User-friendly, Reliable and Secure:

Modernizing State Information Technology Systems and Oversight

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STATE OF OREGON
Office of the Governor
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Vision

Ensuring user-friendly, reliable and secure state technology systems that serve Oregonians.

Executive Summary

The state provides numerous services to help Oregonians live healthy, fulfilling lives. From enrolling in healthcare to managing the criminal justice system, to tracking student's progress in school, Oregonians depend on software systems to deliver these services.

Many large institutions from the public and private sectors have struggled with large, complex projects, ranging from construction projects to IT projects like Cover Oregon. The state must establish a mature, resilient management and oversight structure to effectively manage the complex

information technology systems Oregonians need to deliver a wide-ranging list of services.

To achieve this, Governor Brown directed the Office of the State Chief Information Officer, state agency directors, and their staff to evaluate best practices and propose an improved structure. Their set of recommendations ensures sufficient flexibility for delivering the wide range of services the state manages, while at the same time improving overall IT project management, security, and reduces the risk of failure. The primary strategies to achieve this are:

1. *Modernize and standardize critical statewide systems, including: human resources management, payroll, procurement, and email/office productivity.*

2. *Optimize service delivery to the public and internally by modernizing agency-specific and cross-agency systems and creating a statewide cloud strategy.*

3. *Improve overall software system development transparency by posting project health status summaries online.*

4. *Create and manage a statewide data strategy to improve data analysis, data quality, information sharing and overall decision making to be done by a new Chief Data Officer for the state.*

5. *Increase IT security by adding enhancements to the state's Enterprise Security Office, including improvements in intrusion and detection.*

Background

The state has enormous resources devoted to software and information technology (IT): In the most recent biennium, the state had 1,300 IT employees spread across 100 agencies, boards, and commissions and the state spent over $750 million on contracted IT services. State agencies run hundreds of different systems ranging from off-the-shelf pieces of software, like Microsoft Office, to complex, custom-designed software that can cost several hundred million dollars to build. The age and code bases of these software systems vary widely. Numerous systems, including one used by the Oregon Department of Corrections, use software that runs on 30-year old "green screens." Other systems are brand new and cloud-based.

Historically, the state has not had a centralized approach to IT management. Agencies were in charge of proposing, delivering, and managing their own individual IT systems; however, this began to change following the massive software system failure of Cover Oregon in 2015. In 2015, the state legislature passed HB3099 which restructured the Office of the State Chief Information Office (OSCIO) into a quasi-separate state agency, with the state Chief Information Officer appointed by the Governor. The goal of this change was to place a renewed focus on data center operations, development of enterprise security capabilities, effective management of IT vendor relationships and further maturation of the IT governance framework. The resulting OSCIO redesign led to the establishment of four distinct programs:

- Enterprise IT Governance – to provide agencies with improved processes agencies must use when developing IT systems. StageGate is the central method by which OSCIO provides oversight to state agency IT projects.

- Enterprise Shared Services – to provide shared services such as geographical information systems, quality assurance testing, and pre-approved software systems that agencies can use.
- Enterprise Technology Services – to provide networking and data

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center services for the state.

• Enterprise Security Office – to provide standard IT security protocols and services for the state.

A fifth program, the Chief Technology Office, was added in 2017, to focus on strategic technology initiatives, including broadband and enterprise architecture.

With the 2015 governance changes, IT system management improved but there were still issues, including with security. As an example, in September of 2016, the enterprise was averaging 3.07 critical vulnerabilities per host. As a result, the Governor issued Executive Order 16-13 that centralized all IT security functions within the OSCIO. Since centralization has occurred, security has improved significantly and measurable progress has been made with respect to enterprise risk remediation. As of September 2018, with 57,000 systems scanned, the enterprise is down to .47 critical vulnerabilities per host.

Having experienced large software system failures themselves, many other states have recently embarked on complete centralization of all IT into a single state agency. Some have decentralized systems, and some have a hybrid system.

Recent Accomplishments
Since 2015, the Governor and her team have taken significant steps to improve IT

Full launch of the Stage Gate project oversight model

In 2014, the State CIO, in cooperation with the Legislative Fiscal Office (LFO), established the Joint OSCIO/LFO Stage Gate[1] process—an incremental funding and project oversight model for major IT initiatives exceeding $1 million or those posing substantial risk. This is accomplished through OSCIO review of the IT initiative and its progress to date, evaluation of its near-term plans, validation of resource commitments, and an assessment of the initiatives' readiness to go forward. Factors influencing Stage Gate endorsements include: quality parameters (i.e., how well is the project being executed?); operational feasibility (i.e., are there appropriate resources and can the project be completed on time?); and economic viability (e.g., return on investment (ROI) or net present value (NPV)).

In 2015-17, the Stage Gate team focused on socialization of the model, on-boarding agencies with respect to new policy and process elements, development of project artifact templates, implementing a project and portfolio management system, and applying the Stage Gate oversight model to the first portfolio of 100 major IT projects.

