



A HISTORY OF CARDINAL

The Commonwealth's Efforts from 2004 to 2019 in Developing
an Enterprise Resource Planning (ERP) Application

A Report to the Joint
Legislative Audit and
Review Commission
(JLARC) by the
Department of
Accounts
June 30, 2019

Purpose of Report

This report provides background information to the Joint Legislative Audit and Review Commission (JLARC) to facilitate JLARC's review and evaluation of the Commonwealth's Enterprise Resource Planning (ERP) and related financial, payroll, personnel management and benefit eligibility systems (Cardinal) on a continuing basis pursuant to Chapter 854 Item 31 K.8. - *To aid in this effort, the Department of Accounts shall provide the following information to the Commission not later than June 30, 2019:*

- (i) a history of the Commonwealth's efforts from 2004 to date in developing an Enterprise Resource Planning (ERP) application, including budgeting, financials, payroll, personnel management and benefit eligibility systems;*
- (ii) all initial and revised project schedules for each current and proposed module or phase of Cardinal and the actual date of completion, including modules initially developed for use by the Department of Transportation;*
- (iii) all initial and revised cost estimates for each current and proposed module or phase of Cardinal and the actual cost to date, including modules initially developed and funded by the Department of Transportation;*
- (iv) the total amount of spending authorized to date including all working capital advances and appropriated amounts from all sources; and*
- (v) the estimated ten-year total cost for the planning, development, implementation, operation and maintenance of all current and planned modules or phases of Cardinal.*

History

Virginia Department of Transportation (VDOT) FMS II Upgrade Project

In September of 2004, VDOT began the analysis work to replace its financial management system, FMS II. FMS II was implemented in 1996 and was built on PeopleSoft 6.0 software. The application was heavily customized to meet specific transportation requirements. While functionally robust, the underlying technical components became outdated and vendor support for some key components was no longer available. Because FMS II supported VDOT's Federal Highway Administration (FHWA) billing of nearly \$2 million per day, the risk of failure was unacceptable and a system upgrade was necessary. In October of 2004, a Project Director was hired and a team of functional business analysts and technical resources were put in place. Over a 12-month period, the team documented as-is and to-be business processes, developed over 600 functional requirements, conducted a fit-gap assessment, and estimated the cost for implementation. The functional areas in scope were General Ledger, Accounts Payable, Accounts Receivable, Purchasing, Project Accounting, Time Entry and Capital Assets/Inventory.

It was during this period the Virginia Information Technologies Agency (VITA) was established. As part of this development, an Information Technology Investment Board (ITIB) was also established and charged with oversight of Commonwealth information technology investments, including approvals for new IT projects.

The ITIB made it clear to VDOT executives that agency-based systems were not likely to be approved by the board if the possibility of an enterprise, or statewide, solution could be implemented. Instead of pursuing approval for an agency-based solution, the department opted to participate in a newly formed statewide program, Virginia Enterprise Applications Program (VEAP), established to implement enterprise applications.

Virginia Enterprise Applications Program (VEAP)

The Virginia Enterprise Applications Program (VEAP) was established in 2005 to transform Commonwealth operations by re-engineering and re-tooling the enterprise application architecture of the Commonwealth using superior enterprise resource management and improved government performance. The program expected to provide the Commonwealth with “best practice” administrative and financial business processes supported by a state of the art suite of enterprise resource planning (ERP) solutions consistent with Virginia’s position among the states as financial and technology leader. To achieve this goal, the Commonwealth engaged CGI, Inc. in an Enterprise Applications Master Services Agreement (EAMSA) in December of 2005.

In November of 2006, the VEAP – Phase 1 project was initiated. The scope of this project included the efforts required to replace the Commonwealth's Accounting and Reporting System (CARS), the state’s 30-year-old mainframe system, several agency-based financial systems, including VDOT’s FMS II application, as well as ProBud, the state’s budget preparation and operating system. The project team consisted of subject matter experts across state government, including the VDOT team. The initial funding for the effort was \$11 million, with the remainder of the project expected to be funded by one or more revenue enhancement projects, including initiatives to outsource selected business processes in order to increase revenues to the Commonwealth (debt collection and cost recovery).

In 2007, the project team completed the development of the Future State Environment Documents for nine functional areas in scope to the project. Around this time, the Commonwealth determined the revenue enhancement initiatives proposed by CGI to fund the actual implementation of this project were not viable and CGI was unable to correct recurring performance issues. The project was canceled and the Commonwealth terminated their arrangement with CGI.

