



State Of Montana

2015 Biennial Report on Information Technology

This is the seventh State of Montana Biennial Report on Information Technology prepared under the authority of the Montana Information Technology Act of 2001. It is published every two years unless special interim plans become necessary.

STATE INFORMATION TECHNOLOGY SERVICES DIVISION

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A. Foreword

This Biennial Report on Information Technology is an evaluation of the effectiveness and efficiency of the state's information technology investments in supporting the state's business processes and delivering value to its citizens. The work of supporting the state's business processes is challenging because of the diversity of services the state delivers. These services include health care, management of natural resources, supporting agriculture, promoting commerce, constructing roads, etc.

The report is primarily designed to be an assessment of past progress, but is also an opportunity to outline future impacts on the state's information technology. MCA 2-17-521 specifies that the Biennial Report must contain:

- an analysis of the state's information technology infrastructure;
- an evaluation of performance relating to information technology;
- an assessment of progress made toward implementing the state strategic information technology plan;
- an inventory of state information services, equipment, and proprietary software;
- agency budget requests for major projects; and
- other information as determined by the department or requested by the Governor or the Legislature.

B. Executive Summary

It goes without saying that today's modern organizations are reliant on increasingly complex and integrated information technology for their operations and service delivery. This, combined with the challenge of security, funding, and resource recruitment and retention, requires a renewed focus on creating and utilizing enterprise services and resources.

To address these challenges, the most common trend within state governments around the country has been the centralization of information technology functions with an emphasis on shared services and platforms. This trend is based on the need to improve the efficiency and effectiveness of state government by reducing redundancy in software, hardware and support, which has the potential to reduce costs and improve services. In addition, the creation of enterprise services can facilitate innovation that results in more affordable and accessible state-of-the-art technology. This is especially true when agencies across state government take advantage of the platforms and services offered at the enterprise level. This in turn will result in more standardization, better security, and lower costs for state government as a whole.

As the State Chief Information Officer, I have witnessed firsthand the impact that both internal and external forces have had on the enterprise information technology environment during the last two years. These forces of change are impacting not only the State of Montana but technology service providers as a whole.

We are witnessing greater security risks with more nation sponsored activity than ever before. Our workforce is becoming more mobile and the demand for mobile devices on our network is steadily increasing. Younger state employees are tech savvy and are embracing mobile technology and the *bring your own device* concept like never before. While at the same time, Montana's relatively low unemployment rate makes it more difficult to hire and retain a highly skilled workforce. More agencies are requesting cloud services and are at the same time demonstrating a greater desire to move to shared services and consolidation. The need to maintain budget levels has increase the use of leasing hardware as a cost control method.

As we evolve with the change, we are continually evaluating enterprise information technology services to ensure that we are making the necessary changes to move positively into the future to meet these challenges in an innovative, effective, and efficient manner. As we continue moving toward the enterprise model, we will rely on greater collaboration between agencies and focus on developing and providing shared services in a secure manner.

This report outlines the states accomplishments, challenges, and future initiatives. Transparency is perhaps the area where the state has made its most noticeable improvements, as noted in the last national Digital States Survey. With the establishment of the Transparency Portal, Data

Portal, and Business Portal, citizens can utilize the data that is collected and maintained on their behalf and understand where their tax dollars are being spent.

We continue to see a need to invest in security as we enhance our protections, establish governance, and move to an enterprise program. Agencies continue to demand upgrades to our network bandwidth as we compete with private industry, public safety, and the citizens of Montana for available bandwidth. Other changes include how the state moves forward with mobile device management, enterprise architecture, and enterprise configuration management.

Moving forward, the combined information technology services of the state will continue to support the business needs of the state agencies in a secure, efficient and effective manner while at the same time meeting the data transparency need of the citizens of Montana and supporting the Governor's Main Street Montana Project.

C. Progress on the 2012 State Strategic Plan for IT

Goal 1: Achieve maximum value of information through the active management of information technology

Objective 1: Increase use of consolidated platforms and shared services

SITSD is leading an effort to procure a statewide Electronic Content Management (ECM) system to replace nine separate agency systems. In November the CIO made the decision to proceed with a pilot project at DLI with Perceptive ECM software. Perceptive is currently used at DOJ. Montana is also implementing an enterprise-wide identity management system for access control and verification for all state employees and outside vendors and contractors.

DLI has consolidated its five IT organizations into one group to achieve economies of scale and deliver more effective services through system integration.

COR and DPHHS are planning to host all of their IT systems with SITSD.

Objective 2: Recruit, train, and retain a highly skilled workforce

On an enterprise-wide level, recruiting and retaining a skilled IT workforce remains a serious problem. Agencies list recruitment and retention as the second and third highest risks to implementing their IT plans. Agencies have individual strategies to minimize their risks, but the state does not have an enterprise-wide approach.

SITSD currently uses DOA's performance appraisal process to address training needs. Supervisors are required to identify and document workforce training requirements that address employee performance shortfalls or strategic workforce development goals during the mid-year performance reviews. The information is used to program and prioritize training funds and to procure training from the appropriate sources, including the State Professional Development Center, contractor-based training and vendor-sponsored training opportunities.

Objective 3: Strengthen and expand information technology partnerships

SITSD is implementing the Flexera software asset management tool for managing software compliance, optimizing licensing, streamlining operations and monitoring software obligations. SITSD plans to use the tool to launch an enterprise-wide Software Asset Management service for agencies.

Objective 4: Develop and implement management processes for using and securing information

The Information Security Managers Group developed the Enterprise Security Risk Management Policy which provides baseline security controls for agencies. The state has implemented security training for all state employees on an annual basis. SITSD has also established a new Security Risk Assessment Service which provides a review of information systems according to the National Institute of Standards and Technology (NIST) security standards.

Goal 2: Aggressively use technology to extend capabilities that enhance, improve and streamline service delivery

Objective 1: Seek out and implement innovative information technology solutions

Innovative IT solutions come from a variety of sources. Three modern technology areas are listed below along with agency activity in each area.

Cloud Computing

Cloud computing commonly refers to acquiring remote, shared IT services from an external party. The types of services might be storage, services or entire applications. There are numerous definitions and classifications of cloud computing that will satisfy any IT enthusiast. Montana’s cloud usage includes the following agency examples.

Table 1

Agency	Description
COR	Inmate Trust Accounts are hosted by Cashless Systems
	Commissary system is hosted by Cashless Systems.
	The inmate telephone system is hosted by TelMate.
	Restitution collection system is hosted on RevQ’s Revenue Results system.
DOA	Taleo recruiting system will be hosted with Oracle.
	Division of Banking and Financial Institutions uses a cloud-hosted system for licensing and enforcement activities.
	Montana’s Business Continuity Planning system (LDRPS) is hosted by Sungard.
DOC	Esri hosts agency GIS data and deploys the data using Esri’s web mapping tools.
	Commerce’s Promotion Division uses the Salesforce.com customer relationship management system.
	Commerce’s Housing Division hosts the Multifamily Rental Listing web site with socialserv.com.
GOV	Customer Relationship Management system is hosted by Microsoft.
	Esri hosts agency GIS data and deploys the data using Esri’s web mapping tools.

