

Office of the Washington State
Chief Information Officer

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Washington State Information Technology

Technology Strategy

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This document lays out a strategy for technology investments for Washington state government which currently spends close to \$1 billion per year on technology. It also identifies a significant, small and achievable set of actions that should enable the state to get more and do more with that spending.

It is a strategy for all Washington state agencies, with responsibility for delivery on the shoulders of many agency CIOs and their technology teams. The Office of the Chief Information Officer (OCIO) will provide leadership and be accountable for ensuring success.

As part of the strategy, we will make strategic choices for the next two years. These choices are based on reasonable assumptions and a sound business case that will either result in significant dividends or limit our exposure to losses, and have been vetted by agency technology and business leaders. However, it will continue to be updated as we seek out and incorporate feedback of key stakeholders throughout Washington.

We have a new technology governance structure in place and, with the unveiling of this strategy, I like to think of this being the dawn of a new era for Washington state technology. I am very optimistic that the incredibly passionate, smart and hardworking technology teams in state government are up to the challenge of delivering on these actions.

Regards,

Bharat Shyam
Washington State Chief Information Officer

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INTRODUCTION

Framing a relevant technology strategy cannot happen without first examining the technological trends in society. While there are emerging trends in every aspect of technology, a few are worth noting because they are game-changers. Adapting to these trends will require the state's policymakers and information technology (IT) community to embrace new ways of doing business.

- People are consuming (and expect to have) government and commercial data and services at all times of the day, from all places in the world and from a variety of devices. Agencies that use technology to deliver services to the public will have to begin making those services available on all types of devices including tablets, smartphone and possibly other screens and operating systems.
- An astonishing variety of end-user applications have been developed in recent years with many innovative applications created by individuals accessing shared and available government data. Making state data easily available to the public not only improves transparency, it allows the public to benefit from this entrepreneurial trend.
- Public cloud platforms are being adopted rapidly by startups, enterprises and governments because they are cheaper for many applications, they provide flexibility by allowing IT to commit to only the resources needed but allow for rapid and transitory growth, and they require less upfront investment when building out something new.
- Server applications that are delivered as web services (aka: Software as a Service) are cheaper and easier to adopt than traditional purchased applications. Given the rapid pace of technology development, using SaaS will often provide better value to the state overall.
- Private Cloud Platforms hold out the promise of improved costs and greater flexibility for intranet environments.

We have a list of important observations about Washington state government technology that need to be taken into consideration. The most significant ones are:

- Washington state government is like a conglomerate with many lines of business rather than like a unitary enterprise. Using a comparison from the private sector: Washington is closer to GE (movies, TV, aircraft engines and financial institutions) rather than Wal-Mart (just one business – retail). As a result, many centers of excellence have been formed in IT departments across state agencies. This singular

agency focus has also resulted in many lost opportunities to consolidate and drive savings and improve results.

- Budgets are tight and will remain tight for the foreseeable future.
- Many agencies perceive that a central solution will result in higher costs and loss of flexibility.
- Washington state government technology services are not adequately prepared for disasters.
- The legal framework for procurement in state government technology as well as the lack of sharing of contract information across agencies, often leads to slow, fragmented and cumbersome processes that limit the ability of IT managers to strike the best deal for the state and taxpayers.
- The digital divide is smaller, but still real. Today, only 2% of Washington's population does not have regular access to the internet. In a 2011 Department of Social and Health Services (DSHS) client survey, however, 63.2% of respondents said they have never used the internet to access DSHS services. As paths to internet access become more diverse (televisions, game boxes and smartphones) more opportunities to close the digital divide may become available.
- There is already a trend of consolidation as a result of improved virtualization technologies. Agencies are using the resultant savings to improve existing technology.
- Technology staff is tightly linked to the business needs of their own agencies.

GOVERNANCE OF TECHNOLOGY INVESTMENTS

Successful and timely implementation of the action plan that follows will require the active participation of the entire state technology community.

Office of the Chief Information Officer (OCIO): The state's CIO is responsible for establishing the technology strategy for the state and providing the policy, standards, and decision framework for implementing this strategy. The Office of the CIO will use informal methods (discussion forums, education, strategic discussions with the Technology Services Board, vendors, customers and agencies) and more formal methods (policy and standard setting; oversight) to move this agenda forward. The Office has already established multiple means of interacting with stakeholders, and will build on these to ensure a true partnership as the state moves forward.