In order to move forward with a new financial management system, VDOT’s then Commissioner Greg Whirley, the Virginia State Comptroller, David Von Moll, and the Commonwealth’s then Chief Information Officer, Lem Stewart, established an unprecedented partnership to meet VDOT’s immediate need to replace its unsupported system, while paving the path to replace CARS. Hence, the Cardinal Program was created.

Cardinal Part 1: VDOT

Cardinal Part 2: Statewide Base System Implementation at Department of Accounts (DOA)

Prior to the “Cardinal” branding, the initial financial management system project was called the FMS Project. The first significant accomplishment for this project was the development of a comprehensive Request for Proposal (RFP) administered by VITA Supply Chain Management. The RFP team consisted of staff from VITA, VDOT, and DOA and included 6,000 functional requirements for the vendor community to address. The scope of the RFP was for both software and implementation services because the Commonwealth did not want to prescribe the solution, but rather have the vendor community propose those software products that would best meet the state’s requirements. Two vendor proposal submissions were received and both proposed PeopleSoft v9.0 software. PeopleSoft was – and continues to be – the leading ERP software for state organizations. Now owned by Oracle, Corp., PeopleSoft has been implemented in over 20 states and Oracle has committed to functional upgrades and support through at least 2030.

In 2009, after nearly a year of proposal analysis, software fit-gap activities, vendor qualification reviews, reference checks, and intense negotiations, the Commonwealth signed a contract with Accenture, LLP. The contract period was for ten years and was an open to buy contract, thereby allowing other public bodies to procure Oracle software or Accenture implementation services for ERP related activities. Similarly, the software contract with Oracle, also known as the Commonwealth Enterprise License Agreement (ELA), allows other state agencies to use the Cardinal suite of PeopleSoft products that were purchased at a significant discount. The Virginia Port Authority, for example, was able to leverage the ELA to acquire several PeopleSoft modules at no cost as part of their agency-based PeopleSoft implementation.

Statements of Work (SOW) were written against the background contract for the implementation of PeopleSoft software at VDOT and DOA, as well as for post-production services (PPS) to maintain the applications as they were deployed into production.

The first project undertaken by the Commonwealth had two parts. Part 1 was the replacement of VDOT’s agency-based financial management system, FMS II. Part 2 was the establishment of a “Base” financial management system for the Commonwealth to be implemented at the Department of Accounts only. Because the main justification for this project was reduction in risk related to aging and unsupported systems, the scope for each part was limited to replacing current functionality only. For VDOT, that translated into the implementation of 14 software modules, including products from both PeopleSoft Financials and Human Capital Management (HCM) ERP offerings. It did not include the Capital Assets/Inventory functionality VDOT was looking for because that functionality was not in the legacy FMS II application, and approvals were contingent on retiring existing functionality only.

To achieve the objectives of Part 2, establishing the base for the statewide financial system, four of the 14 modules implemented at VDOT were implemented at DOA. Those modules were General Ledger, Accounts Payable, Expenses, and Accounts Receivable (limited to funds receipts transactions only). These four modules provided the same basic functionality available

in the Commonwealth's Accounting and Reporting System (CARS). For both Parts 1 and Part 2, the project team consisted of VDOT and DOA employees and consultants. The implementations included the full project lifecycle across system design, configuration, development, testing, training, and deployment. Part 1 went into production in December 2011 and Part 2 in October 2012. With the conclusion of Part 2, Commissioner Whirley transitioned the sponsorship role and responsibilities for Cardinal to the Comptroller Von Moll.

In terms of objectives achieved, at the end of Part 1, VDOT was able to retire FMS II and over 5,000 end users were successfully transitioned, using Cardinal to process the complex financial operations of the state's \$4 billion transportation agency. Similarly, at the end of Part 2, DOA was successfully using Cardinal to manage its agency based financial records. An interface between Cardinal and CARS was developed to ensure summary Cardinal transaction records were recorded in CARS, which remained the system of record until all agencies transitioned to Cardinal. Both parts of the project were delivered on time and within budget. Just as importantly, this experience gave DOA the confidence that Cardinal could serve as the Commonwealth's enterprise financial management system and replace CARS, which was a stable but unsupported mainframe system approaching 40 years in service. Given the history of IT project failures in the Commonwealth, this was a significant accomplishment.

Inventory Module Planning (VDOT)

From January through August 2013, members of the Cardinal Project Team conducted a planning phase to assess the feasibility of replacing VDOT's legacy Inventory Management System (WebIMS) with Oracle's PeopleSoft Inventory module within the Cardinal system. The scope of this assessment included analyzing VDOT's Inventory business processes, creating the related business requirements, and performing a fit-gap against the PeopleSoft Inventory module. Additionally, an implementation estimate, project schedule, and staffing plan were created based on the finding from the assessment. This assessment was completed on time and within budget. VDOT executives opted not to move forward with the implementation given other priorities at the agency and with the Cardinal team.