MDT	Esri hosts agency GIS data and deploys the data using Esri's web mapping tools.
MSL	Esri hosts agency GIS data and deploys the data using Esri's web mapping tools.

In addition to cloud computing, agencies have also been using blogs, social networks, wikis, podcasts, user satisfaction surveys, and widgets to complement their internal IT operations.

Mobile Apps

Montana has 23 mobile applications, all introduced within the last biennium. Primary services include:

- DOJ Driver Test Practice Exam for iPad and iPhone
- SOS My Voter Page News from Montana's Secretary of State
- DOR Income Tax Express
- DPHHS Montana Prescription Drug Registry
- COR Correctional Offender Network Search - vineinfo.mcp.x
- MDT Travel Info Mobile MDT Traveler Information
- DOA Deferred Compensation
http://mpera.mt.gov/docs/MPERA_MobileWebApp_Flier.pdf
- FWP State Parks <http://stateparks.mt.gov/favicon.ico>
- BARD Mobile (Braille and Audio Reading Download) Apply for Bard

For a detailed listing of Montana's mobile applications, see [Table 2 - Montana Mobile Applications](#).

In May 2014, the governor announced the State of Montana Mobile App Challenge. This contest is for state employees to brainstorm and invent mobile apps for state government. These apps will help state government become more accessible to Montana citizens, more effective for their needs and more transparent and accountable to all Montanans.

Social Media

Roughly a third of agencies have implemented social media sites. Montana's most popular Facebook page is for Travel Montana.

Table 3 Agency Use of Social Media Sites

Agency	Facebook	Twitter	YouTube	Flickr	LinkedIn	Pinterest
DEQ		X				
DLI	X		X			
DOJ	X	X				
DOR		X	X			
DPHHS			X	X		
FWP	X	X	X	X	X	X
GOV	X	X	X		X	
MDT	X	X	X	X	X	X
MSL	X	X				
OPI	X					

Objective 2: Enhance collaboration

DOA is implementing a new enterprise-wide recruiting system, Taleo, for all agencies on an Oracle public cloud.

The State of Montana's Open Data Portal was implemented in July 2014. The portal is modeled after the Federal government's data.gov initiative and will provide a single source and portal access to State of Montana datasets that can be freely used by the public.

DOC and DOJ participated in the development of a NIEM standard for victim notification, which was implemented in production and adopted by the federal government as a national standard.

DOC expanded access to their offender management system to staff from DOJ, OPD, DLI and is currently working with DPHHS the provision of access.

The FWP Enforcement SmartCop Program is a cooperative effort between the Law Enforcement and Technology Services Divisions of FWP as well as the DOJ. FWP's participation in this program with DOJ allows FWP game wardens mobile access a wide variety of law enforcement systems and automates the specific business of natural resource law enforcement.

Objective 3: Increase use of seamless cross-boundary information solutions

In mid-2013, DPHHS and DOA agreed to work jointly to procure and deploy a solution for managing the state hiring process. This project is part of an overall initiative by DOA to standardize the state's human resource processes and improve the systems and automation used to support human resource activities across all state agencies. Initial efforts were focused on identifying functional and technical requirements, reviewing and modifying business processes and conducting procurement activities associated with the acquisition of a new system. Requirements were validated in late 2013 and the Taleo solution from Oracle was identified as the solution best fitting those requirements. Implementation is in progress.

SmartCop is a highway patrol in-car system used to run queries, issue citations and provide centralized Computer Aided Dispatch (CAD). SmartCop provides an integrated information system for the Montana Highway Patrol (MHP) dispatch and patrol and will soon provide the same in-car solution for FWP and Montana Carrier Services. It includes software, hardware and services to support dispatch operations and an in-car mobile solution including a laptop, printer, card reader, wireless connection and various other equipment.

Goal 3: Build an infrastructure / architecture that provides citizens and employees of the state access to information however and whenever they need it

Objective 1: Explore and implement technology to enhance accessibility, availability, and usability of information

Montana linked the transparency website to the DOC's portal for economic development subsidies, which empowers Montanans to monitor the awards given to companies to grow the economy. The portal

contains award information for 17 programs dating back to 1989. The portal features recipient-specific information on the number of jobs that were supposed to be created by each subsidy.

In 2013, the State CIO set a vision for the state's official website, Montana.gov, that it would be supported by three primary portals: Business, Transparency in Government and Montana Data. The vision was to share data and information between them.

- Montana's Business Portal is run by the Governor's Office of Economic Development. The Portal has two main components: Choose Montana and Montana Site Selector. Choose Montana highlights the facts and figures from Montana's dynamic statewide economy and key industry sectors, as well as the reasons CEOs and entrepreneurs choose Montana as for their operations. Choose is located at [Choose Montana](#). Montana Site Selector provides a group of geo-based tools for analyzing potential Montana locations business or industry. Site Selector is located at [Business.mt.gov > Home](#).
- The Transparency Portal primarily includes state tax expenditure data, state employee pay, the state checkbook and economic subsidies. This site was made available in 2013. The Transparency site is located at [Transparency in Government Portal](#).
- Montana's Open Data Portal went live in July 2014. The portal is being modeled after the Federal government's data.gov initiative and will provide a single source and portal to state datasets that can be freely accessed and used by the public. All data sets are automatically downloadable and API enabled. The Montana Data Portal is located at [data.mt.gov > Home](#).

Montana provides over 228 e-Government services on the Online Services menu on Montana.gov, [Montana's Official State Website](#). There are additional e-Government services that are provided to state employees and specific groups. 40 services were added in 2012 and 22 services were implemented in 2013. The following list provides a sample of what is available.

- Montana Prescription Drug Registry
- Income Tax Express mobile service
- Asbestos Project Permitting
- Brand Rerecord.
- MHP Citations Roadside Payments
- Inmate Banking
- Burn Permits (County projects)
- Property Tax payments

Montana has many ongoing and future projects that implement citizen engagement, open government and mobile services.

- DOA is soliciting agency data for inclusion in the state's data portal. The infrastructure is in place and data is now being loaded.
- FWP has established a Public Mobile Application Proposal Committee to evaluate mobile access for all licensing functions: purchase, delivery and proof.
- DPHHS is enhancing its CHIMES eligibility system with a mobile self-service application.
- DPHHS is enhancing its Vocational Rehabilitation Case Management System with remote and mobile access.

- MDT is adding mobile access to its Bridge Management System.
- FWP's Law Enforcement Technology project provides for the installation and maintenance of mobile computer terminals along with functional vehicle mounted and portable radios for FWP game wardens.
- DOR's new version of GenTax will offer mobile access.

Objective 2: Leverage robust technology platforms

Agency acceptance of SITSD's managed virtual server offerings was not always overwhelming. Control was always an issue. SITSD responded by developing a new service offering, Virtual Server Platform (VSP), that allows agencies to create, manage and maintain their own virtual servers with any guest operating system supported by VMWare vSphere 5; as well as having the ability to allocate CPU, RAM, disk space to their virtual servers in any supported configuration. A second agency customer is now implementing the service.