The Consolidated Technology Services Agency (CTS): CTS provides technology services to state agencies and to local and tribal governments and non-profits. These services fall into several broad categories: telecommunications; email; networking; storage; and computing-related services. CTS provides critical security services which ensure businesses, citizens and governments can conduct safe, reliable transactions with Washington state agencies. CTS also provides co-location services for several agencies in the Office Building 2 (OB2) data center.

The Department of Enterprise Services (DES): DES is responsible for developing and operating enterprise applications, such as the state's financial reporting system, and the human resource management system (HRMS). They also provide web development services to other agencies. In addition, DES is responsible for statewide contracting services. As such, DES will play a critical role in evaluating the state's IT procurement framework to determine whether there are further savings to be captured through more coordinated purchasing of IT infrastructure and services.

Technology Services Board (TSB): The TSB is designed to: provide a forum for discussing the state's technology vision and planning; reviewing and approving policies and standards adopted by the CIO; and to provide strategic oversight of the state's major technology projects.

Agency CIOs and IT teams: Each agency has its own IT team and IT leader who are responsible for defining and implementing technology that supports the business needs of their individual agency.

STRATEGIC TECHNOLOGY GOALS AND GUIDING PRINCIPLES

The key **goals** for technology in Washington state government are straightforward and have not changed dramatically in the last several years:

- Innovate and deliver better services to make public interaction with state government more streamlined and responsive.
- Make government data more accessible to citizens to increase transparency and to encourage private sector innovation.
- Continually focus on making state business operations efficient, nimble, and frugal.
- Build and support credible, well-planned, trusted IT organizations that save money and make employees more productive.

The **principles** that guide us in reaching these goals, however, have changed as technology has evolved.

- **Take on** ambitious projects in smaller, incremental steps that yield value at each phase along the way, reflecting the well-known best practice of iterative projects that build on success.
- **Promote** centralization or consolidation where it makes sense for the enterprise and the business owners, based on a sound business case. Consolidation is not an end in itself.
- **Build and maintain** trust in our efforts by making our work transparent to state policy makers and to the general public. Critical technology decisions (contracts, metrics, and milestones) should be publicly available for inspection and comment.
- **Make smart bets** on emerging technologies for long-term solutions.
- **Leverage** centers of excellence in departmental IT to experiment with new ideas and solutions.
- **Adopt** a technology policy and decision framework that is sufficiently rigorous to ensure the state, as an enterprise, is heading in similarly-focused, compatible

directions, but flexible enough to be tailored to the business needs of each organization.

- **Increase trust** and improve performance by making IT spending details more transparent and publicly available.
- **Balance risk and reward** to ensure technology investments yield maximum value whenever and wherever possible.

ACTION PLAN

Every significant investment we make requires us to take a calculated risk based on reasonable assumptions and a sound business case that the investment will pay off. The State of Washington is concentrating on technology that will allow us to remain customer focused, increase our nimbleness and adaptability, and respond to public demand for more, faster, and easier access to government. The key strategic technology efforts we are making for 2012 are spelled out in the Action Plan that follows.

Action 1 Secure critical state government services and enable them to continue functioning after a disaster

Agencies across state government take precautions against disaster and have disaster recovery plans and backups of data in place. Today, however, most agencies (including some with critical applications) do not have the ability to actually bring up their applications in a different data center. Mission-critical systems need remote site “hot failover” systems (redundant active systems that take over automatically if something happens to the main system). These hot failover systems should be geographically remote to reduce the risk that the cause of the failure in the main system does not similarly affect the redundant system.

Finding the money to support or improve disaster recovery is a difficult case to make by agencies facing reductions in their core services. Creating private clouds that interoperate should enable agency IT teams to start developing some local automatic failover capability at lower cost. (See Action #8) The OCIO will work with agency teams to prioritize the most critical applications. The OCIO will work on a systematic plan and take leadership in finding the lowest cost way to enable critical applications to failover to a different location.