Cardinal Part 3: Statewide Rollout of Base Financials

Following the successful implementation of the Cardinal Base Financial system at DOA, the State Comptroller approved the continued rollout of Cardinal to the remainder of the state agencies. The Cardinal Part 3 Project, which formally commenced in February 2013, involved the statewide rollout of the "Base" solution to approximately 280 agencies across the Commonwealth of Virginia. The key objective of this project was the timely decommissioning of CARS upon successful statewide rollout.

The Cardinal Part 3 Project included system configuration, functional and technical design and development, enhancement of the Cardinal technical architecture, full change management efforts (i.e., communications, training, organizational assessment) and Project Management

Office (PMO) activities. Part 3 consisted of two releases, or waves, of deployment to the state agencies. Wave 1 included rolling out the system to agencies who primarily processed transactions online. Additionally, this release served as a pilot for the Cardinal interface program, in which several agencies who interfaced transactions from agency-based systems to the statewide system would interface to Cardinal as part of the Wave 1 deployment. This approach allowed the project team to work out any interfacing issues in a controlled environment, without affecting the majority of interfacing users. The Cardinal Project successfully deployed Wave 1 in October 2014.

Wave 2 focused on addressing minor interface issues and the completion of system deployment to the remaining state agencies. This included the remainder of the interfacing agencies (19 unique statewide interface programs containing nearly 400 instances of interface runs), as well as online agencies that needed to be grouped with interfacing agencies because of related financial management processing responsibilities.

At the conclusion of Wave 2 in February 2016, all state agencies using CARS were migrated to Cardinal. The cutover to Cardinal was very smooth, with no disruptions to vendor or locality payments. At the start of fiscal year 2017, Cardinal became the Commonwealth's financial management system of record, used by ~8,500 users across the Commonwealth. The 40-year old mainframe system was replaced by a system with modern transaction processing, including automated workflows and self-service capabilities for operational efficiencies. The system provided visibility and transparency with real-time reporting access to enterprise-wide data, online query tools and transaction auditing for better internal controls. In addition to modern, standard business processes based on industry best practices, the Commonwealth implemented a redesigned Chart of Accounts (COA) and a standard, shared vendor database for the Commonwealth – a goal that eluded the Commonwealth for decades.

A first release of Cardinal Business Intelligence (BI) Reporting was also implemented with the completion of the Cardinal Part 3 Project. BI provides system users with powerful data extract and reporting capabilities that are more advanced than reporting tools routinely available to many Cardinal users. The Cardinal Part 3 Project successfully concluded in April 2016 and the official VITA Project Management Division (PMD) project closeout occurred in September 2016 – on time and under budget.

The Auditor of Public Accounts (APA) has audited Cardinal each year since the go live in 2011. Year after year, the system has received positive audit results with no material findings. The Cardinal Financial system meets over 6,000 Commonwealth business requirements and serves nearly 300 state agencies. The Department of Accounts is confident no other solution could have met the Commonwealth's complex needs as well as Oracle's PeopleSoft applications.

Cardinal eVA Integration

While the Part 3 implementation was still in progress, the Department of General Services and the Department of Accounts were tasked with assessing business processes and requirements for

the Commonwealth's procure-to-pay functions in an effort to integrate the statewide procurement system (eVA) with the soon to be statewide financial system, Cardinal. This effort began in March of 2015 and teams from both agencies worked collaboratively to evaluate the related business processes, as well as develop requirements, and perform fit-gap analysis against each system based on the desired new business processes. DOA incurred roughly \$500,000 in expenses for this initiative, but was reimbursed by the Department of General Services.

The evaluation concluded in August of 2015. The results showed the effort to systematically connect the procure-to-pay transactions between the two systems would be significant, and very expensive. In addition, the revamped business processes would be complicated and inefficient for the end user. A decision was made to abandon the integration, and the Cardinal team returned their complete focus back to the Cardinal Financials implementation.

Cardinal Post Production Support (PPS)

Once any part of a system goes live in a production environment, it must receive the proper attention and resources to effectively support the application, its related business processes and the system users. Because the Commonwealth made a significant investment in the Cardinal Financials project, a dedicated support team was established to ensure the system's continued success.

The Cardinal Post Production Support (PPS) team is responsible for maintaining all Cardinal modules and system functionality once they deploy into the Cardinal production environment. This includes the PeopleSoft applications and all supporting technology. Cardinal PPS became effective when VDOT went live with Cardinal Financials in 2011.

