the defined requirements today. PennDOT may prioritize or de-prioritize effort for Yellow subsystems for the term of the contract based on Initial Work Package effort.
- ▶ **Green** – This function/subsystem is meeting the defined requirements today and the MVDLS Solution will need to interface and/or integrate with these existing subsystems.

The rest of this document provides descriptions of each subsystem on the Blueprint.



2. Foundation Layer Functions

Red Diagram Subsystems

The following functions/subsystems are depicted as “Red” on the Blueprint diagram. This means that these systems must be delivered in their entirety as part of the Contractor’s solution.

2.1 Correspondence, Forms & Documentation Composition

Electronic Correspondence Exchange

Description

As PennDOT moves into an electronic age of correspondence exchange, the use of email, upload/download, SMS Text, and electronic fax will be increasingly important. The Correspondence, Forms & Document Composition Subsystem is responsible for properly sending the documents to recipients and tracking that the transmission was successfully completed. The results of the transmission and the document sent must be stored in the system’s records for audit and customer support. Likewise, this subsystem must collect the messages and documents received electronically and match them to the proper transaction or customer records. Additionally, this subsystem must trigger any processing steps which may be required.

Electronic Forms

Description

Most, if not all DMV transactions, are conducted with a required amount of data that is collected by a “form” from a customer. While these have traditionally been paper forms, the move to be paperless will require the use of electronic forms. These forms will provide instructions to customers, collect and validate data, and transfer the data to PennDOT systems for a transaction.

The forms can be filled in electronically and submitted to DMV systems to start or complete a transaction. Through the use of a smart form, the data for the transaction is validated prior to submittal. An electronic form can be used with a PennDOT website to submit data and payment. If a transaction is started, but needs to be completed at a later point, the customer will be provided with this information and the next steps needed to complete the transaction. The final steps will be different for every transaction but will start consistently with an electronic form. Electronic forms can be used to collect data for submission, or they can be used as parts of a “wizard” that will collect data from the customer in a guided manner.

Document Composition

Description

PennDOT generates a significant amount of documents and notices which are used for both in-person transactions and batch transactions. These print requests include many legal documents such as Vehicle Titles, Registrations, Driver License Records, and notifications.

The MVDLS Solution will include a Document Composition subsystem that will merge document design and layout with appropriate document data to produce a finished

document. This system will allow PennDOT to better manage the layout and consistency of documents. It will also allow PennDOT to manage production of documents to multiple media including paper, PDF, HTML, email, SMS Text, and fax.

The Document Composition subsystem will support all other DMV subsystems that generate documents and provide a common infrastructure for printing at all locations.

2.2 Data Conversion

Description

Accurate and available data is key to DMV transactions. The MVDLS Solution must have a mechanism to convert and cleanse existing data in an incremental manner to support incremental production deployments.

While PennDOT does not desire a single customer record at the database layer that supports all functions, unified views of customer data from all subsystems must be available and the flexibility for both PennDOT users and customers to build their own views is needed.

The new database must meet the PennDOT technical standards, support relational data structures and feed current Business Intelligence / Business Warehouse (BI/BW) reporting.

2.3 Workflow Management

Description

Many DMV business transactions require multiple staff across multiple areas to work in a sequence of steps. These steps are predefined and should be followed consistently across the organization. Workflow management helps in defining and implementing extended business processes by routing the work to staff and notifying them about the work task that needs to be performed. Once the work is completed by one staff, the task should be automatically routed to the next staff in the process. Work tasks can include manual processes and automated tasks.

Electronic workflow improves efficiency by routing transactions and documents directly to the staff that need to perform a task. This reduces the chance that the transactions could be lost. Workflow also allows for an easy method of tracking the transactions and documents. In addition, it allows tasks to be automatically distributed to staff based on their changing availability to support the function.

The tracking information could be made available to the customer which will keep them updated regarding their transaction status and reduce customer calls to the service center.

2.4 Rules Engine

Description

The overall operation of PennDOT and the process by which PennDOT systems must perform calculations and enforce business rules is significantly complex and subject to continual change. This change is caused by new legislation, an ever increasing focus on security, operational improvements, and the addition of new services. The MVDLS Solution requires a facility to change business rules and calculations in a manner that is

fast, efficient and minimizes system reprogramming. This system should allow staff to focus on the definition of the rules and calculations and not be overburdened with technical implementation issues.

The MVDLS Solution shall contain a Rules Engine from Progress Corticon. The Rules Engine should be accessible to all DMV subsystems and these subsystems could be designed to leverage its functionality. Such rules shall include, but may not be limited to, vehicle financial responsibility sanctioning and driver license sanctioning, and the requirements necessary to have a privilege restored. Such decision-making code could reside in the Rules Engine so that multiple subsystems can access it and so that it can remain consistent across all subsystems.