Specifically, the OCIO commits to the following steps:

- **Identify** the most critical agencies in need of a comprehensive disaster recovery plan;
- **Help** these agencies create and track a schedule for creation of automatic failover in remote pools/data centers;
- **Identify** and explore data center space opportunities away from western Washington’s seismic fault zones;
- **Work with** security experts and state agencies to develop a security strategy aimed at ensuring that critical government services remain secure against hacker attacks.

DEPARTMENT OF HEALTH (DOH) DISASTER RECOVERY SITE IN EASTERN WASHINGTON

As a first responder to public health emergencies, the DOH is required to maintain 24X7 availability of key critical systems and services. By leveraging the master agreement with TierPoint, located in Liberty Lake, Washington, DOH has established a disaster recovery site 300 miles away in eastern Washington.

DOH’s implementation of the site allows the agency to be able to recover from a single system failure or from the loss of the entire main data center in Tumwater, Washington within 24 hours for critical systems, infrastructure and services.

Action 2 Improve accountability and insight into technology investments

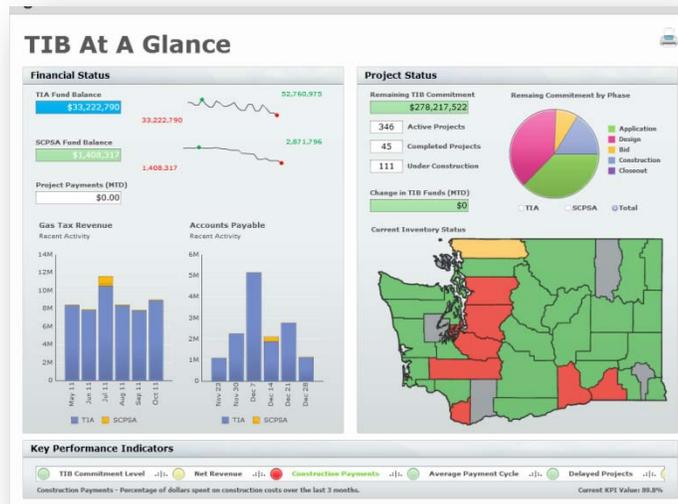
Each year the state spends nearly \$1 billion on IT staff, infrastructure, applications, maintenance and operations. Technology, legislative, and policy executives have been concerned about the lack of sufficient and credible insight into agency-level and enterprise-wide technology investments.

This is caused, in large part, by the lack of coordinated tracking and reporting of technology expenditures. For example:

- IT staff costs can be extrapolated from the state’s Human Resource Management System (HRMS), but with great difficulty. Since agencies do not all use a consistent set of identifiers for IT staff, it is problematic to get an apples-to-apples comparison.
- Expenditures can be extracted from the state’s financial reporting system, but are challenging to track back to specific projects.
- Lacking a centralized contracts database, it is impossible to determine how much the state, as an enterprise, spends on a particular type of infrastructure or to confirm that all agencies are getting the best price from a particular vendor. Likewise, there is significant difficulty for individuals to track the progress of major state IT projects underway.

When there is no clear understanding of the categories in which technology expenditures occur, the legislature and technology executives can end up focusing on comparatively minor expenditures which may be more understandable. Although major IT projects are subject to OCIO oversight, there is no central source of information available to the public on the progress of smaller IT projects. In many cases it is tricky for someone outside the project team to track projects even at the individual agency level.

In contrast, individuals wanting to track a state investment in local transportation projects can go to the Transportation Improvement Board website (<http://www.tib.wa.gov/TIBDashboard/>) to find a straightforward, robust dashboard with



The Transportation Information Board dashboard featured on their website.

measurable metrics that are tracked and reported regularly. Users have the ability to drill down on individual projects for specific information on expenditures, progress to date, and other relevant information.

The level of data provided for transportation projects not only provides insight into individual projects, it is a key way for citizens and legislators to hold the agencies accountable for meeting project timelines and expenditure goals. In addition, the collection and reporting of the data is a valuable management tool for the agency to hold project staff accountable as well.