The mission of Cardinal PPS is to operate, maintain and enhance a fully functional financial management enterprise system including limited Human Capital Management (HCM) components for VDOT and a Business Intelligence (BI) solution. The PPS team is charged with meeting all of the Commonwealth's business and technical requirements. Requirements are continuously updated based on any new project implementations and applicable updates resulting from changes to business policies and practices. The PPS team is also responsible for working with the thousands of end users who rely on Cardinal to effectively perform their daily job duties.

Cardinal is considered a mission critical system for the Commonwealth, and as such, must be available to end users on a daily basis. Additionally, Cardinal processing requires 24 X 5 support due to the complex nightly batch schedule required to meet business requirements. PPS is responsible for working closely with VITA and its business partners across a wide range of functions, including batch operations, help desk ticket management, and technical infrastructure solutions. Cardinal PPS is comprised of functional and technical resources from both the Commonwealth and Accenture.

VDOT Separate Instance Analysis

Amid growing concerns about competing priorities with the Part 3 implementation, VDOT initiated an effort to study the feasibility of creating a separate instance of the Cardinal system for their distinct use. From November 2014 through May 2015, members of the Cardinal team analyzed the impacts of creating a separate VDOT instance of PeopleSoft Financials and HCM from the statewide Cardinal production instance and integrating with the Cardinal statewide instance. The project scope included assessing the different components of the Cardinal Post Production Support (PPS) model across Tier 1, Tier 2, and Tier 3 support, including impacts to human resources, as well as any supporting technologies (e.g., ITSM, VSM, SharePoint, and Microsoft (MS) Project). Additionally, the team conducted an infrastructure assessment, including analyzing the hardware and software necessary to support a VDOT instance across the database, application, and web layers, as well as the batch and interface architectures for PeopleSoft. Finally, a functional approach assessment examined the VDOT business processes to determine what Reports, Interfaces, Conversions, and Extensions (RICE) and configurations needed to be added, modified, or removed in order for VDOT to operate in a separate instance and integrate with the Cardinal statewide instance. This analysis was completed on time and within budget. VDOT executives determined it would not be cost-effective for the agency to implement a separate instance of the Cardinal solution.

Cardinal Upgrade

From April 2016 to March 2017, the Cardinal team undertook a major system upgrade initiative. Because the Cardinal team had been focusing on implementing the financial management system for VDOT and for the statewide rollout, there had been no real opportunity to upgrade the software or supporting technical architecture components initially implemented since the 2011 original go live to ensure continued software and hardware vendor support. The scope of the Cardinal Upgrade project was to bring all components forward to fully vendor-supported levels and to reduce any risk associated with unsupported systems. The focus was on upgrading the technical components of the solution to meet the Commonwealth requirements, not on implementing new functionality. The project tasks included upgrading the PeopleSoft software to v9.2 for both Financials and Human Capital Management (HCM), PeopleTools to v8.55, Oracle Database to v12c, Phire to v11, and User Productivity Kits (UPK) to v12.1 and OBIA to v10.2. From an infrastructure perspective, the project also included upgrading the hardware used to support the PeopleSoft architecture. The new hardware was built on Oracle Linux 7 and Windows 2012 R2 Operating Systems. From a change management perspective, the project included the review and update of all statewide and VDOT training materials affected by the new version of the software. The Cardinal Upgrade spanned the Requirements of Part 1, Part 2, and Part 3 and covered all users of the Cardinal system.

Because the scope of the upgrade included every layer of the solution from hardware, operating system, database and application, the system had to be thoroughly retested. The upgraded solution successfully went into production in March of 2017 (final project closeout in June 2017)

with no impact to users or business partners. The project was delivered on time and within budget.

After the Base Financial system was implemented statewide and the Cardinal upgrade completed, DOA had envisioned expanding the Cardinal Base System functionality to include some of the additional modules that were implemented at VDOT, including potentially project accounting, accounts receivable and fixed asset accounting. With a more robust statewide financial management system, DOA knew that some agency-based applications could be retired to reduce statewide IT costs. Before this strategy was able to come to fruition, new risks emerged with the state's statewide payroll system, CIPPS.

Cardinal Payroll

The Department of Accounts is responsible for operating the statewide payroll system, the Commonwealth Integrated Payroll/Personnel System (CIPPS). CIPPS currently serves as the payroll system for the majority of the Commonwealth's agencies. CIPPS is a mainframe application built in 1986 that produces payroll for over 100,000 salaried and hourly employees. In early 2015, Infor Global Solutions, the software vendor for CIPPS notified DOA of its intent to discontinue software support as of May 31, 2018. As a result, DOA leveraged the Cardinal team to conduct a payroll system replacement assessment from May 2015 through September 2016. Representatives from over 100 agencies participated in this assessment effort, with the result being a comprehensive set of approximately 1,000 requirements needed for a new statewide payroll system that covered 11 core business processes (and over 30 sub-processes).

