Department of Labor & Employment

Five Year IT Roadmap

Aligning business goals and technology forecasts
October 2016

COLORADO
Governor's Office of
Information Technology
Serving people serving Colorado

Table of Contents

Introduction

Purpose of Roadmaps

In 2015 the Joint Technology Committee (JTC) requested that the Governor's Office of Information Technology (OIT) collaborate with our agency customers to create Five Year IT Roadmaps. The Roadmaps are intended to:

Establish a five year planning horizon to better understand funding needs
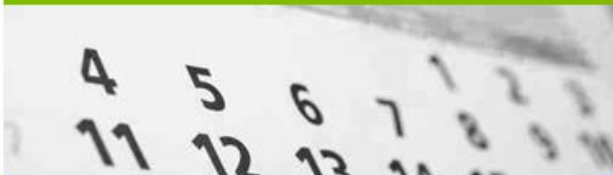
Let business needs drive technology vendor selection

Reduce fragmented funding requests

Manage hardware and software lifecycles to set proactive refresh cycles

Leverage best practices to reduce complexity and maximize resources

Employ technology standards to deliver consistent and cost effective solutions

Utilize enterprise solutions to reduce costs

Support new technical platforms such as mobile applications and customer self-service

Align technologies across agencies to deliver more consistent and reliable service

Jointly plan technology changes and upgrades to minimize downtime

Converge infrastructure for more seamless user experience

Understand dependencies between network, server, database, development, and desktop support groups

Define technology priorities to ensure appropriate balance of critical functions versus innovative outputs

Determine feasibility and impact of upcoming technology initiatives

Allow cost/benefit of initiatives to drive prioritization

Assumptions

Environment

- Decisions related to major agency initiatives or projects may alter this plan.
- Infrastructure and security needs to meet state and federal compliance will be maintained.
- As it relates to this document, the term "enterprise" is used to define high-impact, statewide initiatives driven by OIT.

Drivers of Cost and Complexity

- Cost estimates are based on initial quote/vendor information and past initiatives and are subject to change.
- It is estimated that overall IT costs will increase by three percent per year.
- For Decision Items, cost allocation to customer is based on OIT's current Common Policy rates.

Assumed Constants

- Staffing is assumed to remain constant, unless otherwise noted.
- Desktop hardware refresh cycles are executed on a four-year lifecycle.

Changes to Roadmap

- This is a living document which will be updated once per year; timelines and cost estimates are subject to change.

Agency Business Objectives

Maximizing technology resources requires agency business objectives to drive technology investments, rather than letting technology trends drive business strategy. For OIT to provide the most appropriate solutions to customers, there must be a clear line-of-sight to an agency's strategy, goals, and objectives. The objectives below have been identified by the Colorado Department of Labor & Employment (CDLE), and submitted to the Governor's Office of State Planning and Budgeting (OSPB) to reflect the agency's top strategic priorities over the next three years.

#1-Improve Customer Satisfaction by Five Percent Annually

CDLE will be creating and implementing an ongoing customer survey, striving to achieve a five percent increase in customer satisfaction annually by fostering an agency-wide culture of service based on values, utilizing customer feedback and strategic initiatives to improve service delivery, and maintaining an effective Continuity of Operations Plan (COOP).

#2- Improve Employee Survey Results by Five Percent Annually

CDLE strives to establish a culture of engagement and accountability that affords employees the opportunity, structure, and tools to thrive and provide an exceptional customer experience. Because employee satisfaction has been shown to increase customer satisfaction, productivity, and performance, CDLE is striving to achieve a five percent increase in employee satisfaction annually. Strategies for reaching this goal include maintaining the Employee Quality and Excellence Plan (EQEP) as a tool, maintaining Covey as the foundation of the Leadership Development Program, continuing work with succession planning, improving the CDLE rewards and recognition program, and encouraging the practice of appropriate change management.