Similar types of accountability and transparency tools are needed for IT projects. The OCIO will work with the Department of Enterprise Services (DES) to launch transparency and accountability tools with the goal of helping agency CIOs learn more about their IT spending and to use that insight to drive improvements. Agencies will initially focus on a modest number of critical performance measures, and will be encouraged to expand their performance monitoring over time. Also, in preparation for the 2013-15 biennium, OFM and the OCIO will partner to present a technology budget that is more transparent than in the past. These tools are expected to improve accountability, insight, and increase public and legislative confidence in the way technology funding is being managed in the state.

Action 3 Encourage adoption of public cloud platforms where appropriate

The State of Washington will leverage public cloud platforms for applications that are suitable to run on them. The OCIO will put in place policies that encourage and guide the use of the public cloud as a means of decreasing costs and increasing flexibility. In the past, agencies made investments in mainframe and client server infrastructure that forced over-provisioning for anticipated peak demand. The evolution of virtualization technologies allows better utilization and reduced hardware and management costs. Those same virtualization technologies make it possible for vendors to rent out hundreds of thousands or millions of servers as cloud platforms.

Today, publicly available Cloud Platforms (aka: Public Clouds), run by major vendors like Amazon (AWS), Microsoft (Windows Azure), Rackspace, Verizon (Terremark), Salesforce, Google, etc., allow customers to rent servers, storage and networking infrastructure to run applications and pay by the hour. The largest of these public cloud platforms will eventually have millions of servers and are able to drive economies of scale that are hard for a single enterprise or government to achieve on its own.

Using the public cloud where appropriate can reduce, or in some cases eliminate, the need for investments in computer hardware and software. Additionally, since the vendor is constantly upgrading its equipment and software, agencies can get the benefit of the most up-to-date platforms sooner. A public cloud model is particularly easy to adopt today in cases where the data is not subject to stringent certification and security requirements.

Some of the data held by state agencies is highly sensitive and subject to very strict security requirements because it deals with private information (names, social security numbers, social service recipients, or proprietary business information) and is not suited for the public cloud today. Instead, this data would be better served by a private or

Cloud computing provides several benefits:

- **Economical:** Public Cloud computing is a pay-as-you-go approach to technology, in which low initial investment is required, and additional investment is required only as system use increases.
- **Flexible:** IT departments that anticipate fluctuations in demand no longer need to scramble for additional hardware and software. With cloud computing, they can add or subtract capacity quickly and easily.
- **Fast:** Cloud computing eliminates long procurement and certification processes, while providing a rich selection of services.

“Government” cloud. Specifically, the following actions will be initiated by OCIO to encourage adoption of the Public Cloud Platform:

- **Negotiate** purchasing relationships with Cloud Platform Providers.
- **Identify** workloads in state agencies that we can move to public cloud platforms.
- **Experiment** with and adopt management toolsets to manage workloads on Public Cloud Platforms.
- **Explore** the concept of the Government Cloud and whether such offerings can work for more sensitive Washington state applications.

Action 4 Encourage adoption of Software-as-a-Service (SaaS) for applications purchased by state agencies where appropriate

Software-as-a-service (SaaS) or “on demand software” is becoming a common delivery model for many business applications. Priced as a subscription, SaaS is generally a less expensive way to adopt new applications. SaaS is a promising trend that state government must explore more aggressively.

Where appropriate, the OCIO will encourage adoption of SaaS solutions that can be rolled out with minimal up-front investment since they are cheaper to deploy and are easier to maintain and upgrade. Learning Management; Personnel Performance Management; and Time, Leave and Attendance are all systems being planned for enterprise adoption with initial roll-out in a handful of different agencies that could benefit from a SaaS solution.

In 2012, the OCIO will actively encourage SaaS solutions when agencies propose purchasing new applications.

COMMERCE IMPLEMENTS SaaS: SALESFORCE.COM

Commerce purchased the Salesforce.com software as a service (SaaS) in March 2011. Salesforce was successfully implemented, providing a cloud-based, multi-user environment for communicating, documenting and automating the activities of the Commerce Business Recruitment and Trade projects and initiatives.

Using Salesforce ensures activities are coordinated across the division programs, giving staff a clear view into all of the activities surrounding a company, opportunity or project. Reports on progress toward achieving performance targets can now be generated automatically, on a regularly scheduled basis.

A major benefit of Salesforce is that Commerce staff can now easily query and abstract data to identify trends, answer ad hoc requests and create formal reports to executive management, the Governor’s Office, and the Legislature, regardless of the source of the data.