In April 2014 SITSD entered into an agreement with the state of Oregon allowing either party to request IT services. A separate agreement allows Oregon to lease rack space in Montana's Miles City Data Center.

Objective 3: Document and implement repeatable technology management processes

Montana has a robust and active Project Management Office (PMO) staffed by five nationally-certified project managers. Project management ensures Montana's IT investments produce their intended results by:

- Developing a consensus on the project's purpose and objectives
- Providing tools for defining and controlling a project's scope
- Managing project risks
- Identifying, monitoring and tracking deliverables and milestones
- Improving communications and reporting

The PMO provides training, project management for selected projects, LFC reporting on major projects, and oversight of agency IT projects. Agencies such as DPHHS, MDT, DOJ, and DLI have also adopted industry best practices in project management. Montana has not had a major project failure in the last two years.

Goal 4: Enhance the reliability and security of the state's information systems

Objective 1: Develop and implement an Information Risk Management Program

In addition to the establishment of a statewide security risk management policy, the Office of the State CIO supported an effort through the Legislative process to extend the security infrastructure through the State of Montana Data Protection Initiative. This initiative provides the implementation of a statewide data protection system through user access control and verification also identified as Identity Management. This initiative includes multi-factor authentication, comprehensive security controls for multiple identity stores, robust auditing capabilities, and the ability to integrate various agency systems together to manage and exchange data. In addition, this project involves a statewide risk assessment that

will highlight vulnerabilities and generate requirements for improving security that will be used for an additional funding request for the 2015 Legislative Session.

The Governor of the State of Montana is a strong supporter of cyber security and has implemented a requirement for all state employees in the Executive Branch to complete security training by August 31, 2014. The state has opted to use the Securing the Human training offered by SANS through MS-ISAC (Multi-State Information Sharing and Analysis Center) and is on task to have employees complete the training. The state has also established some insurance incentives for the agencies which have all employees complete the training.

Objective 2: Identify and document compliance requirements

SITSD monitors agency compliance with IT standards and policies through the ITPR acquisition review process. SITSD reports all IT policy and standard exception approvals to the ITB and LFC each quarter. The State Records Committee continues to manage and monitor agency records retention and disposal.

Objective 3: Streamline and unify information security processes in accordance with industry practices

Montana is implementing a statewide access control and verification system for all state employees. Various state agencies also have a need for other outside individuals to have access to confidential data that is maintained by state government. Access to this information will be controlled through the new access control system.

In 2013 the Information Security Managers Group (ISMG) reviewed and assigned all 800-53 Rev4 National Institute of Standards and Technology (NIST) security controls and formulated the state's Security Risk Management Policy. This policy identifies and describes the common, minimum NIST controls that must be implemented by all state agencies.

Goal 5: Develop and implement an information technology governance structure for delivery of expected benefits

Objective 1: Develop and utilize an enterprise architecture

Although the use of Enterprise Architecture is not common across agencies, Montana's DPHHS is well along the path. DPHHS is moving from monolithic legacy systems toward web-based, people-friendly, and interoperable systems based on Service Oriented Architecture (SOA). SOA allows separate, standalone systems to communicate using exposed, shared services through a common shared architecture and service bus. Users will be able to access data from multiple systems seamlessly, and errors associated with redundant data entry will be reduced.

SOA takes advantage of commercial off-the-shelf (COTS) products and allows for the reuse of system components across business functions as services. The department has implemented a data exchange service bus that provides interoperability that makes use of multiple industry standards.

DPHHS follows federal guidance on the Medicaid Information Technology Architecture (MITA) system architecture principles, and is replacing its legacy Medicaid Management Information System (MMIS) with one that is fully aligned with the MITA standards.

Objective 2: Coordinate and leverage state technology investments

In 2013 Montana and Oregon expanded their IT business relationship with a formal intergovernmental agreement that allows them to purchase IT services from the other state's catalog of IT services. Previously the relationship was based on separately negotiated MOUs for specific services.

Objective 3: Provide ongoing review of capital information technology projects

The State Project Management Office collects project data on those projects meeting one or more of the Legislative Finance Committee (LFC) criteria:

1. Project cost estimate is at least \$500,000 for development. Development costs include costs for internal staff, vendor contracts, equipment and software, or
2. Project is included in the bill that provides resources for long-range IT, or
3. Project is potentially of enterprise interest or need. For example, document imaging systems have been implemented by a number of agencies with a cost of less than \$500,000, however statewide the investment in the technology could be considered significant, or
4. The LFC has specifically requested the project be reported.

The information is captured electronically, consolidated and reported to the LFC.

Objective 4: Align technology investments with the state's overall goals, priorities, and mission objectives

The current state IT strategic plan is directly aligned with the administration's focus on better jobs, better education, and effective state government. The plan states that Montana will use/leverage technology to address these areas by:

- Providing mobile access for our citizens and state employees.
- Prioritizing projects that deliver the most effective government services.
- Employing technologies that make state services more accessible and secure.
- Sharing systems across agencies, Montana political subdivisions, and other states.
- Maximizing returns on IT expenditures.

View the [State of Montana 2014 Strategic Plan for Information Technology](#).

D. Progress on 2012 Agency IT Plans

The following information on agency progress was submitted by the individual agencies and is presented here in their own words.

Department of Administration

- **Statewide Budget and Reporting System Upgrade**
This project upgraded the statewide budgeting system to mitigate technology support concerns and provide new functionality. The SABHRS Finance and Budget Bureau managed the upgrade project on behalf of the Governor's Office of Budget and Program Planning (OBPP) and the Legislative Fiscal Division (LFD). The IBARS system is in production.
- **Banking Database and Process Automation**
BOLD is a consolidated system to track and manage financial institutions licensing and bank examination processes and information. The goal was to improve internal operational efficiencies and provide better service to customers. This division completed the system implementation in April 2014.
- **Property and Casualty Insurance Information System (PCIIS)**
The project updated the underlying technology infrastructure of this system to modern technology and standards. The system helps DOA efficiently manage and track the state's vital, insurable assets and provide more timely underwriting submissions to the state's commercial excess insurance carriers. The system was implemented October 2013.
- **Statewide Data Protection**
The 2013 Legislative session, HB10 – Long Range Information Technology Projects, included funding for the Data Protection Initiative. This initiative included three components:
 - ✓ Implementation of an enterprise system of user access control and verification;
 - ✓ A statewide security risk assessment and penetration test;
 - ✓ Implementation of multi-factor authentication; the use of two forms of identification to allow access for a user to a system.

Major progress was made on the three components of the Data Protection Initiative. The user access control and verification project is underway and on schedule. The planned implementation date is July 2015. The risk assessment and penetration testing phase is complete. In Nov 2014 five participating agencies will be briefed on the results. The enterprise risk assessment will provide recommendations for the next phase of the Data Protection Initiative. SITSD also completed the implementation of multi-factor authentication.