As part the planning process, a full fit-gap analysis was conducted to assess the Commonwealth's requirements against the PeopleSoft software to ensure the solution would meet Virginia's needs. While an ideal goal is to always improve business processes, sometimes significant obstacles impede such goals. This was certainly true for the Commonwealth. Some of the constraints the Commonwealth faced included:

- The autonomy of many of the individual agencies, authorities and facilities that are processed in the statewide payroll system, ultimately resulting in a more complex processing structure not easily accommodated by delivered software.
- No single data source for the personnel and/or human resource information required to process payroll for a broad spectrum of employee types, many of which have unique payroll processing implications.
- While the Commonwealth is an "enterprise", many of the state entities have their own Federal Identification Number. In a standard system implementation, each one of these would be treated like a unique company. However, in the Commonwealth, they are not independent when it comes to payroll processing, approvals, data access, etc., which adds to the complexity of the system implementation.
- The Commonwealth pays most salaried employees twice each month, and there is not adequate lag time between pay period end dates and payment dates to allow for thorough data validation or to process the related accounting entries in the proper accounting

periods without significant effort. Payrolls must be processed before the corresponding timesheets and leave data are available, resulting in additional reconciliation effort and adjustments. Delivered software does not work this way.

- Since there are no standard hours per pay period for bi-monthly salaried employees (number of workdays in any pay period can vary), delivered software processes would not work properly.

Because of such constraints (and many others), a software as a service (SaaS) model was not considered a viable option for the Commonwealth. Similarly, to the statewide rollout of Financials, the Cardinal team needed the ability to make certain customizations to the delivered software in order to meet these Commonwealth-specific payroll processing needs. While the fit-gap analysis proved that PeopleSoft could handle the overwhelming majority of the Commonwealth's requirements, it was imperative the Commonwealth had the flexibility to modify our PeopleSoft applications. In addition, the delivered integration with the already implemented PeopleSoft financials solution was a much-desired benefit of this solution. Given all of this, coupled with the fact that DOA had a very skilled Cardinal project team in place (with a very successful Financials implementation already completed), the decision to expand and leverage the Cardinal footprint to include Payroll was viewed as necessary to reduce the total cost of ownership to the Commonwealth. The approval and funding for the Cardinal Payroll Project was provided and the project officially launched in August 2016.

The functional areas in scope were limited to Payroll and Time & Attendance. Similar to the Financials project, the Payroll Implementation project objective was to decommission the CIPPS mainframe application as quickly as possible. Five PeopleSoft modules were needed to meet the business requirements related to this scope. In addition to the Payroll module, Time and Labor, Absence Management, limited Human Resources, and ePay modules were to be implemented. The project also included fully integrating these new functions with the existing Cardinal Financials modules in order for the Commonwealth to take advantage of the power of an Enterprise Resource Planning (ERP) system.

A dedicated Cardinal Payroll Project Team was established and the project was scheduled to go live with Release 1 of the new payroll system in April 2018 with about 15% of the CIPPS user population and Release 2 in October 2018 with the remaining users. The CIPPS software support vendor agreed to continue software support under an extended support contract through June 2019.

During data conversion and payroll parallel testing of the Cardinal payroll system in May 2018, significant issues were identified with the data provided by the Department of Human Resource Management's (DHRM's) Personnel Management Information System (PMIS). Testing issues included some employees being paid twice while many others not being paid at all due to gaps in legacy data files.

PMIS was originally implemented in 1978 and its companion application, the Benefits Eligibility System (BES) in 1981. These mainframe applications had served the Commonwealth for nearly 40 years. Multiple systems and organizations require reliable human resource and health

benefits data via system interfaces. For financial reasons, the mainframe these systems resided on had to be retired and PMIS and BES were migrated to a web-based platform in 2017. Following the migration, ongoing technical issues plagued these systems.

Despite the best efforts of DHRM and the DOA Cardinal Team, the data conversion issues could not be sufficiently resolved to convey confidence that the on-going data exchange between PMIS and the Cardinal Payroll system would result in accurate payroll processing for the Commonwealth's 100,000 in-scope employees. Although the payroll project implementation was going very well, was on time and within budget, DOA made the decision to pause the Cardinal Payroll Project and determine a course forward for the payroll project given the risk associated with the critical on-going required HR data exchanges.