Action 5 Adopt Enterprise Resource Planning (ERP) applications systematically and incrementally in order to enable Washington to function as a cohesive enterprise

All state agencies perform some similar back office functions that are required to run their organization, including: payroll; time, leave and attendance; recruiting; payables; and receiving. Washington state agencies have often performed these tasks with custom (usually mainframe) applications. With the exception of HRMS, we have essentially missed an entire generation of off-the-shelf applications delivered as Enterprise Resource Planning (ERP) applications that Fortune 500 companies adopted in the 1990s and 2000s. By missing this generation of applications, agencies can leapfrog and adopt best-of-breed SaaS or hosted solutions instead.

Today, several agencies are evaluating how to replace specific back-office applications, usually because there is a specific area that is causing the agency pain or presents an opportunity. Our goal is to ensure that we adopt needed back office applications in these agencies while ensuring that each application is rolled out systematically enterprise-wide. The back-office applications adopted in each agency should work together as a suite as they are gradually rolled out. These efforts will be coordinated through the OCIO to assure consistent adoption of solutions that benefit more than a single agency, and that adopted solutions are compatible and work in concert. We believe that the ERP market is ready to embrace SaaS business models and SaaS as a technology.

The OCIO will introduce a policy framework that allows an incremental approach to building a cohesive suite of applications, based on prioritized identified needs. These applications will be developed for the sponsoring agency, stabilized and tested to ensure the solution addresses their need appropriately. Once stable and proven in the pilot agencies, the applications can be made available to a broader set of agencies and the roll-out procedures standardized.

The OCIO will work together with other state agencies, to implement those solutions on an enterprise level, based on need. Enterprise and customer value must be demonstrated at each step before moving forward.

Action 6 Consolidate where appropriate to drive savings and deliver improved services

Consolidation makes business sense in areas where agencies perform similar functions (i.e. back-office systems). More customized business solutions are needed to address unique business needs (such as tolling systems).

The OCIO is responsible for putting in place a common framework for evaluating and implementing infrastructure consolidation where it makes sense. For multiple reasons, including cost, loss of flexibility and loss of service, agencies do not fully trust centralized IT efforts today. We propose that we build up confidence within agencies for consolidation as follows:

- Pick a few departments that have a passion and need for a new enterprise solution. Everyone does not have to adopt at once. It is important to mitigate risk by scaling the implementation with a small number of willing candidates.
- Once the solution has been selected, implemented and stabilized in a small number of early adopter agencies, broaden to a larger set of departments and develop a standard approach to implementation.
- After the larger set of departments have been stabilized, roll out to the entire enterprise.
- At each step, the consolidation must demonstrate value to the enterprise and to the customer.
- Improve budgeting procedures so that early adopters are not penalized as a new service is rolled out.

While there are numerous examples of where consolidation may make sense, the following areas are the ones we intend to take on for the next 12 months based on resource availability:

FISH AND WILDLIFE (DFW), NATURAL RESOURCES (DNR) AGRICULTURE (AGR) AND RECREATION (RCO) SHARE INFRASTRUCTURE TO REDUCE COSTS

Several natural resource agencies share the cost and responsibilities of their data center. In addition, the agencies look for opportunities to collaborate across agency boundaries in the delivery of IT services.

For example:

- AGR is using DNR's virtual server environment to help them meet their needs for virtualization.
- DNR is currently looking at sharing DFW's video conferencing infrastructure to greatly reduce their costs.

In addition to collaborating with infrastructure, the agencies also look at collaborating in the delivery of other IT services.