In 2017, the state began to shift away from reactive management of projects with performance problems to one of early intervention. The disciplined use of the Stage Gate model has led to collaborative discussion between OSCIO and agencies with respect to utilizing best practices for project planning. It has improved the quality of project work, investment risk is being evaluated early on, and adjustments are being made before significant expenditures are authorized. Projects

1. https://www.oregon.gov/das/OSCIO/Pages/StrategyStageGate.aspx

are being proactively paused when health status is trending down, giving OSCIO an opportunity to work with agencies on a prescribed set of course-corrective actions.

Unifying IT security across the state

Following Executive Order 16-13 and at the Governor's request, the Legislature passed SB 90 in 2017 to unify IT security functions in the Enterprise Security Office (ESO). This resulted in the transfer of 35 security positions and the establishment of a new unified enterprise security program. Under this new unified program, ESO has established a new enterprise security plan and priorities for execution, initiated a centralized security monitoring program for agencies, trained nearly 30,000 staff members in information security, and implemented an enterprise-wide vulnerability management program that has doubled the number of agencies and systems being actively managed while reducing the average number of critical vulnerabilities in enterprise systems by 80% in just two years.

Simplified purchasing for commonly-used software, hardware, and IT services

The Basecamp Program[2] pre-approves and negotiates advantageous price agreements for commonly-used software, and hardware and IT services for use by state agencies, local governments, and educational organizations across the state. The program's goal is to significantly expedite technology purchasing, reduce procurement costs, and assist with technology alignment. The program has begun to drive continual improvement in the IT procurement acquisition process, introducing new and innovative concepts that increase transparency, improve vendor performance, and capture additional value from statewide price agreements.

2. https://www.oregon.gov/basecamp/Pages/default.aspx

Evaluation and prioritization of all major state IT projects as part of the Governor's Recommended Budget process

At the direction of the Governor, the OSCIO and the Executive Leadership Team, through the Enterprise IT Governance Committee, developed an IT project prioritization process and a rating system to evaluate and score agency-submitted IT projects as part of the Governor's Recommended Budget process.

Broadband partnership for rural Oregon

Oregon has partnered with Oregon's four research universities to provide better access to affordable, reliable, and higher-capacity connectivity to more than 600 sites across the state, making it easier to collaborate, share information, and support their missions. Through the OregonFIBER Partnership (OFP), the partners intend to meet a shared need for a statewide network with the information-carrying capacity required to use new technologies (Internet of Things, big data, etc.) which generate unprecedented amounts of data and offer the possibility of new insights into emerging research and pressing public policy challenges.

The Governor's Strategy:
Think Globally, Act Locally

To continue the maturation of state IT management, the Governor directed her team to evaluate national best practices around project execution and governance. As a result, the overarching theme for the next stage in the state's maturation process is to increase standardization and centralized oversight of processes around software system development, while at the same time elevating overall IT expertise within management teams of state agencies. While business needs of the state must drive technology choices, information technology expertise is an important strategic component to agency decision making, both short- and long-term. So while full centralization of all IT functions was evaluated as an option, it was determined that this would remove too much strategic insight from agencies at a time when they should be increasing their technological expertise.

Following a year of discussion across the executive branch, the Governor and her team have landed on a hybrid approach that provides both centralized expertise and accountability mechanisms when needed, while maintaining flexibility for agencies to design and deliver systems efficiently. This is the "Think Globally, Act Locally" approach.

Strategies

The Governor's five strategies are the foundation for providing reliable, resilient, and secure information technology systems and services. Ultimately, a balanced IT ecosystem with strong enterprise roots, agency agility, and appropriate shared services will enable the State of Oregon to deliver quality programs and services to Oregonians.

ONE: **Modernize and standardize critical statewide systems, including: human resources management, payroll, procurement and email/office productivity.**

TWO: **Optimize service delivery to the public and internally by modernizing agency-specific and cross-agency systems and creating a statewide cloud strategy.**

THREE: **Improve overall software system development transparency by posting project health status summaries online.**

FOUR: **Create and manage a statewide data strategy to improve data analysis, data quality, information sharing and overall decision making, to be done by a new Chief Data Officer for the state.**

FIVE: **Increase IT security by adding enhancements to the state's Enterprise Security Office, including improvements in intrusion and detection.**

ONE: Modernize and standardize critical statewide systems, including payroll, procurement and email/office

The state has embarked on modernizing and centralizing human resources (HR) through a system called Workday. Currently there are hundreds of different agency HR systems in use and this will migrate many of those HR functions to a single, cloud-based solution that will significantly increase efficiencies in internal HR delivery while at the same time allowing the ability to improve employee training and implement important new statewide initiatives, including: leadership training, pay equity and succession planning.

The next systems that must be modernized are:

Payroll: The Oregon Department of Administrative Services (DAS) provides payroll processing to all state employees and state agencies (executive, judicial and legislative branches). The purpose of the project is to replace the legacy Oregon State Payroll Application and ePayroll timekeeping application with a modern solution supporting payroll, time, leave management and labor distribution.