Cardinal Human Capital Management (HCM)

After consultation with the Secretaries of Finance and Administration, DOA and DHRM agreed to modify the scope of the current Cardinal Payroll Project to include a planning effort and an analysis phase to determine how to include the replacement of PMIS and BES within the Cardinal PeopleSoft solution. This decision resulted in the Cardinal HCM Project. The scope of this new project included the existing Payroll and Time & Attendance functional areas, as well as the front-end human resource and health benefits administration business processes. DOA and DHRM were joint agency sponsors for this effort and the Cardinal Project Team expanded to include three DHRM staff resources.

This planning effort began in July 2018 and concluded in April 2019. During this period, the project team engaged a cross-section of agencies to gather, document, and review over 1,400 business requirements and 17 business process flows and narratives (comprised of 49 sub-processes). These served as input to a comprehensive fit-gap analysis against the PeopleSoft HCM software. The key deliverables for this phase were an implementation project schedule, staffing plan, and cost estimate to accommodate the new, much broader project scope. Because of the urgency to replace these systems in a timely manner, the analysis was limited to the functionality offered in CIPPS, PMIS, and BES and did not include additional functionality (e.g. Recruit Management, Workforce Planning) typically offered in an ERP.

In May 2019, the Secretaries of Finance and Administration approved the proposed implementation effort for the Cardinal HCM Project. The project officially kicked off in June 2019 with a 31-month implementation schedule. The primary objective of this project is to reduce the risk to the Commonwealth associated with aging, unsupported, and unstable systems. At the conclusion of the project, four mission-critical systems, CIPPS, PMIS, BES and TAL (Time Attendance and Leave), will be replaced by Cardinal. Additionally, approximately 20 supporting applications at DOA and DHRM will be retired because Cardinal will include the functionality to replace them. This approach will allow the Commonwealth to take advantage of the proven ERP software, and implement standard government administrative processes across the Commonwealth. By leveraging the investment already made in Cardinal, the solution will not only meet the complex HCM business requirements, but will also deliver seamless

integration between these modules, as well as with Cardinal Financials. This will allow the Commonwealth to take the much-needed step towards true systems and support integration under a unified PPS environment. Finally, with all of these core systems residing on same Oracle PeopleSoft platform, the Commonwealth will be able to utilize vendor supplied software updates for functional and technical improvements (Oracle has committed through at least 2030), as well as leverage the marketplace for continued system support.

On top of a broad functional scope, the Commonwealth has complex agency and locality system usage profiles, which will require significant configuration, some software modification, extensive data conversion, development of dozens of interfaces and reports, and a robust, but flexible, change management approach. The scope includes all state agencies and Commonwealth localities using PMIS and BES, as well as all state agencies using CIPPS payroll. That translates into 665 different organizations. The team is planning for 10,000 core users who will require instructor-led training and 200,000 self-service users (including 46,000 Commonwealth retirees and 48,000 Commonwealth locality employees) who will require web-based training.

To reduce risks associated with this complex project, the Cardinal HCM system will deploy to agencies and localities in two releases. All participants will track to the same schedule for the design, build, and test phases. At that point, a subset of the user population will continue through the deployment activities and go-live as a pilot group. Once the system stabilizes and users are processing transactions without significant issues, the team will move forward with the remainder of the user base for a second deployment. The first release will be limited to those agencies and localities that will only use the health benefits functionality, as well as roughly 10% of the current CIPPS user base (including VDOT, DOA, and DHRM), and select interfacing agencies needed to help pilot the interface program before full deployment. The first release is planned for March 2021 and the second release, to include all remaining agencies, is planned for October 2021. Once the second release agencies have deployed to Cardinal HCM, transaction processing in the legacy systems will cease and Cardinal will become the Commonwealth's system of record for payroll, human resources, and health benefits functions.

In order to expeditiously address the risks associated with its' failing or unsupported legacy systems, the Commonwealth has extended its implementation services contract with Accenture until the end of 2022. This will allow the Commonwealth to leverage the existing Cardinal project team (including Accenture and Commonwealth contractors) to complete and stabilize the Cardinal HCM Project and production environment. Additionally, this will give the Commonwealth sufficient time to execute an RFP for future support services and allow for knowledge transfer activities between the incoming vendor and Accenture.

Future Possibilities for Cardinal

Currently, there are no specific projects planned after the completion of the Cardinal HCM implementation. However, there are many other opportunities to leverage the strengths of the Cardinal program beyond the current solutions. For example, many state agencies are greatly

anticipating the opportunity to utilize the Cardinal financial management modules offered to VDOT. Implementing broader system functionality will be the catalyst for agencies to begin thinking about retiring their agency-based systems in favor of enterprise application offerings. Additionally, DHRM has other core HR functions that could potentially be more effectively managed with additional Cardinal HCM modules. Finally, leveraging the Commonwealth's investment in Cardinal by consolidating more of our administrative business processes in a system designed specifically for that purpose would result in operations that are more streamlined, providing improved efficiencies and greater data visibility and effectiveness.