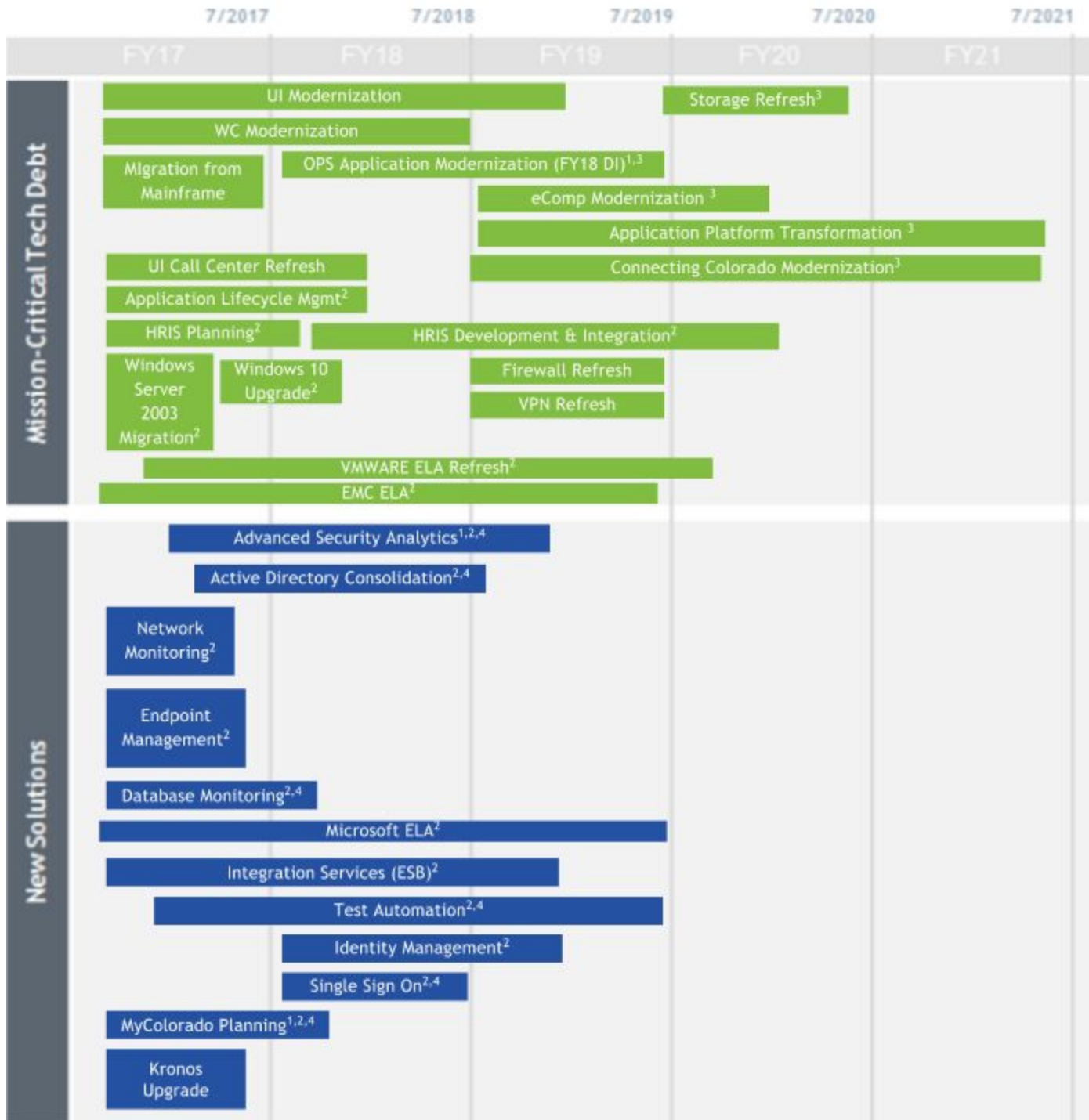## #3- Implement Process Improvement

CDLE will be implementing five key process improvements annually to maximize the value they bring to their customers and stakeholders. This will be done by prioritizing, implementing, and reporting on process improvements, using the Process Improvement Forum and Lean.

#4- Implement Optimal Technology Solutions

CDLE will be employing a multitude of strategies to implement optimal technology solutions that create an exceptional customer experience, including approaching technology projects with a focus on better serving the customer and actively engaging and partnering with OIT.

Agency Roadmap

Timeline

A Gantt-style timeline chart with columns for 7/2017 (FY17), 7/2018 (FY18), 7/2019 (FY19), 7/2020 (FY20), and 7/2021 (FY21).