Agriculture

- The Department of Agriculture purchased an enterprise class license for grant management software. The purchased license allows any state agency to participate. The original implementation is a collaboration of AGR, DNRC, DOC and FWP. System administration duties are shared between participating agencies and coordinated by a user group which meets monthly

with the vendor. User group meetings provide an open forum to discuss system issues, present enhancement ideas and support for newer participants. The Department of Agriculture structured participation cost-sharing by simply dividing recurring annual costs equally between participating agencies. Since recurring costs are relatively fixed, the annual cost to each agency is reduced when new agencies join the group.

- The goal to promote and expand the use of FundingMT.org has been successful. Since 2012, the participant agency list grew and now includes DMA and DLI.

Board of Public Education

- Replacement of all PC's/laptops in the office for all staff;
- Continued use of technology for board meetings;
- Accomplished all goals and objectives in the 2012 Plan.

Commerce

- Commerce's top accomplishment was a group of projects that addressed obsolescence of our web HTML 4 environment. We had numerous sites built upon this technology and to address it required coding upgrade and/or replacement to HTML 5 and CSS 3 using ASP.NET. This new version has allowed us to improve access for mobile devices and take advantage of new features available for design, forms, video and social media. These projects included:
 - Visit.com .Net Phase I - Completed
 - Visit.com .Net Phase II - Completed
 - Visit.com .Net Phase III - Completed
 - Census Information Site – Completed
 - Made In Montana – Replacement - Nearing completion
 - Montana Heritage Commission – Replacement – Underway
- Commerce successfully replaced the Oracle/Siebel based VISITS system, also known as a Customer Relationship Management (CRM) System, by a Salesforce.com SaaS solution. This project eliminated 12 on premise servers and expensive licensing and support costs for the Siebel CRM and Oracle Database.
- Commerce procured and implemented a Housing Servicing Program that absorbed four loan servicers. Currently, over 4,000 loans are being serviced. The Board of Housing has worked closely with SABHRS, State Treasury and other entities in streamlining and automating processes where possible. The servicing of mortgages includes the handling of mortgage payments, disbursements of escrow funds for taxes, insurances and handling of foreclosure processes.

Commissioner of Higher Education

- The University System upgraded its core network to support higher capacity and additional locations.

Corrections

- The department expanded the victim information and notification system to include victim notification on status changes for offenders under community supervision. As part of this expansion we participated in a national effort to develop a national victim notification standard and were the first state to implement this standard.
- Additionally, DOC developed an alternative method for victims to register with the department with the creation an online registration app available on the e-Government portal. The success of this project was measured with the success of real time notification transactions and the occurrence of victim notifications about probation and parole events.
- The Student Online Academic Resource (SOAR) project was successfully implemented. This project established a secure network, located in the State of Montana Data Center (SMDC), that allows for restricted inmate access to online resources. The department partnered with Montana State University Billings, Flathead Valley Community College, and Miles City Community College to provide services to the offenders utilizing this network. The success was measured by successful completion of the courses offered and additional courses being made available.
- The department selected two new offender assessments for use; the Ohio Risk Assessment System (ORAS), which we call the Montana Offender Reentry Risk Assessment (MORRA), and the Women's Risk and Needs Assessment (WRNA). After these paper-based tools were selected, the department worked with the University of Cincinnati to gain an understanding of requirements of automating these tools without impacting the fidelity of the instruments. Both tools were integrated into the department's Offender Management Information System (OMIS). The success of this project was measured by testing scoring mechanisms and adoption for production use. Prison and community corrections staff have been trained and are using the assessments.

Commissioner of Political Practices

- CPP upgraded a primary business application called Campaign Tracker. The application and a mixture of various checklists managed various business processes, but the lack of a consolidated database resulted in lost documents, delays in processing, and overlapping schedules for staff members. The objective for the new system was to provide online access system and encourage everyone to use the eFile system. The system will also provide free access to the public and allow for broad searches of the public data. An external contractor upgraded the existing database and developed all eFile services. The Candidate and Committee Registration application was launched on January 12, 2014. Candidate and Committee Reporting, upload, and the public search function were launched in May.

Labor and Industry

- The planned consolidation of IT services in the DLI was completed successfully. The focus of this consolidation was to create excellence in IT, build on a culture of service and support, enhance IT collaboration and manage systems, applications, projects and staff from an Enterprise perspective.

Over one year ago, an IT transition team was formed to plan and implement this consolidation effort. On June 16, the newly designated Technology Services Division (TSD) began operations at our new location at 2550 Prospect Avenue in Helena. TSD consists of a project management office, application services section, technical services section, and security team.

As part of this consolidation effort, DLI has implemented IT career pathways to provide IT staff career advancement opportunities as positions become vacant. In addition, TSD will be providing job-specific IT training and mentoring to division staff on an annual basis.

Natural Resources & Conservation

- Central Office of Information Technology (OIT)

DNRC has spent the last few years forming and solidifying a central Office of Information Technology (OIT) alignment of departmental enterprise business goals and IT support.

Overcoming legacy business practices and introducing mature IT methodologies took not only IT expertise but a tremendous amount of relational management. This effort to ensure agency programs of improved technological support is now bearing fruit as several important systems are gaining traction in engaging modern IT practices and reaping the benefits of today's technical efficiencies. Metrics for this project include soft measures such as increased collaboration across programs, improved IT engagement, and better project management as well as hard measures such as decreased support response times, improved resource management, and legacy system upgrades.

- Launch of the Information Security Management (ISM) Program

The department actively collaborating with SITSD in formalizing the state's common security controls based on NIST 800 series publications and ITL security bulletins. At the same time, a short-term security directive was employed to address the security controls that had the greatest impact to mitigate risk for potential security events. Following this, the department rolled out annual SANS Institute's Securing the Human training to department employees in collaboration with SITSD. The department is developing a full ISM program strategy that includes updated system security measures, continuity of operation plans, mature IT process development, and professional security reviews.

- Windows 7 Migration

DNRC migrated all desktop systems from Windows XP to Windows 7. The project standardized DNRC's desktop operating systems and hardware for the first time and upgraded over a dozen legacy programs. Historically desktop systems were independently purchased and configured according to the needs of each division.

- **Delayed projects**
The Water Rights system was stalled due to lack of funding. DNRC is pursuing FY16 funding for a pilot study to provide answers to the direction and scope of this upgrade. The website redesign was delayed due to a key position vacancy. The department's pursuit of a mobile device management solution and a records management solution were postponed to watch the results of SITSD's RFPs in these areas. The desktop backup solution has been abandoned in favor of using enterprise storage solutions.

Several other projects are behind schedule due to staffing issues. The OIT unit was staffed at 50% for half of the biennium due to IT personnel retention and recruitment challenges.