Key Contacts

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Supplemental Information

Cardinal Enterprise Resource Planning System Status (Table 1), Funding Sources Applied (Table 2), and Ten-Year Total Cost Projection (Table 3) information follows.

Table 1
Cardinal Enterprise Resource Planning System Status

Cardinal Projects and Initiatives	VITA PMD Oversight	Status	Start Date (Month/Year)	Planned End Date (Month/Year)	Actual End Date (Month/Year)	Planned Budget	Expenses through 05/31/19	Schedule Results	Budget Results
Projects									
Financials Part 1 (VDOT) and Part 2 (DOA)	Yes	Complete	Apr-08	Mar-13	Mar-13	\$ 58,337,353.00	\$ 56,816,853.00	On Time	Under Budget
Financials Part 3 (Statewide Waves 1 and 2)	Yes	Complete	Feb-13	Sep-16	Jun-16	60,000,000.00	54,470,040.97	Ahead of Schedule	Under Budget
Human Capital Management (HCM) (transitioned from the Payroll Implementation only project)*									
Cardinal Payroll Planning		Complete	May-15	Sep-16	Sep-16				
Cardinal Payroll Implementation		Re-scoped*	Aug-16	Jun-19	Not Applicable*				
Cardinal HCM Analysis		Complete	Aug-18	Jun-19	Jun-19				
Cardinal HCM Implementation		In Progress	May-19	May-22	TBD				
Cardinal Upgrade (Major Version Release)	Yes	Complete	Apr-16	Jun-17	Jun-17	15,000,000.00	13,416,026.55	On time	Under Budget
Initiatives									
Post Production Support (Regular System Maintenance)	No	Ongoing	Oct-11	TBD	TBD	Not Applicable	118,703,787.70	Not Applicable	Not Applicable
Inventory Module Planning	No	Complete	Jan-13	Aug-13	Dec-13	Not Applicable	895,658.00	Not Applicable	Not Applicable
Separate Instance Analysis	No	Complete	Nov-14	May-15	May-15	Not Applicable	297,265.50	Not Applicable	Not Applicable
Total							\$286,565,370.36		

*The Cardinal Payroll Implementation project was initially scoped to include a deployment of statewide Payroll and Time & Attendance functionality. The start date was August 2016, with a planned end date of April 2019. The original budget was \$40 million. After significant challenges obtaining conversion data from the statewide human resource management system (PMIS), the project budget was revised to \$43 million and the planned end date shifted to June 2019. After repeated attempts to resolve the data conversion issues, the Payroll Implementation project was initially paused while an evaluation (HCM Analysis) was conducted to determine how to replace the PMIS (and companion Benefits Eligibility System) along with the already planned Payroll and Time & Attendance replacement. In May 2019, the Payroll Implementation project was re-scoped to the HCM Implementation project. The planned end date was revised to April 2022 and the planned budget was increased to \$131,820,000.

Table 2

Cardinal Enterprise Resource Planning System Funding Sources Applied

Cardinal Projects and Initiatives	VITA PMD Oversight	Status	Primary Funding Source	Expenses Applied to Primary Funding Source (as of 05/31/19)	Secondary Funding Source	Expenses Applied to Secondary Funding Source (as of 05/31/19)
Projects						
Financials Part 1 (VDOT) and Part 2 (DOA)	Yes	Complete	Special Revenue (VDOT)	\$ 47,389,770.85	Working Capital Advance	\$ 9,427,082.15
Financials Part 3 (Statewide Waves 1 and 2)	Yes	Complete	Working Capital Advance	54,470,040.97	Not Applicable	Not Applicable
Human Capital Management (HCM) (transitioned from Payroll Implementation only project)	Yes	In Progress	Working Capital Advance*	41,715,644.88	General Fund (DOA)	250,093.76
Cardinal Payroll Planning Implementation		Complete				
Cardinal HCM Analysis		Re-scoped				
Cardinal HCM Implementation		Complete				
Cardinal HCM Implementation		In Progress				
Cardinal Upgrade (Major Version Release)	Yes	Complete	Working Capital Advance	8,559,424.95	Special Revenue (VDOT)	4,856,601.60
Initiatives						
Post Production Support (Regular System Maintenance)	No	Ongoing	Internal Service Fund (DOA)	98,734,726.24	Special Revenue (VDOT)	19,969,061.46
Inventory Module Planning	No	Complete	Special Revenue (VDOT)	895,658.00	Not Applicable	Not Applicable
Separate Instance Analysis	No	Complete	Special Revenue (VDOT)	297,265.50	Not Applicable	Not Applicable
*A working capital advance (WCA) in the amount of \$82,400,000.00 was authorized by the 2019 Virginia Acts of Assembly Chapter 854 Item 259B.1.b. As of May 31, 2019, the available balance of this WCA was \$40,504,596.90.						