- **Data Centers:** State agencies operate several quality data centers, and these will be managed along with the newly built state data center. Excess space will be rented out or repurposed. *(See Action 8 for further discussion.)* Data centers will be decommissioned when they reach their end of life or need refurbishing.
- **Shared Email:** The Shared Email project is already underway. Some agencies will directly adopt cloud email services.
- **Wi-Fi LANs:** Washington state government is woefully behind the times in this area, and in fact, exposes the state to some risk. Most state buildings (and in some cases individual floors in buildings) on the capitol campus grounds have their own, sometimes highly insecure Wi-Fi LAN. The Capitol Campus should be served by a single Wi-Fi LAN service. The OCIO will partner with Consolidated Technology Services and other interested agencies to provide a better designed Wi-Fi solution.
- **Procurement:** Technology procurement takes a variety of forms in state government, and through multiple venues. In some cases, agencies run major procurements independently. The Department of Enterprise Services (DES) provides master contracts for some purchasing, while personal service contracts are handled in yet another fashion. The state does not have a centralized system to report contracts, so it is very difficult to know what types of services, or products are being purchased across agencies and at what price. The state can continue to drive down costs by making it easy for any agency to find the current lowest negotiated price anywhere in state IT. The OCIO will work with (DES) to provide easy access to the lowest price for all IT products and services.

Action 7 Adopt private cloud platforms across agency technology teams to enable easy movement of workloads across pools of servers

While **public** clouds are built by outside vendors and made available to the general public, **private** clouds are built, managed and maintained by state IT staff in state data centers. Until now, agencies have been focusing on virtualizing servers and consolidating the number of actual physical machines. This is actively in progress and agencies will all be significantly virtualized in the near future.

The next logical step is consolidating the agencies' virtualized servers into one or more private clouds on servers located in one or more of the state's data centers. (See Action #8) This will benefit the state by allowing greater sharing of infrastructure resources across those departments with similar policies or communities of interests (public safety, health and human services). Efficiencies are gained by ensuring that each private cloud is built to the same standard specifications.

Development of these private clouds will also improve the state's ability to implement disaster recovery since application servers will be able to run in more than one data center. (*Disaster recovery is addressed more fully under Action 1.*)

At least one such private cloud will be delivered by CTS and offered as a service to agencies.

Specifically, the OCIO commits to the

ECOLOGY SAVES \$1.2 MILLION OVER FIVE YEARS THROUGH VIRTUALIZATION.

In 2007, Ecology launched a server consolidation effort to centralize approximately 42 physical servers in the Programs located at the headquarters office in Lacey. This was a significant cultural change for the Programs who were accustomed to managing their own servers. Central IT assumed the role of managing the majority of physical servers (94 in total) located in Lacey.

In preparation for their migration to the new State Data Center, Ecology launched, in 2010, a compute and storage virtualization effort to reduce operating costs and meet the GMAP objectives. At the start of this project, in December 2010, Ecology had 115 physical servers located in Lacey. At present, Ecology has 68 physical servers remaining and expects to reduce that to 38 by end the March, 2012.

The initial investment for the compute and storage virtualization was ~\$400k. Return on investment payback period is expected to be approximately 20 months. Estimated savings over a 5 year period are expected to be ~\$1.2M. These savings reflect cost avoidance in physical server purchases, related software licenses, and power and cooling costs. Savings are being used for budget cuts and line of business investments.

following steps:

- **Identify** a standardized private cloud stack to invest in for managing private clouds in state data centers.
- **Identify** at least three agencies that will begin building out interoperable, standardized private clouds.
- **Create and track** a schedule for the creation of these private clouds.
- **A private cloud utility** will be delivered by CTS and offered as a service to agencies.

Action 8 Efficiently manage all of the state's suitable data centers

The state has invested in several data centers in Thurston County, many of which are quality assets that are built to sound technology standards, including:

- The Jefferson Street Data Center
- Department of Corrections Data Center
- Department of Ecology Data Center
- Department of Labor and Industry Data Center
- Healthcare Authority Data Center (aka Cherry Street Data Center)
- Department of Health Data Center
- Department of Transportation Data Center
- OB2 – Office Building 2 Data Center (which houses DSHS, DOL, ESD, DFI, Early Learning, and others)

We need to manage all of these viable data centers – not just focus on the Jefferson Street Data Center. There is substantial value in having more than one good data center in which to deploy critical workloads.

The proposal in this document lays out the intermediate steps to enable a pool of machines to span multiple data centers by using private clouds.