The planned solution is to extend the current Workday platform through integration with the Workday Human Capital Management application. Implementation of a modern payroll system is essential to reducing the state's business risk associated with the current system and will provide the state with a solution that is expandable, flexible, and maintainable and significantly improves the efficiency and effectiveness of payroll business processes.

Procurement: DAS is proposing implementation of an enterprise e-Procurement solution, known as OregonBuys. The OregonBuys solution supports best practices in procurement and is intended

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to alleviate many of the problems and risks state agencies are experiencing with existing systems and manual processes.
The project intends to deliver the following benefits (among others) as an enterprise service:

- Increased efficiency in completion of core procurement tasks and reduction in manual processing, increasing time for strategic procurement activities
- Accurate information supporting stronger contract negotiations
- Improved administration and adherence to business controls
- Consolidation into one enterprise application, stabilization of the technical environment and elimination of redundant data and processes

Once enterprise implementation is complete, the current Oregon Procurement Information Network (ORPIN) procurement system and other state agency systems used to manage procurement processes will be decommissioned.

Email/Office Productivity: DAS is proposing that Enterprise Technology Services (ETS) and partner state agencies replace the current enterprise email system (Microsoft Exchange) with the government Microsoft Office 365 Software as a Service (SaaS) solution. This request will also provide state agencies who are currently not on Enterprise Email the ability to obtain the same product and services and allow the sharing

of emails and documentation through a unified global address list. This is expected to improve service delivery to ETS and agency customers, reduce or eliminate the need for email infrastructure, reduce software updates/upgrades and improve response times. Office 365 includes collaboration tools such as Word, Excel, PowerPoint, Outlook, OneNote and OneDrive.

TWO: Optimize service delivery to the public and internally by modernizing agency-specific and cross-agency systems and creating a statewide cloud strategy

The state has an opportunity to further improve service delivery to the public and among internal customers by taking several concrete actions:

a) Create a statewide cloud strategy:
   In order to take advantage of potential cost savings and avoid pitfalls associated with relying on one vendor, the state should focus on ways to seamlessly shift environments through a properly managed cloud architecture. Benefits include increased agility, resiliency, reliability and the opportunity to capitalize on performance optimization opportunities.

b) Establish Chief Business Technology Officers to manage multi-agency IT strategy:
   Multiple computer-aided agencies do permitting, manage loans, and use a crisis dispatch system. However, there is currently no coordination between agencies as they look to update or modernize this functionality. To achieve this we must establish Chief Business Technology Officers who can provide this strategic coordination. Strategic coordination must occur based not only on traditional

agency groupings (Education, Natural Resources, Public Safety, Healthy People, Transportation, Economic Development, and Administration and Business Services), but more importantly based on either functionality or on end-user groupings. (For example, loan servicing is done by the Oregon Department of Environmental Quality (DEQ), an agency in the natural resources portfolio, and also by the Oregon Department of Veteran's Affairs (ODVA))

The Chief Business Technology Officers must work with agency leadership teams to increase multi-agency strategic planning, up to and including the creation of centralized, shared-service IT entities.

c) <u>Require agencies to develop IT modernization plans</u>:
Each agency must work with OSCIO and the new Chief Business Technology Officer in their agency grouping to develop multi-year IT modernization plans for retiring legacy systems and improving service delivery.

d) Establish statewide standards and an enterprise architecture that provides common functions and technology available for use by all agencies.

THREE: Improve overall software system development transparency by posting project health status summaries online

The state CIO tracks and evaluates all sizable projects that are currently in development by agencies and their contractors. To increase transparency, the CIO will develop a plan to post IT project health status information online within the next year.

FOUR: Create and manage a statewide data strategy to improve data analysis, data quality, information sharing, and overall decision making, to be done by a new Chief Data Officer for the state

A proper data strategy informs and guides decision making in both business and IT. A newly hired Chief Data Officer (CDO) will develop a plan to:

- Build the capacity of agencies to effectively use data
- Ensure that quality data can be accessed and used by agencies and stakeholders
- Analyze data to create meaningful information
- Sustain support for continued data efforts

Ultimately, the CDO must instill a culture that leverages data as a strategic asset.

FIVE: Increase IT security by adding enhancements to the state's Enterprise Security Office, including improvements in intrusion and detection

Following on the centralization of IT security within the Enterprise Security Office of OSCIO, we must invest further to address audit findings from federal regulators, including the IRS, FBI, Center for Medicaid Services and the Social Security Administration. Failure to achieve compliance puts the state at risk of losing access to federal information, such as federal criminal justice information or federal tax information, which is essential to conducting state business.

In addition, security risk assessments completed under Executive Order 16-13 demonstrated significant weaknesses in the state's ability to detect and respond to modern threats. One of the state's primary defenses to outside intrusion, enterprise firewalls, must be upgraded to continue to protect the state's digital assets.

OSCIO has assembled a security investment package that we must fund in the 2019 legislative session.