Mission-Critical Tech Debt
- UI Modernization
- Storage Refresh[3]
- WC Modernization
- Migration from Mainframe
- OPS Application Modernization (FY18 DI)[1,3]
- eComp Modernization[3]
- Application Platform Transformation[3]
- UI Call Center Refresh
- Connecting Colorado Modernization[3]
- Application Lifecycle Mgmt[2]
- HRIS Planning[2]
- HRIS Development & Integration[2]
- Windows Server 2003 Migration[2]
- Windows 10 Upgrade[2]
- Firewall Refresh
- VPN Refresh
- VMWARE ELA Refresh[2]
- EMC ELA[2]

New Solutions
- Advanced Security Analytics[1,2,4]
- Active Directory Consolidation[2,4]
- Network Monitoring[2]
- Endpoint Management[2]
- Database Monitoring[2,4]
- Microsoft ELA[2]
- Integration Services (ESB)[2]
- Test Automation[2,4]
- Identity Management[2]
- Single Sign On[2,4]
- MyColorado Planning[1,2,4]
- Kronos Upgrade

[1]*Pending Decision Item*
[2]*Enterprise Initiative – see Appendix A: Enterprise Roadmap*
[3]*Unfunded – see Financial Overview*

Agency Initiative Details

Mission-Critical Technology Debt

These initiatives are vital to the functioning of normal government services. Delay in pursuing the initiatives will create a need for future effort and resources that surpass the resources needed if the initiative were carried out proactively.

Application Platform Transformation

CDLE's remaining application portfolio is a disparate collection of more than 100 Commercial-Off-the-Shelf (COTS) vendor software products satisfying specialized requirements or are custom built in-house applications written in a diverse collection of programming languages, many of which are at, or will soon reach, end of life. Solution options are being identified in FY16-17 in anticipation of an FY18-19 funding request.

Connecting Colorado Modernization

The Division of Employment and Training is currently investigating options for modernizing its aged Connecting Colorado application. Connecting Colorado connects job seekers, job providers, and training providers. The application was custom designed and is completely vendor hosted and maintained. It is built using an outdated programming language and continues to be tailored to meet stakeholder needs. Solution options are being identified in FY16-17 in anticipation of an FY18-19 funding request.

eComp Modernization

The Division of Labor Standards and Statistics is in the process of evaluating options for modernizing its aged claims management system (eComp). eComp is used to track information related to claims filed by employees who allege that their employer owes them wages that are past due or have violated some aspect of the Colorado Wage Law. The current application is developed in an application language which will soon be at end of life, and which does not easily support major modifications. Rewriting sections of code is time consuming and can also impact other portions of the program, thus causing unexpected cascading issues. Consequently, legislative changes made in January 2015 have not been addressed within the application and have forced other manual processes to be developed outside of the system. Solution options are being identified in FY16-17 in anticipation of an FY18-19 funding request.

Oil and Public Safety Application Modernization

The Division of Oil and Public Safety (OPS) is in the process of evaluating options for modernizing its aged licensing, permitting, and inspection applications, all of which are currently developed in application languages which are, or will be soon, at end of life. Funding is being requested in FY17-18 to migrate, and subsequently modernize, current OPS applications onto an OIT Enterprise Application Platform (e.g., Salesforce).

Server/Storage Refresh

CDLE's infrastructure environment hardware will reach end-of-life in December 2019. Planning is underway to identify local needs and OIT Enterprise opportunities.

Unemployment Insurance Application Modernization

The Division of Unemployment Insurance has undertaken a multi-year modernization of its core technology systems - Colorado Unemployment Benefits System (CUBS) and Colorado Automated Tax System (CATS). This project involves a code conversion of the existing mainframe systems and then subsequent modernization into a microservices architecture. This architecture will make the system highly adaptable for continuous improvements while ensuring compliance with state and federal requirements.

Workers' Compensation Application Modernization

The Division of Workers' Compensation has undertaken a multi-year modernization of its core technology systems. This project involves a code conversion of the existing mainframe systems and then subsequent modernization.

New Solutions

These initiatives provide new yet fundamental service to agencies. End-user technical expectations are driving service providers to strengthen system functionality. Failure to implement these new services in the coming years would exacerbate major inefficiencies and significantly impair the state from meeting citizen expectations.

Kronos Upgrade

This project will replace the legacy applications and systems currently used for tracking time and leave balances.