To manage these data centers effectively, however, there is a need to spell out the business reasons that should cause an agency's computing workload to move to a new, better data center, since IT teams are resistant to moving from an adequate data center to a new one if there are no benefits. These can include:

- If an agency's current data center is inadequate and the workload is critical, they should be in a better data center. (The Washington State Patrol data center falls in this category.)
- The need to build up the ability to spread out a pool of machines to multiple data centers as the first step towards Disaster Recovery.
- To relieve the pressure on overburdened data facilities. (For example, about 20-25% of OB2's load in one of the halls needs to be moved to the new state data center to relieve cooling issues).
- Eventually, some data centers will need more infrastructure investment. Moving to the new data center will then be the fiscally sound decision. (The Department of Revenue (DOR) and several of the DSHS data centers fall in this category.)

As was discussed under Action 6, many state agencies began the process of consolidation by virtualizing their servers in preparation for the opening of the new state data center. As a result of these virtualization efforts, the number of actual physical servers that the

State maintains has been significantly reduced, decreasing the need for data center space. All of the data centers mentioned above, with the exception of OB2, are operating significantly under capacity today because of virtualization.

Moving towards the creation of a Data Center Management plan, the OCIO will work with agency CIOs to:

- **Identify** all the data centers that will continue to be maintained into the future.
- **Identify the first set** of agencies and systems from OB2 that will move to the Jefferson Street Data Center.
 - The Washington State Patrol (WSP) should be one of the first set of agencies to begin such a move (completely under the control of the WSP technology team). The WSP team will begin moving into the Jefferson Street Data Center as the first step towards enabling failover for disaster recovery with the intention of eventually closing down their current data center.
 - The CTS team will identify and move 20% - 25% of OB2 in order to relieve pressure on cooling in the OB2 facility.

Action 9 Encourage state agencies to systematically free up data (including geospatial information) for public consumption

Making government data more easily accessible by Washingtonians supports our commitment to transparency and openness and promotes innovation by encouraging the use and reuse of government data sets. Most state agencies make data and information available through their agency-managed websites, but data can often be difficult to find, interpret and combine with other data to come up with an entirely new way of looking at things.

Local, state and federal governments are exploring ways to “free up” or open the data they maintain to encourage entrepreneurial innovation. Many governments, including states (Oregon, Oklahoma), federal governments (U.S. and England), local governments (cities of Seattle, Chicago) and others are using Socrata’s data.gov as a portal providing access to government data. In 2010, Washington launched the www.data.gov.wa website as a pilot. However, the site has languished since the launch without an executive sponsor or evangelist.

The OCIO will:

- **Work with** state agencies to identify a solution (like data.gov) to house the data, and encourage widespread participation in the data sharing.
- **Work with the Geospatial Information Services (GIS) community** to rapidly deploy web services and tools needed to publish and easily consume GIS data.

Action 10 Make it easier for Washingtonians to interact with state government

Technology makes the provision of government services more streamlined and efficient. Several agencies have found innovative ways of responding to demands for readily accessible interactions. The Department of Licensing (DOL), for example, has greatly reduced state costs and public inconvenience by introducing online vehicle registration and driver license renewals. This has enabled DOL to significantly reduce their brick and mortar establishments, and realize the resultant savings, while making it easier for



WAOCIO's Quick Response Code

Washingtonians to fill their licensing needs directly. This has also allowed the DOL to increase their understanding of customer needs and how to deliver services efficiently.

The Department of Parks and Recreation has deployed QR (Quick Response) codes (http://en.wikipedia.org/wiki/QR_code) at state trailheads to allow hikers to purchase their Discovery Pass on site, reducing the need for staffing and raising the opportunity to expand purchase of the pass while making it easier for hikers to comply.

These examples improve the customer experience while reducing state costs. Efforts need to focus on solutions that make it easier for the public and business to seamlessly access services across departments. For several years, the small business community has sought ways to interact with all the licensing, registration, and taxing agencies without having to go to each agency individually. Providing a single entry point for these businesses could reduce errors, and make the business owner's experience with the state much more enjoyable (or at least less onerous.)



Over half of the states have privatized the creation and maintenance of their state portals for permits and licenses. Oregon, for example, recently joined 25 other states by contracting for web-hosting services that allow the kind of personalization already realized on award-winning state portal sites like Utah's (<http://utah.gov/index.html>)

These services usually fall within one of two categories – self funded privatization, based on collection of fees; and consulting or contracting the work out.

The Department of Enterprise Services (DES) is currently evaluating these options as well as options to fund this work in-house. The OCIO will work with DES to complete the business analysis and help move these efforts forward.