2.5 Fee Accounting/Financial Management

Description

PennDOT collects hundreds of millions of dollars in fees each year. These funds are allocated to different accounts based upon the source of the revenue and legislative rules that have created additional funds and purposes. Many business areas interact with and collect payments from various locations.

The MVDLS Solution must have the ability to track and reconcile all fees and distribute them to their appropriate accounts. It should allow the business areas to manage a financial account for each customer as necessary, especially business customers.

The MVDLS Solution must accept all forms of payment including cash, checks and electronic payments including ACH and payment cards. It should also provide cash drawer management for point of sale capture and reconciliation.

The MVDLS Solution will not replace the Commonwealth's core financial systems and must integrate with them as needed for complete and accurate fee and refund processing.

2.6 Scheduling

Description

PennDOT schedules and manages thousands of tests, hearings and special point exams each year. Current systems partially automate test scheduling. Other appointments are manually scheduled.

The MVDLS Solution must have the ability to schedule multiple types of events such as driver's tests, mechanical technical testing, special point exams and hearings. Drivers should be able to schedule selected events on the website and see the appointment calendar to be able to manage their own appointment changes.

Yellow Diagram Subsystems

The following functions/subsystems are all depicted as “Yellow” on the Blueprint diagram. This means that some portion of these systems are in place and the Contractor shall be required to evaluate what can be leveraged from existing PennDOT capabilities and recommend how to improve functionality to fully meet the future vision. PennDOT may prioritize or de-prioritize effort for Yellow subsystems for the term of the contract based on Initial Work Package effort.

2.7 Transaction Manager

Description

Many DMV transactions include consistent tasks and activities. These functions should be performed consistently by the system whether they are for a Driver’s License, Vehicle, or other transaction. Common functions for a transaction include, but are not limited to, the following:

- ▶ Data collection
- ▶ Validating the data with pre-defined edits and validations rules
- ▶ Reviewing eligibility
- ▶ Checking data with external systems
- ▶ Creating products
- ▶ Calculating fees
- ▶ Collecting fees
- ▶ Printing receipts and products
- ▶ Committing transactions to the database
- ▶ Suspend transaction as a result from exception handling

The Transaction Manager subsystem should leverage the existing Work Identification Numbers (Front End Process), allow PennDOT to control which types of users (ex: business partners) can perform specific transactions, and keep track of the following:

- ▶ Type of transaction initiated/processed/pending
- ▶ Who initiated/processed the transaction; including workstation, staff, and office location
- ▶ When transaction began and ended
- ▶ Audit trail of access, edits, and completion of the transaction
- ▶ Transaction financials

Current Systems:

The following systems currently fulfill the functionality of this subsystem:

- ▶ The DVS legacy applications (CARATS & DL&C) use RACF and custom COBOL programs in conjunction with IMS codes tables.
- ▶ .Centric is a Java based application and uses Siteminder.

2.8 Inventory Management

Description

PennDOT maintains a significant amount of inventory stock. Some stock is serialized and considered controlled items because of its intrinsic “street value.” Such items include registration stickers (until the end of calendar year 2016), Vehicle Title stock, and License Plates. PennDOT distributes this stock to many locations on a regular basis in addition to a much larger number of business locations around the State. PennDOT must track stock levels at all locations and manage the shipments of all controlled and non-controlled items.

The MVDLS Solution must build upon existing capabilities to include inventory management functions. The Inventory System must allow staff to manage the entire inventory process including the ability to track and trend usage of stock, transfer items from one location to another, allocate stock, replenish or otherwise adjust stock levels. It must support periodic reconciliation and track all controlled items by serial number.

PennDOT business partners must be able to use the Inventory System.

Current Systems:

The following systems currently fulfill the functionality of this subsystem:

- ▶ Inventory management for Motor Vehicle products is done in .Centric; the legacy application CARATS interfaces with .Centric.

2.9 External Interfaces & ETL

Description

The MVDLS Solution will exchange data with a variety of other computer systems including other state agencies, other states, the federal government, and private businesses. This data must be formatted and loaded or extracted on a variety of schedules working with data that may arrive or be requested in varying volumes.

The MVDLS Solution must include interface and ETL (data Extraction Transformation and Load) functionality that allows such external interfaces to be automated and implemented in a consistent manner. The subsystem will allow PennDOT to consistently support flat file, XML, web services and other interface approaches.

The Interface/ETL function must also manage a data dictionary that is used to support the definition of the fields and tables in PennDOT data model.