Table 3

Cardinal Enterprise Resource Planning System Ten-Year Total Cost Projection

PROJECTS											
	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	Total
Implementation of Statewide HCM											
Software	\$ 5,915,000	\$ 2,157,000	\$ 1,734,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,806,000
Hardware	5,090,000	5,090,000	35,500	-	-	-	-	-	-	-	10,215,500
Internal Staff	1,694,007	1,659,452	473,894	-	-	-	-	-	-	-	3,827,353
Consultant Services	23,567,930	25,161,660	9,203,394	-	-	-	-	-	-	-	57,932,984
Other	884,000	806,000	338,000	-	-	-	-	-	-	-	2,028,000
Contingency	-	-	8,500,000	-	-	-	-	-	-	-	8,500,000
Total Estimated Project Costs	\$ 37,150,937	\$ 34,874,112	\$ 20,284,788	\$ -	\$ 92,309,837						

OPERATIONS											
	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	Total
Annual Maintenance (FIN)											
Software	\$ 2,870,855	\$ 2,956,981	\$ 3,045,690	\$ 3,137,061	\$ 3,231,173	\$ 3,328,108	\$ 3,427,951	\$ 3,530,790	\$ 3,636,713	\$ 3,745,815	\$ 32,911,135
Hardware	6,489,000	6,683,670	4,000,000	4,120,000	4,243,600	4,370,908	4,502,035	4,637,096	4,776,209	4,919,495	48,742,014
Internal Staff	2,772,846	2,856,031	2,941,712	2,800,000	2,884,000	2,970,520	3,059,636	3,151,425	3,245,967	3,343,346	30,025,484
Consultant Services	9,932,143	10,230,107	10,537,011	10,200,000	10,506,000	10,821,180	11,145,815	11,480,190	11,824,596	12,179,333	108,856,375
Other	356,343	367,033	378,044	389,386	401,067	413,099	425,492	438,257	451,405	464,947	4,085,073
FIN Subtotal	\$ 22,421,187	\$ 23,093,823	\$ 20,902,457	\$ 20,646,446	\$ 21,265,840	\$ 21,903,815	\$ 22,560,929	\$ 23,237,757	\$ 23,934,890	\$ 24,652,937	\$ 224,620,081
Annual Maintenance (HCM)											
Software	\$ -	\$ 721,000	\$ 1,500,000.00	\$ 2,000,000	\$ 2,060,000	\$ 2,121,800	\$ 2,185,454	\$ 2,251,018	\$ 2,318,548	\$ 2,388,105	\$ 17,545,924
Hardware	-	1,856,575	5,000,000	5,150,000	5,304,500	5,463,635	5,627,544	5,796,370	5,970,261	6,149,369	46,318,255
Internal Staff	-	1,268,960	2,640,000	3,520,000	3,625,600	3,734,368	3,846,399	3,961,791	4,080,645	4,203,064	30,880,827
Consultant Services	-	2,966,194	6,171,000	8,228,000	8,474,840	8,729,085	8,990,958	9,260,686	9,538,507	9,824,662	72,183,933
Other	-	180,250	375,000	500,000	515,000	530,450	546,364	562,754	579,637	597,026	4,386,481
HCM Subtotal	\$ -	\$ 6,992,979	\$ 15,686,000	\$ 19,398,000	\$ 19,979,940	\$ 20,579,338	\$ 21,196,718	\$ 21,832,620	\$ 22,487,598	\$ 23,162,226	\$ 171,315,420
Total Estimated Operations Costs	\$ 22,421,187	\$ 30,086,802	\$ 36,588,457	\$ 40,044,446	\$ 41,245,780	\$ 42,483,153	\$ 43,757,648	\$ 45,070,377	\$ 46,422,489	\$ 47,815,163	\$ 395,935,502

COMBINED PROJECTS AND OPERATIONS											
	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	Total
Total Estimated Project and Operations Costs*	\$ 59,572,124	\$ 64,960,914	\$ 56,873,245	\$ 40,044,446	\$ 41,245,780	\$ 42,483,153	\$ 43,757,648	\$ 45,070,377	\$ 46,422,489	\$ 47,815,163	\$ 488,245,339

*Projected costs assume no new Cardinal analysis/implementation or major system upgrade efforts during this ten year period.