CDLE's Unfunded Technology Outlook

The totals below are high-level cost estimates where funding has not been explicitly identified. In most cases, for technology initiatives defined as an OIT enterprise initiative, OIT seeks funding through Decision Items to ensure that the state maintains consistent technology service and is able to take advantage of scalable rates.

For a more detailed breakdown, contact your agency's IT Director.

	FY17	FY18	FY19	FY20	FY21
Mission-Critical Technology Debt	$0	$0	$11,450,000	$0	$0
New Solutions	$0	$0	$0	$0	$0
TOTAL	$0	$0	$11,450,000	$0	$0

Appendix A: Enterprise Roadmap

The timeline below represents OIT's enterprise initiatives, meaning those OIT-led projects that apply to all or most customer agencies. These initiatives are part of OIT's overall strategic direction, which may be mandated or offered to agencies optionally. This timeline has been included to provide a reference as to how an individual agency's IT Roadmap correlates to OIT's statewide plan. Descriptions of each initiative can be found in Appendix B.
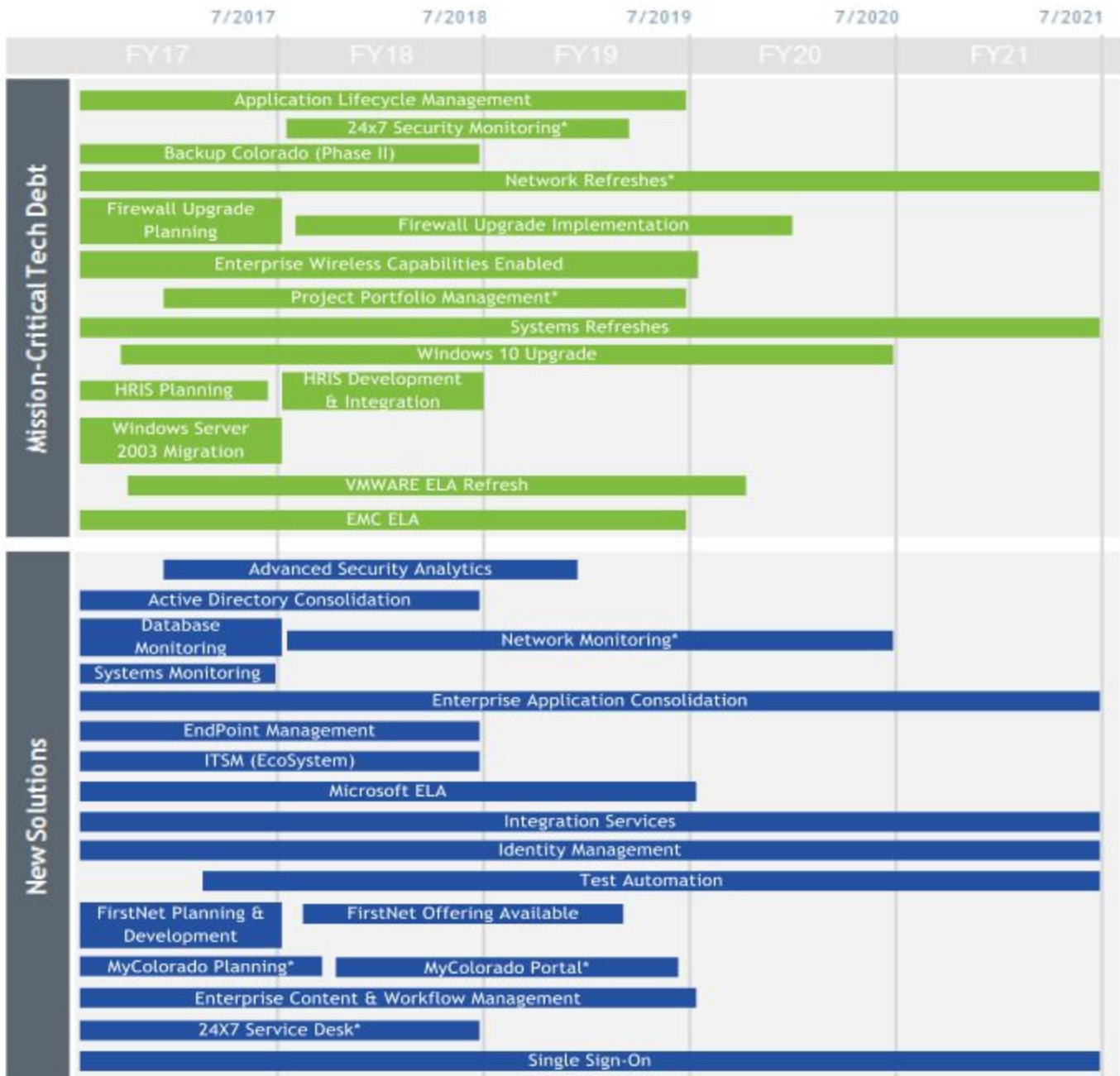
Pending Decision Item