This subsystem should provide an application independent layer to exchange data between systems, including the E-Gov subsystem, and allow for easier replacement of systems and applications.

External Systems: There are a wide variety of external systems that should interface with PennDOT systems and a full list of interfaces is separately documented. Some key interfaces include, but are not limited to, the following:

- ▶ Federal
 - National Motor Vehicle Title Information System (NMVTIS)
 - Commercial Driver’s License Information System (CDLIS)
 - Problem Driver Pointer System (PDPS)

- Social Security Online Verification (SSOLV), Systematic Alien Verification for Entitlements (SAVE), & Passports
- State to State Driver Verification (DLVS)
- ▶ State & Local
 - Courts
 - Legislative Inquiry
 - Law Enforcement
 - Municipal (Parking, etc.)
 - Vital Records
- ▶ Third Party
 - Insurance Companies
 - Auto Industry
 - Electronic Titling
 - Electronic Liens
 - Third Party Electronic Vehicle Registrations

Current Systems:

The following systems currently fulfill the functionality of this subsystem:

- ▶ Technologies used for external interfaces include custom COBOL programs, MQ and SFTP.

2.10 E-Gov (Web Center)

Description

The MVDLS Solution must leverage the existing e-Gov public-facing “front end” website structure to provide additional functionality as defined in each business area.

PennDOT’s website supports both transaction processing and acts as a public information center. DMV customers conduct millions of transactions each year. Many of these transactions are completed in-person at a field office or through the U.S. Mail using paper documents. PennDOT can open many of these transactions to a facility on the Internet that will allow customers to securely conduct business. Web functions will allow businesses and individuals to securely identify themselves and process transactions. These may include, but are not limited to, the following:

- ▶ Applying for licenses and other products and services
- ▶ Submitting required documents & information
- ▶ Checking the status of a process or application
- ▶ Making payments
- ▶ Scheduling business license inspections
- ▶ Requesting & scheduling hearings
- ▶ Filing a complaint

PennDOT also provides real-time query of information to a variety of authorized businesses. This includes insurance companies who check the driving records of their customers and transportation companies who check the status of their drivers. The MVDLS Solution must support functions on PennDOT’s e-Gov structure that are secure and easy to use. This MVDLS Solution must allow authorized businesses to identify

staff, conduct queries, track usage and submit payment for services. As possible, record requests will be fulfilled electronically. The system should track all queries and access to the system.

Additionally, PennDOT's effectiveness depends upon getting proper information to its customers. The MVDLS Solution shall support views of a variety of important publicly available information. No User ID or authentication shall be required to view this type of information. Examples of the types of information available include, but are not limited to, the following:

- ▶ **License Requirements** – The public will be able to view the requirements and process for obtaining various personal, commercial and business licenses.
- ▶ **Consumer Reference Materials** – Driving manuals, tutorials, and other references will be available for viewing and downloading.
- ▶ **Business Reference Materials** – Information for businesses that will allow them to more easily reference procedure guides, understand their responsibilities and easily conduct business with PennDOT.
- ▶ **How-To Guides** – Simple guides for completing transactions and conducting business with PennDOT.

Current Systems:

The following systems currently fulfill the functionality of this subsystem:

- ▶ The public facing Driver & Vehicle Services website is a Java based application that interfaces with the legacy applications (CARATS & DL&C) using custom COBOL programs and IMS (TP) transactional processing.

Green Diagram Subsystems

The following functions/subsystems are all depicted as “Green” on the Blueprint diagram. This means that these systems are in place and meeting defined requirements. The MVDLS Solution must interface and/or integrate with these functions.

2.11 Electronic Document Management System (EDMS)

Description

PennDOT staff receives and generates a considerable amount of documents across all business operations. Most documents are associated with a particular customer and application, case, or other situation. PennDOT has a document management system to capture, organize, track, and retrieve these documents. The MVDLS Solution must leverage this existing system for image storage and retrieval.

Documents from the new system must be captured and retrieved at a variety of locations within PennDOT’s central office and at field offices around the state. The MVDLS Solution must integrate with the document management system to allow for quick scanning of documents while the customer is present as some documents will be returned after being scanned.

PennDOT staff should be able to track the versions of documents, annotate documents, and set retention schedules.

2.12 BI/BW, Reporting & Analysis

Description

The MVDLS Solution shall be built around a new data model and consistent database infrastructures. This consistency shall allow PennDOT to utilize their existing common set of reporting tools for reporting and analysis. PennDOT has an existing business intelligence/business mart reporting structure that supports both standard and ad hoc business reporting needs. The MVDLS Solution shall feed these existing reporting structures. The MVDLS Solution shall support:

Standard Reporting – These reports are designed to meet the regular needs of PennDOT operations. The reports are run and distributed on a regular basis and used to manage operations. The tools will allow these reports to be developed using primarily graphical means and scheduled to process automatically.