Public Health and Human Services

- **Implementation of Enterprise Architecture and the Shared Fiscal Services Layer (SFSL)**
The department has implemented enterprise architecture components such as Common Client Index (CCI), business rules engine, enterprise service bus (ESB), a document generation engine and a Shared Fiscal Services Layer (SFSL). These were built within the framework of a Services-Oriented Architecture (SOA) which increases modularity, provides a more streamlined user interface, and facilitates additional system interfaces. SFSL transformed fiscal business processes into a library of shared fiscal services. These shared services replaced and centralized the functionality housed in separate systems. CHIMES, TANF and CHIMES SNAP use the SFSL for all fiscal processing and fiscal-related interfaces. As other systems are enhanced, they will be built to use SFSL. SFSL went live November 2012. These functionalities enable shared data collection, automated processing of changes received via data exchanges, and task management. They also improve accuracy of eligibility determinations, usability of the front-end interface, and timeliness of application processing.
- **Implementation of CHIMES SNAP and CHIMES TANF**
The SNAP and TANF eligibility systems project replaced the SNAP and TANF components of The Economic Assistance Management System (TEAMS). TEAMS was a mainframe-based system previously used in the eligibility determination, benefit distribution and program administration for the Medicaid, SNAP and TANF programs. The replacement systems went live November 2012. Enhancements and maintenance of these systems are managed by the technology services division through a contract with an outside vendor. CHIMES SNAP and CHIMES TANF leverage the enterprise components discussed above. This enables shared data collection and increased eligibility determination accuracy. These implementations streamlined and enhanced the department's interoperable eligibility systems to allow caseworkers to seamlessly process and maintain benefits for applicants.
- **The Affordable Care Act Implementation**
Montana elected the Federally Facilitated Marketplace (FFM) instead of building our own state-based exchange system. The CHIMES EA and CHIMES Medicaid/HMK system were modified to meet the compliance requirements for FFM. Montana designed, developed and implemented system changes that met the ACA guidelines. We leveraged enhanced funding for system improvements related to shared components of Medicaid functionality through 2015. Enhancements included: the creation of business rules for MAGI Medicaid/CHIP categories;

creation of new presumptive eligibility programs, and the implementation of a re-designed and modernized self-service portal. The self-service portal mirrors the CMS single streamlined application for health coverage applicants and expands self-service capabilities to include the ability to view current benefits, report changes, renew benefits, and opt-in to electronic notifications. Automation capabilities have been expanded to include “no touch” application processing and health coverage enrollment for FFM determinations and self-service portal applications.

Justice

- MERLIN release 14.3 contained several major technology updates to MERLIN’s application architecture. Upgraded items in this release included Internet Information Services (IIS), Active Directory, Visual Studio, DevExpress, .Net, Printing, and replacement of all of the web/application servers. The project started in December of 2012 and was implemented in July of 2013. This project was a prerequisite to the Microsoft XP replacement project. In addition, this project enhanced the MERLIN system performance, security, reliability, and provided the ability for future technology enhancements.
- The Sexual or Violent Offender Website (SVOW) application was completely rebuilt in-house. With nearly 600,000 visits per year, SVOW is a valuable resource for Montanans performing searches to find sexual and violent offenders in their neighborhoods, cities or counties. Not only does it provide offender location and information, but it also provides references, guidelines, statistics, notification instructions and educational information. SVOW can be viewed on any device, from desktops to smartphones. It uses only one code source which eliminates additional programming, support, and management for different devices. The new SVOW application saves \$23,000 annually in maintenance costs.
- The Windows XP eradication team successfully planned and replaced 520 Windows XP workstations within 6 months, logging 5,000 travel miles in the process. They isolated and obtained support of two other vital systems that allowed for citizens to obtain driver’s licenses and provide fingerprints for criminals and job applicants. Replacing or isolating these machines ensured vital sensitive data and systems were secured and risk of downtime and data compromise was significantly reduced.

Revenue

- Continued Support of the Governor’s 20 X 10 Initiative
DOR downsized the number of desktop printers; implemented settings on PCs to save energy; installed energy efficient power supplies; employed video conferencing, implemented server virtualization and reduced the number of physical servers. DOR implemented Microsoft’s System Center Service Manager (SCSM) and System Center Operations Manager (SCOM) for remote management of desktops, deployed DOR applications from a central repository, and hardware and software asset management.

- **Imaging Technology**
 Although electronic filing reduces paper returns, DOR still devotes significant resources moving, retrieving, and storing paper documents. Physical transport of paper increases the risk of disclosure of confidential state tax data. Imaging and workflow will greatly enhance DOR's ability to improve security, efficiency, return processing and error correction. Future plans include dynamic two-dimensional bar coding, which will speed taxpayer refunds, provide better information for the legislature, and increase tax revenues from compliance. Implementation in the Property Assessment Division (PAD) will improve property valuation and property tax administration while minimizing new staff requirements. The project was completed with over 100 different form pages scanned, and either data captured or image stored.
- **Consolidated Application & System Support**
 DOR recognized the need to consolidate all DOR IT system support within the IT office. Benefits included strengthening security and privacy safeguards by the uniform application of security and privacy rules; increased the effectiveness/efficiency of the maintenance, support and development of systems by standardized procedures; improved long range IT planning and decision making; maximized the effective allocation of limited IT resources; ensured that the business and management analysts are equipped with the data analysis and reporting. The project is complete.

Fish, Wildlife and Parks

- **Migrate off SITSD's e-Directory Tree** – FWP was able to successfully stand up its own e-Directory tree and move its primary authentication store to this new implementation. This eliminated the dependency on a SITSD hosted technology that was being deprecated at the state level. FWP's e-Directory has been in production for nearly three years now with all of FWP's internal authentication requirements being served by this directory.
- **Fish and Wildlife Information System (FWIS) continued development** – This very important biological data analysis system has continued to gain in feature set and in importance to FWP's core business of natural resource management. Most notably in the past biennium, the FWP regulations module of FWIS was re-written to interface with all other relevant parts of the system. Species with mandatory reporting requirements and associated district quotas are now potentially available to all areas of the system, including regulations, thereby streamlining the season setting process. Success has been measured by increasing adoption of the system for multiple uses by a larger FWP employee set.
- **FWP Technology Services completed a through program review** in the first half of 2014 to identify potential efficiencies and cost savings. A number of planning process gaps were identified and corrected. Additionally, a formalized IT governance process was implemented along with performance measures: user adoption, customer satisfaction, technical debt load/new system development ratios, costs per system.

Governor's Office

- The change of administration resulted in the elimination of three of four objectives in the 2012 IT Plan. The constituent tracking software application objective has been refocused on Microsoft Dynamics CRM instead on ConTrack. Dynamics CRM is in production.

Lottery

- The retailer population has grown with the addition of installed terminals throughout the state providing our product in a diverse mix of retailer locations.
- Lottery Operating System issues and events preventing the Lottery from providing its products have declined as the IT department continues to perform thorough testing of all system and product upgrades.
- The Lottery is moving forward with the update of the Lottery Operating System technology through a procurement of a new vendor contract. The request for proposal process is on schedule and on track. A new contract will ensure the Lottery continues to maintain state-of-the-art technology in order to provide our product to the public.