Action 11 Inventory and plan for replacement of critical legacy IT systems

Several key services in state government are provided by aging legacy systems. Legacy systems are potentially problematic:

- They often run on obsolete (and sometimes slow) hardware.
- These systems can be hard to maintain, improve, and expand due to an inflexible architecture. Those who were experts on the system have retired or forgotten what they knew about it. It often takes several months in on-the-job training for new staff to become productive.
- Some legacy systems may have vulnerabilities in older operating systems or applications due to lack of security patches being available or applied. There can also be production configurations that cause security problems.
- Integration with newer systems (such as mobile phones) may also be difficult because new software may use completely different technologies.
- Many of these systems are not flexible and it has become harder and more expensive to find the talent to maintain and modify them.

A **legacy system** is an old computer system, mainframe, or application that continues to be used, typically because it is critical for meeting the agency's needs, even though newer technology or more efficient methods of performing a task are now available.

Some of these systems include:

Tax Administration: The Department of Revenue (DOR) depends on COBOL-based systems for its mission critical core tax processes. These systems are the backbone of daily operations and have evolved over the years with regulatory and legislative change. Given the current financial climate our state is facing, the agency is taking an incremental approach to rewrite these applications utilizing existing resources.

Migrating to modern technologies reduces DOR's risk and maintenance costs and provides more desirable features and ease of use than what is available on most COBOL applications in production. It also allows access to a larger workforce trained on new technologies as well as software products that only work with more modern systems.

Community College student and faculty back office systems: There are 34 community colleges in Washington that form the backbone of two year post-high school education. Back office functions for teachers and students run on a 30 year-old COBOL system that is not flexible enough to meet the needs of the current student and faculty population.

Social Services: Medicaid as well as Basic Food and Public Assistance eligibility depends on millions of lines of COBOL.

Other agencies still use mainframe systems for very important applications including Corrections, Labor and Industries, the Department of Natural Resources, and the Employment Security Department.

To ensure the long-term health of technology in Washington's government, the OCIO must be responsible for creating a systematic inventory of legacy systems and prioritize those that ought to be replaced.

The OCIO will specifically commit to the following actions:

- **Identify and prioritize** the list of legacy applications that should be replaced in the next 10 years.
- **Formulate** a strategy for tackling the task of systematically replacing these applications and funding the replacements.

Action 12 Study how to attract and retain highly skilled technology staff and build up technology interest groups that function as robust communities in state government

The State of Washington employs over 3,000 full- and part-time technology employees who are passionate, dedicated, and highly skilled. IT is a critical component in the effective delivery of almost every state government service. However:

- Half of this workforce is over 50 years of age.
- One quarter of the IT workforce has over 20 years of service and is over the age of 50 and hence is eligible to retire at any time.
- Less than 5% of the IT workforce is under 30.

There are significant retention and recruiting challenges for government agency IT departments to staff their departments today and plan for how they will staff their departments tomorrow:

- While compensation for technology staff rose dramatically in the Seattle area last year, (<http://www.mobiledia.com/news/87836.html>) state government salaries were reduced.
- The technology infrastructure available to employees is somewhat limited, and can create inefficiencies in the work environment. For example, there is no Capitol Campus-wide Wi-Fi-LAN in Olympia resulting in the inability for employees to take their laptop or tablet to a meeting and remain connected to the network.
- Hardware and software refresh cycles have been lengthened due to budget constraints, which delays the upgrade of employee skill sets to match.
- For a variety of reasons, adoptions of new technologies are not made in a timely manner. If the state is not at least providing laboratories for emerging technologies, gifted technology employees fall behind in marketable skills and lack the innovative environment that drew them to technology in the first place.

The loss of key technology staff to more progressive public or private employers often means state agencies must turn to consultants for the same skill set, often at significantly higher cost. The OCIO will initiate a discussion on all these issues. Specifically, the OCIO will:

- **Work together with the Personnel Director** over the next year to develop a technology personnel recruitment and retention strategy that will focus on our ability to attract and retain top talent in important technology areas.

- **Foster** the creation of communities of IT personnel who are interested in a specific area by hosting seminars and online forums that create a community of interest around specific technology or IT management areas.