Appendix B: Enterprise Initiative Details

This section provides an overview of each Enterprise Roadmap initiative.

Mission-Critical Technology Debt

These initiatives are vital to the functioning of normal government services. Delay in pursuing the initiatives will create a need for future effort and resources that surpass the resources needed if the initiative were carried out proactively.

24x7 Security Monitoring

The OIT Security Team will be leveraging managed services to support 24x7 monitoring of the state network traffic to improve overall state security, visibility, response time, and detection of security incidents.

Application Lifecycle Management

Process and technology are being put in place to track all state-owned software applications from initial planning through retirement. This will give customers a clearer picture of the number of applications in their agency, the cost associated with the applications, and a roadmap for application replacement, updates, and/or decommissioning. This initiative was generated from the FY15 Eliminate Redundant Applications Decision Item.

Backup Colorado Phase II

The goal of Backup Colorado is to implement a robust, standardized, statewide backup and disaster recovery solution for all critical applications supported by OIT. In addition to bringing Colorado up to federal, state, and agency security requirements, the project will reduce the risk of data loss and the impact of downtime on customer operations.

Major phases are System-wide Data Collection and Analysis, Architectural Design, Purchases, New System Design Configuration, Equipment Deployment, and Testing. This project was an OIT FY16 Decision Item that is billed back to the agencies based on Colorado State Network (CSN) circuits and the servers being hosted and housed by OIT.

Dell EMC Enterprise Licensing Agreement (ELA)

The Dell EMC Enterprise Licensing Agreement (ELA) took effect in January 2016. The agreement has separated hardware and software which will allow for OIT and agencies to take advantage of three important benefits: (1) software portability across EMC hardware platforms, (2) overall TCO reduction by 32 percent as well as reduced costs for future expansion, and (3) a statewide storage standard. It will cover all EMC deployments and impacts all state agencies. The costs are covered through the Infrastructure Refresh Decision Item in FY16 and FY17, but will be a charge back to

agencies in FY18 and FY19 based on Hosting Infrastructure utilization and Dell EMC platform growth.

Enterprise Wireless

The Enterprise Wireless solution will make secure wireless internet accessible to all OIT customers and will provide employees, guests, and customers in state locations the ability to work, check schedules, and effectively handle data more efficiently. Additionally, it will enable users to perform job tasks on devices with wireless capability (e.g., cell phones, laptops, and tablets) even when away from their desk, thus increasing their productivity. Providing this basic and expected business service directly responds to the needs of our customers. Funding for this project comes from the OIT FY16 Enterprise Wireless Decision Item that is billed back to the agencies based on FTE.

Firewall Upgrades

OIT will be upgrading disparate agency-specific firewalls to the statewide standard Next Generation Firewall. These firewall upgrades will increase security through web filtering, application inspection, and intrusion protection systems. We expect to see significant cost savings from an enterprise licensing agreement. This project has been funded through an FY16 Decision Item.

Human Resource Information System

The Human Resource Information System (HRIS) project will consolidate many disparate, outdated, and redundant systems into a central integrated system. Available modules in the new HRIS will include central employee demographics repository, employee performance management, onboarding, payroll, and timekeeping which will have the ability to integrate with the existing standard timekeeping system. The project is being run jointly by the Department of Personnel & Administration (DPA) and OIT. Development of the system is funded through a DPA FY16 Decision Item.

Project Portfolio Management Upgrade

OIT will upgrade our existing project portfolio management tool to enable standardized project management processes and methodologies, enhance reporting capabilities, and grant resource management capabilities. This upgrade is expected to result in more efficient and consistent project delivery. The tool upgrade has been funded through the FY15 IT EcoSystem Decision Item.