Montana Arts Council

- In 2006, the Montana Arts Council (MAC) initially contracted with SITSD to design a Contact and Grants Management Database. The initial project did not result in a useable system. Since the initial conception of the project, technologies, circumstances, and requirements have changed, but MAC still needs a new system to manage contact information. With the services of Carol Schopfer of SITSD, MAC has completed the business process mapping, requirements gathering, and a feasibility study to evaluate potential solutions. With the help of Cheryl Pesta and Steve Haines of SITSD, a Contractor Engagement Proposal for staff augmentation was completed and a contractor was hired to guide MAC through the process of selecting and purchasing software. Eight systems were demonstrated and MAC is currently preparing a limited solicitation and ITPR. MAC anticipates having staff trained and a software solution implemented, tested and running by December 2014.
- Select staff members are using smart phones to assist workflow and streamline processes.
- Select staff members have been trained in new website management software and the agency is in the process of redesigning the website to better serve the constituency. The design process began in January 2014 and will continue with demo pages and test. The final implementation date has not been determined.

Montana Board of Crime Control

- The Grant Management Information System (GMIS) has increased the efficiency of information sharing for sub-grantees and MBCC staff. MBCC works closely with the vendor of the system to enhance and ensure required maintenance is performed in a timely manner to maintain

compliance with Federal regulation. MBCC also works with stake-holders to ensure that participation by local agencies is continually increasing. The rewrite of the OSAS (Online SubGrant Application System) component of GMIS is intended to provide better workflow of grant information entry by sub-grantees and program managers. The rewrite of the new OSAS user interface is estimated at 75% complete. The GMIS System includes OSAS, GWIS (Grant Web Information System) and BMWAS (Board Member Web based Access System). The GMIS system is substantially completed, but enhancements and maintenance will be ongoing to ensure accurate and timely distribution and collection of grant applications.

- MBCC continues to improve the collection error rate of the data being collected and analyzed for adult, juvenile and crime victims. Law enforcement agencies are audited on a semi-annual bases to ensure reporting compliance and the reliability of the data being provided to Montana agencies and the FBI. In addition, detention center data is being analyzed for compliance and violations are being reported. The collection, analysis and validation of crime data, continue maintaining and enhancing MBCC crime data collection systems is on-going. These include Montana's version of the National Incident Based Reporting System (MTIBRS), Juvenile Detention Database and Reporting System (JDDRS), Drug Task Force Crime Data Collection, Juvenile Offense Statistical Data (CAPS & JCATS), Adult Detention Center System, Law Enforcement Manpower Database, Automated Victims Information database (AVID).
- MBCC provides and supports many web sites, publications and conferences that provide information about and encourage the sharing and disseminating of important public safety information. MBCC continues to improve the utilization of the *Crime in Montana* document for the process of analyzing crime. Increased acceptance and usage of the publication ultimately leads to improved crime prevention capabilities by various entities in Montana. MBCC ensures that this analysis is accurate and provides useful statistical information to the consumers of this publication. MBCC continually assesses the avenues that consumers of this information access the site. The growth of mobile devices is beginning to drive the dissemination of important information to various platforms. In addition, MBCC has increased the overall sharing and networking of knowledge within the Montana public safety community. The analysis, validation, statistical reporting of crime data, maintaining and enhancing the MBCC public web site with Montana crime data and information is on-going. The process of knowledge sharing via social media platforms is continually changing and demands for information are continually increasing.
- MBCC is implementing an updated Juvenile Detention Database and Reporting System (JDDRS) that improves oversight and management in conjunction with the Supreme Court's Juvenile Court Assessment and Tracking system (JCATS). This union will allow for near real time data gathering and exchange, providing decision makers with vital information. Integrating JDRS into JCATS maximizes efficiencies and provides a unified approach to juvenile tracking and reporting for the state of Montana. The system is currently in test and will be in production in FY2015.

Montana Department of Transportation

- The SIMS project is near completion and MDT gathered business requirements, developed an RFP, selected a qualified vendor, and implemented a new Safety Information Management System in 2014. It has been a successful project producing a functional system that meets the

agency requirements and customer expectations.

- MDT invested a great deal of time developing an IT Investment Selection Process. Currently, MDT has established a framework where all major projects are discussed and prioritized at the agency level. This framework has been successful because project expectations are established and communicated. In addition, the correct resources are assigned to the highest priority projects within the agency.
- MDT adopted a new application development methodology. MDT has migrated from a traditional waterfall methodology to an Agile Scrum methodology. Agile helps speed up the system development lifecycle phases and allows MDT to bypass process steps that add little value to the project. The new Agile methodology encourages a collaborative team approach, facilitates knowledge sharing, and engages the stakeholders continuously so new requirements are gathered faster and reduces scope creep. This methodology saves MDT time and effort, and redistributes leadership at various levels within the teams. Success has been measured by the end result – a higher quality of software delivered quicker than a traditional waterfall methodology and satisfied customers.

Montana Historical Society

- Montana Historical Society accomplished replacement of hardware and brought MHS current with the four-year replacement cycle.
- MHS implemented a new employee IT security orientation program.
- MHS expanded the accessibility to MHS archives and Research Center catalogs. The measure was the increased in number of research requests either electronically or in person.
- MHS is in the development stage of the electronic access to *Montana Magazine of Western History* project. Currently, MHS has the entire 60-year run of the magazine available as text-searchable PDF format. The next phases are dependent on funding.

Montana Public Employee Retirement Administration

- MPERA successfully closed its Electronic Content Management (ECM) project in August 2012 for 76% of the original project cost. This covered the cost of all required software and slightly more than 50% of the services for which MPERA contracted. All project completion criteria have been met. MPERA has also successfully completed the back file conversion of active member files.
- MPERA's second major initiative is to develop a new Line of Business (LOB) software system. LOB is a component of the MPERAtiv program, which includes business process modification, data cleansing, imaging, and a new LOB system. Provaliant Retirement, LLC, provides ongoing project oversight and quality assurance throughout all projects included in the MPERAtiv program. PERIS, the LOB project and the Data Services project are on schedule and remain within scope. They are scheduled to be implemented in July 2015.

Montana State Fund

- Montana State Fund (MSF) has successfully invested IT resources on appropriate projects approved by the Board of Directors or prioritized by the MSF Governance Committee. These projects and system changes include improving current insurance processing functionality through system enhancements and ensuring effective processing through infrastructure maintenance.
- Leveraging the large volume of insurance business data continues to be a priority. MSF has completed minor maintenance and enhancements as requested to its insurance intelligence system that provides executive, leader and employee access to enterprise-wide reporting to help drive decision making and monitor complex business situations.