Ad-hoc Reporting – These reports are designed to meet special purpose needs. While similar to standard reports, they may not be scheduled or run repeatedly. The system should allow analysts to copy logic and designs from other reports to create new ones.

Analysis – Analytical “number crunching” focuses on accessing and performing unique calculations. Data must be manipulated by the reporting tools and available for extract into desktop tools such as Excel.

Data Dictionary – A comprehensive data dictionary must be available that allows analysts to quickly understand and use the data that is in the system. The MVDLS Solution database will contain hundreds of database tables and thousands of fields, many of which will have complex definitions.

Report Library – The Reporting and Analysis tools must have a function for documenting the library of reports, their purpose and current usage.

Scheduler and Distribution – This subsystem must be capable of scheduling reports to be run either one time or on a regularly scheduled basis. In addition, it must have a facility for storing, managing, and distributing completed reports electronically for access by authorized staff around the state.

2.13 Physical Print Center

Description

PennDOT has an existing Print Production facility that is highly efficient. This print center supports renewal notices and other high volume printing requirements. The MVDLS Solution shall leverage this existing print center for high volume printing.

2.14 Identity and Access Management

Description

The MVDLS Solution will include many subsystems, some of which will be custom developed while others will be “off-the-shelf” software packages. In addition, a variety of users including PennDOT staff and management as well as other state agencies, the public, and businesses shall have some form of access to the system or a limited number of subsystems.

The MVDLS Solution shall:

- ▶ Integrate with existing PennDOT security functionality to support identity and access rights, single sign-on and audit tracking.
- ▶ Use an Access Control software package to coordinate the identity and access rights of each user and the mechanism for providing access to the right software subsystems. In addition to centralizing security management, this subsystem could simplify user access by allowing for a single sign-on to access all authorized systems. This subsystem will also track and audit usage.

2.15 IVR/Call Center

Description

PennDOT offers selected transactions via Interactive Voice Response (IVR) and has no plans to expand this service channel. The existing call center must be able to use the MVDLS Solution to quickly obtain a consolidated view of customer data to support inquiries and processing.

3. Business Layer Functions

The subsystems in this layer represent the new functions that shall be implemented to replace three legacy systems:

CARATS – Commonwealth Automated Registration and Titling System

FR – Financial Responsibility System

DL&C – Driver Licensing & Control System

These functions shall be implemented and deployed in small iterations which shall be defined at the start of the MVDLS Project with the selected vendor. Generally, the functions will be addressed in the order presented below and as depicted in the diagram from left to right.

3.1 Vehicle Title & Registration

Description

During the period from 2006 to 2008, PennDOT documented a full set of Motor Vehicle requirements for the MVDLS Solution. The selected Contractor will be expected to validate these requirements with the business community and the technical team.

This subsystem shall include non-commercial and commercial titling and non-commercial vehicle registration. This subsystem shall also support Dealer title and registration transactions. All Title and Registration transactions shall be supported by this subsystem including initial issuance, renewals and transfers.

Snowmobile, ATV and Boat Titling and Registration shall also be covered within this subsystem; however, no historic requirements have been captured for these vehicles.

3.2 Driver License Issuance

Description

During the period from 2006 to 2008, PennDOT documented a full set of Motor Vehicle requirements for the MVDLS Solution. The selected Contractor will be expected to validate these requirements with the business community and the technical team.

This subsystem shall include non-commercial and commercial permitting, licensing, invitations to renew, camera cards and non-driver identification processing. Actual card production is a separate system outside the scope of the MVDLS project.

3.3 Sanctions

Description

During the period from 2006 to 2008, PennDOT documented a full set of Motor Vehicle requirements for the MVDLS Solution. The selected Contractor will be expected to validate these requirements with the business community and the technical team.

This subsystem shall include all the processing associated with all types of suspensions and restorations.

3.4 Information Services

Description

During the period from 2006 to 2008, PennDOT documented a full set of Motor Vehicle requirements for the MVDLS Solution. The selected Contractor will be expected to validate these requirements with the business community and the technical team.

This subsystem shall include the processing associated with driver records and information.

3.5 Business Partner Management

Description

During the period from 2006 to 2008, PennDOT documented a full set of Motor Vehicle requirements for the MVDLS Solution. The selected Contractor will be expected to validate these requirements with the business community and the technical team.

This subsystem shall include all processing associated with business partner contracts.