Network Refreshes

OIT is developing a statewide refresh lifecycle that will annually replace 20 percent of network infrastructure that is at its manufacturer's end-of-support lifecycle. This will keep the state's technology current and under warranty, which ensures continued support for this critical component. Customers will experience increased IT system performance with decreases in downtime, outages, and lost connectivity with the added availability to a secure and stable infrastructure. This is an ongoing effort that has been funded through the FY16 Infrastructure Refresh Decision Item.

Systems Refreshes

OIT will identify and upgrade aging platforms that pose a significant risk and impact to the customers and support staff. Customers will be provided monthly metrics on resource consumption and utilization. Reduced downtime, data transparency and lower support costs are all benefits that will result from this effort which is currently in process.

VMWare Enterprise Licensing Agreement (ELA) Refresh

The existing VMWare Enterprise Licensing Agreement expired in October 2016. The new agreement will span three years and provide agencies the benefit of reduced annual maintenance costs and operational toolsets that enable monitoring and utilization/performance showback for workloads. Without the ELA, maintenance costs will be at 100 percent and will not include licensing for operational performance showback. Customers will be responsible for the maintenance costs for Hosting Infrastructure and local VMWare deployments at their agency.

Windows 10 Upgrade

Support for the Windows 7 operating system (OS) expires in January 2020. To ensure there is no lapse in support, OIT will upgrade all Windows 7 computers (desktop and laptop) to Windows 10. This is a multi-year effort that spans 17 agencies and more than 28,000 devices.

Windows Server 2003 Migration

Windows Server 2003 has reached its end-of-support lifecycle and it is increasingly difficult to find service providers who continue to support this OS. To ensure that state servers continue to receive appropriate support and reduce risk, OIT will retire and replace all servers used by supported agencies that run Windows 2003 OS. Moving to a newer version (2008 or higher) will give customers a more secure and supportable OS for their applications. This critical migration is anticipated to be completed by July 2017.

New Solutions

These initiatives provide new yet fundamental service to agencies. End-user technical expectations are driving service providers to strengthen system functionality. Failure to implement these new services in the coming years would exacerbate major inefficiencies and significantly impair the state from meeting citizen expectations.

24x7 Service Desk

Agencies can add after-hours support to their existing coverage. OIT offers the additional support as a contracted service through a third-party provider. OIT is exploring incorporating the offering into our standard suite of services, and is pursuing an FY18 funding request to cover the cost of providing the service to all agencies.

Active Directory Consolidation

Active Directory (AD) consolidation is being accomplished with virtualization technologies creating a centralized domain from all the disparate domains. This centralized domain has access to all users allowing for centralized management of users and other AD objects like groups. A standardized AD across the state enterprise is necessary for OIT to help our customers implement the most modern technology solutions at the lowest cost, for example Enterprise Wireless. It will also enable an enterprise directory that includes the email addresses and phone numbers of all executive branch agencies regardless of email system. Funding is available through a Decision Item until FY18.

Advanced Security Analytics

As part of OIT's Secure Colorado initiative, OIT looks to improve security incident preparedness and intelligence with the use of a visualization tool. Visualization tools heighten an organization's ability to detect and respond to attempted cybersecurity attacks. This initiative is funded by an FY17 Decision Item.

Database Monitoring

Implementing a solution to monitor all state databases will provide OIT with proactive visibility into and analysis of database environments. The solution will provide our customers with a reduction in data loss, preventative measures for failing databases, and long-range planning for database storage. To minimize cost, OIT is seeking to utilize existing tools to develop a solution; however, if existing tools do not meet functional needs, OIT will request FY19 funding.

Endpoint Management

Endpoint Management, through the Systems Center Configuration Manager (SCCM), allows administrators to manage large groups of Windows-based computer systems. This provides OIT support staff with the ability to remotely discover, track, patch, and image equipment, and ultimately will provide a managed inventory of computer assets across the state. The tool has been implemented in nine agencies and will be implemented for the remaining agencies (DPA, HC, OIT, GOV, DNR, CDPHE, DMVA, and DOR) by FY18.

Enterprise Application Consolidation

The statewide consolidation of existing and new applications onto standard enterprise platforms will create a simpler and easier end-user experience, reduce the long-term cost of maintaining duplicative applications, and strengthen OIT's support capabilities. Consolidation efforts completed through FY16 were funded through the Eliminate Redundant Applications Decision Item; any future costs, including implementation, license cost and maintenance, would need to be funded by the agencies.