Montana State Library

- MSL has been migrating to a virtual server environment to provide efficient server management, reduced maintenance downtime, server portability to allow for an eventual move the SMDC, and expanded disaster recovery options. At present our virtual server environment consists of 9 host servers and 24 virtual servers. While there are still 12 physical servers, one of those will soon be decommissioned and 7 already have replacement virtual servers. By January 2015, we should have 4 remaining physical servers. One of those is a disaster recovery server and the remaining 3 belong to the Montana Shared Catalog (MSC). MSC regularly evaluates new technology and alternative solutions which include both cloud and other third party hosted solutions as well as virtual server options.
- We began a multi-year project to overhaul the MSL web presence in 2012. Problems with the existing web site included difficulty locating web resources, dated design, unpleasant user experience, poorly maintained content, and a lack of integration between the web site and the web applications. Three sub-projects were identified to address these issues: Implementation of a Content Management System (CMS) that used responsive style sheets, the promotion of social media tools and integration of the use of those tools into the MSL web presence, and an overall web site redesign to provide a modern look and feel that is consistent with the state template. The CMS (WordPress) was rolled out in early 2013. In mid-2014, all CMS sites were migrated to the DNN environment hosted at SITSD. This project has distributed the work of maintaining MSL web content to program staff. Content is more current and program staff being more engaged in the MSL web design. Social media guidelines have encouraged program Facebook pages that contain appropriate, regularly updated content. This has been successful in expanding exposure of library services to a larger user community. Finally, with the implementation of the CMS the MSL website moved to the new state template. Site design update planning is underway and we plan on refreshing the look and organization of the MSL site in the coming year.
- Prior to 2012, the library operated without a clearly-defined IT support program. The network administrator and web manager both reported to the digital library manager (also the MSL CIO) while database administration and application development occurred within MSL programs, and primarily within the NRIS program. The digital library manager position has taken on more of a

CIO role. This position now supervises a database administrator and a web developer as part of a central MSL IT support program, which has allowed MSL management to better plan and coordinate library projects with IT components and allows library programs to keep their efforts targeted to the specific business needs they support. The IT group has also begun the process of building a central IT knowledgebase and a central IT asset management system.

Office of the Public Defender

- OPD successfully implemented the Microsoft Systems Center Configuration Manager tool. The objectives of the project included a centralized solution to PC imaging, software distribution, patch management and centralized desktop configuration. OPD is currently using the product for all of these tasks.
- OPD utilizes a case management system to track and report on all cases throughout their life cycle. One of our primary goals was to improve the existing system by implementing stricter data integrity rules, improve reporting capabilities, and automating common tasks. OPD was successful in all of these areas as evidenced by the significantly improved accuracy of reports that are submitted to the Legislature and the Governor's Office. We also implemented/enhanced automatic document generation to save our staff and attorneys time when creating standard documents.
- OPD has now implemented both Microsoft Lync and Polycom Real Presence Desktop software within our agency and with select contract attorneys. Using this software saves the agency money and time by reducing travel to remote courts when in-person appearances are not necessary.

Office of Public Instruction

- Major accomplishments include the successful implementation of the Statewide Longitudinal Systems Data Warehouse. The GEMS project (Growth and Enhancement of Montana Schools) was a three year, \$5.8 million effort that collected data from the majority of the OPI's legacy systems and presented the data longitudinally to the public. The project included significant changes to the OPI infrastructure environment as well as introducing new software and security techniques to the agency.
- The OPI also introduced significant new systems to the Education Licensure program. The new Educator Licensure system modernized the legacy application that was built in-house. The system has an improved security module, integrated document imaging and retrieval and improves the operability of the system for both the OPI staff and educators seeking licenses.
- The OPI introduced an automated Direct Certification system within the School Foods area. This system replaces a significant manual operation to match DPHHS SNAP/TANF records to OPI student records. By automating this process, the OPI helps ensure that individuals entitled to free/reduced lunches receive this benefit without completing additional paperwork. The system was built on Microsoft's Dynamic CRM platform, which will be used throughout the agency for a variety of small projects.

- The OPI also completed a new system for annual data collection, the successfully introduced the Data Governance Committee's for K-12 data and K-20 data, and updated all applications to the .NET framework.
- The biggest challenge the OPI faced was the implementation of an effective identity management system. The OPI was unable to attract any third party integrators to assist in the roll out of the Microsoft suite of tools the OPI plans to implement. While these efforts were in process SITSD launched its own identity management project. The OPI elected to halt its internal effort and coordinate with the state-wide initiative.

Montana Commissioner of Securities and Insurance

- CSI's IT department completed a full conversion to SBS, SBS software represents a cooperative effort with all other state insurance regulatory agencies. The insurance industry in Montana benefits as data collection and interpretation become standardized across state lines. Because SBS software is web-based, less strain has been placed on CSI servers and other hardware to support the agency's insurance regulation functions. CSI staff will also have direct access to the NAIC's national insurance databases through SBS a vital feature.
- CSI IT Staff began a long overdue update of the agency's internal database applications, imaging software, and server environment. CSI is currently working on a custom-programmed solution to replace the outdated application currently in use and has also replaced its outdated scanning application with an ECM system from ImageNow. This has furthered the agency's goal of improving efficiency and cutting waste by beginning to build a paperless office.
- Other accomplishments that have been met this year are:
 - ✓ CSI IT technical staff is in the process of cross-training in all areas to better serve the Agency.
 - ✓ CSI's IT staff has gained significant experience and knowledge in managing complex projects through training and development.
 - ✓ CSI's IT effectively utilizes the expertise and knowledge that already exists in our department to manage several different current hardware and software platforms across the Agency.

Secretary of State

- SIMS phase 1 went live on July 1, 2014.
- MT Votes enhancements were timely and accurate.
- Full IT staffing achieved. The expanded IT staffing reduced vendor software maintenance contract expense.

Teachers Retirement System

- The first goal achieved was migration of the current pension management database (Pension +) to a modern database. This was accomplished with the migration of the RMS database to an Oracle 11G database hosted by SITSD in the State of Montana Data Center. TRS currently hosts a development, test and production database with SITSD and those databases are backed up at the Miles City Data Center.

- The second goal achieved was planning for an update to the front-end pension application. TRS researched options including custom applications, commercial pension software and other alternatives. A decision was made based on cost and time to do a technology upgrade from the current OpenVMS system to a web-based application running on Adobe ColdFusion.
- In February 2013 the TRS Board of Directors approved a pilot project to develop the Retired Payroll Module with a web-based front end. The pilot was successful and deployed for TRS in December 2013.
- Work began on the new M-Trust project. Completed tasks include: hiring a project manager, developing a Statement of Work for the technology upgrade and IV&V work; completing a high-level project schedule, creating the development/test/production environments for the web application, establishing a process for review and approval of change orders, and reviewing project risks and mitigation actions. As of July 2014 the project was proceeding according to schedule with a planned completion of July 2016.

E. Montana's Current IT Environment

Montana state government is comprised of 34 agencies and offices (hereafter referred to as agencies) within three branches of government that operate under a federated structure, including information technology support services. Federated structure is a pattern in enterprise architecture that allows interoperability and information sharing between semi-autonomous lines of business, information technology systems and applications.

While state statute places responsibility for statewide information technology planning, policy and coordination under the Department of Administration and the State Chief Information Officer (CIO), agencies independently select their IT investments, vendors and priorities. The state's IT organizations collaborate through various boards, councils, and work groups lead by the State CIO and staffed by the State Information Technology Services Division (SITSD).

IT Expenditures

During the summer of 2013, information was gathered to identify Montana's IT expenditures. This information was collected from a variety of sources including reports from the Legislative Fiscal Division, SABHRS, and agency web sites. The *Montana IT Expenditures* report, September 2013, estimated FY12 statewide IT expenditures to be nearly \$170 million. Section H-4 of this report uses the same methodologies to estimate FY14 IT expenditures at \$188M.