Enterprise Content and Workflow Management

To streamline process and eliminate overhead, OIT is evolving the state's ability to administer digital content throughout its lifecycle. This will allow agencies to create, edit, review, and publish

electronic text. Additionally, automating workflows improves repeatable end-user experience and ease of tracking process improvements and operational metrics.

FirstNet

FirstNet will be the first high-speed, nationwide wireless broadband network dedicated to public safety. The national solution plan will be released in fall of 2017, at which point Colorado will decide whether to accept the national plan or create a state plan. The build-out of the national plan will be paid for federally; if Colorado rejects the plan and creates its own, the network will be partially funded by federal grants and partially funded by the state. Ongoing program management costs will also need to be covered by the state.

Identity Management

OIT is establishing a centralized system for secure access, authentication, authorization, and user account administration for all systems managed or supported by OIT. In addition to significantly speeding up OIT's delivery of access control and on-boarding requests, we expect a reduction in the risks and costs associated with duplicative accounts.

Integration Services

OIT will be deploying a standard technology service that will reduce cost and improve security and management for the re-use of data integrations and exchange of information between state systems.

IT Service Management EcoSystem

The IT Service Management (ITSM) EcoSystem is a set of cohesive and integrated tools, including Service Desk Manager, Service Catalog, Asset Manager, Problem Management, Customer Service Portal, and Xtraction reporting tool, that are necessary to most efficiently and consistently deliver technology support and services to state agency programs and to Colorado residents.

When fully built out, the EcoSystem will provide better service delivery, support, and incident response and resolution times. Additionally, the tools will enable a consistent customer experience across enterprise service offerings through an improved customer-facing web portal. The final stages of implementation will be completed in FY18.

Microsoft Enterprise License Agreement (ELA)

The three year Microsoft Enterprise License Agreement (ELA) covers Microsoft resources for multiple agencies. The ELA is a user-based access license that supports Desktop, Server and Office based platform access, as well as O365, Azure and Mobility Suite. Existing ELAs were brought into the new ELA where applicable, except for DNR, CDOC and CDHS who will be added at a later date when appropriate.

OIT will develop a request/procurement process for acquiring new Microsoft licenses, which will reflect a real-time charge for the license as well as a true-up timeline where appropriate. Agencies will be charged annually for their license capacity use.

MyColorado Portal

OIT is leading an effort to create a mobile portal that will give residents, visitors, and businesses seamless and interactive access to the services, information, resources, and support provided by state agencies at anytime, anywhere, and from any mobile device. The portal will reduce the need for users to enter duplicative data and provide a protected entry point into the state.

Network Monitoring

Implementation of a network monitoring tool across all supported agencies will give our network teams the ability to manage the agencies' network devices and users. They will be able to monitor and resolve faults, availability, and performance issues, as well as view performance and availability statistics for all monitored elements, among many other features. The initial deployment will monitor network segments and devices; it will later be configured to monitor servers and applications.

Single Sign-On

Beginning in FY17, OIT will offer agencies the opportunity to integrate their many business applications onto a single interface portal. Single Sign-On technology will allow state employees access to multiple applications with a single username and password. This scalable solution offers a safer and more efficient way to navigate the applications they use. Single Sign-On will be rolled out in two phases. Phase I will identify applications that are domain-wide. In Phase II, OIT will work with each agency to identify their needs and implement the service.

Systems Monitoring

Through a systems monitoring enhancement, customers will have access to real-time reporting of their applications with a greater level of detail. OIT will be able to provide increased efficiency by streamlining key IT processes with out-of-the-box and customizable policies, guided remediation, and automated enforcement of standards. The tool will optimize performance, capacity, and compliance while retaining full control. Through a four-phased approach, this effort will be completed in 2017. The project is partially funded through the Infrastructure Refresh Decision Item.

Test Automation

An automated application testing system will be available as a service to customers in spring 2017. This will lead to more efficient and accurate application testing and allow testing staff to focus on more complex testing tasks. We can expect to see a reduction in the number of application defects, faster application development and change timelines, and reduced technical risk.

Colorado Department of Labor & Employment

Five Year IT Roadmap