NOTE: Expenditure data from FY12 and FY14 has not been validated by an independent source.

Organizational IT Structure and Staffing

Each agency has an information technology unit for a total of approximately 876 IT FTE across the state. The count of IT FTE was based on position title since Montana does not classify employees as IT or non-IT. SITSD is the largest IT organization in the state with 199.5 FTE, which includes non-IT positions such as financial, administrative staff, and public safety communications that support the division's missions. This represents 20% of state's total IT FTE. SITSD provides over 200 IT services for use by state agencies, universities and colleges, local governments, and other states.

Duties and responsibilities of the various IT organizations are similar, but vary in size, structure and areas of expertise. Service providers offer IT applications development and support services, desktop support, project management, and other agency-specific infrastructure support.

IT Position Classification and Pay

The responsibility of position classification and pay is delegated to individual agencies based on their business needs and budget. There are over 75 different IT job titles used among the agencies. Many of these positions have comparable job duties, yet titles and pay vary significantly from agency to agency. In researching agency organizational charts, several different IT job titles are used for IT heads, where others use non-management IT titles to describe this position. The base pay for these management

positions range from \$64,354 to \$199,035 with a total annual cost of \$1.9million. The disparity in pay and job titles is common in other IT jobs, as well.

Agency size generally determines the number of IT staff required to support the business. For smaller agencies, staff is required to have general technical proficiencies in many aspects of IT. Larger agencies are able to hire individuals with particular IT specialties and can provide cross-training, succession planning, back-up support, and opportunities through career ladders. As an enterprise utilizing a federated model, we are missing an opportunity to provide these capabilities equally to all agencies within state government.

IT Hiring and Retention

In the Risk section of the agencies’ 2014 IT Plans, 21 agencies listed hiring and retaining IT staff as one of their primary risks. During discussions at the Information Technology Manager’s Advisory Council (ITMC) meetings, managers have stated that the disparity between agencies’ usage of job titles, classifications, and pay is one of the primary causes of IT staff’s interagency job hopping.

Table 1: Staffing Risks and Issues Identified by State Agencies in their 2014 IT Agency Plan

Staffing Risks and Issues	Count	Agencies Identifying Risks and Issues
Difficulty hiring qualified technical staff/key staff	21	DOA, AGR, BPE, DOC, COR, DEQ, DLI, DNRC, DOJ, DOR, DPHHS, FWP, LIV, MBCC, MDT, MSL, OPI, PSC, SAO, SOS, TRS
Staff retention/ retirements/ turnover/ voluntary terminations	21	DOA, BPE, DOC, DEQ, DLI, DOJ, DOR, DPHHS, FWP, LIV, LOT, MBCC, MDT, MHS, MPERA, MSF, OPD, SAO, SOS, TRS
Staff burnout; too much work; staff resources stretched thin between multiple priorities; insufficient resources to meet program needs particularly during season emergency or other unique events; growing IT service demands with a static IT workforce	5	DOJ, DPHHS, DNRC, MDT, MPERA
Inadequate/insufficient staffing. Staffing level remains the same.	4	COR, MSL, PSC, OPI

Agency size can also determine their ability to better manage the retention risks while meeting current business and operational objectives. The Department of Agriculture (AGR) is a good example of the issues faced by small IT groups. AGR has 4.35 FTE dedicated to IT; the agency’s CIO/IT manager, a network administrator, two programmers, and the part-time (.35) employee is contracted exclusively for Geographical Information Systems (GIS) services which is a skill beyond the expertise of the other AGR IT staff. The two programming positions are currently vacant, the CIO plans to retire in December 2014, and the network administrator is scheduled to be out on paternity leave starting in January 2015. In addition, AGR is in the third year of a major IT system replacement which will serve as their core business application. The staff turnover in this department will greatly affect their ability to complete this project. A larger agency is better suited to absorb staff turnover due to the sheer number of qualified employees, whereas a smaller agency is not.

IT Contracting, Acquisition, and Vendor Management Processes

While DOA State Procurement Bureau (SPB) has a central contract management system in place and manages all non-IT contracts, each state agency manages their IT contracts autonomously.

In an effort to leverage the combined buying power of the state, SITSD negotiates and manages several key IT contracts on behalf of the enterprise. There are currently six enterprise contracts: Microsoft, ESRI, Flexera, Allround Automation, Adobe, and Oracle. Usage of enterprise contract management practices has proven to be time-saving and has delivered substantial financial value to the state. In our last negotiation with Microsoft the state realized cost avoidance of \$457,000 through an enterprise agreement.

There are hundreds of IT services procured through contracts by agencies. Each agency is independently executing various acquisition planning strategies and procurement activities according to their delegated authority using the Technology Procurement Request (ITPR) process. At present, the ITPR process is not followed in a consistent fashion from agency to agency. As a result, the state has experienced inconsistent terms and conditions from the same vendor, different rates and pricing, unpredictable service and level of accountability. The state has also had redundant procurement efforts, such as multiple agencies undergoing Request for Proposal processes seeking the same product or service or purchasing licenses already procured via an enterprise agreement.

SITSD is the only state government organization that has a vendor management program. Dealing effectively with highly trained sales executives is difficult, especially for IT procurement staff that is under pressure from their internal business stakeholders and management to complete purchases quickly. Agencies report they have experienced sales representatives using high pressure sales tactics to target individual agencies in order to encourage sales. Many agencies are not sufficiently staffed or trained to handle complex and/or high-pressure IT procurements.

IT Governance Structures

Montana Information Technology Act (MITA) is the primary authority for the division of IT governance responsibilities between the Department of Administration (DOA) and executive branch agencies. MITA accommodates a federated system, establishing the office of the Chief Information Officer (CIO) within DOA, and delegating specific duties to the department:

- IT planning and program responsibilities for the executive branch of state government
- Recommendations to the Office of Budget and Program Planning on IT budget requests
- Establishing IT policies, standards, procedures and guidelines
- Review the use of IT resources
- Review and approve of all state agency IT contracts
- Operate and maintain a central computer system and statewide telecommunications network.
- The CIO and DOA have several advisory groups established through legislation, executive order and DOA Director order of these, the Information Technology Board is the largest advisory group with the broadest areas of interest.
- Information Technology Board (ITB) is a group of cabinet/-level, local government, legislative representatives and private sector partners that advise DOA on cooperative IT contracts, standards, policies, plans, budget requests, rates, exceptions and major projects.

- Information Technology Mangers Council (ITMC) is a group of agency IT managers and a local government representative that advise the CIO on state IT policy, technology issues, and plans.
- The Electronic Government Advisory Council (e-Government) advises on the creation, management and administration of electronic government services and information on the Internet. Legislation will be introduced to combine the governance functions of this council with ITB with the intent to integrate all topics relevant to technology that affects citizen-based services.
- The State-wide Interoperability Governing Board Executive (SIGB) directs the operation of the state-wide public safety radio system as described in Montana's Homeland Security Strategic Plan and State Communications Interoperability Plan.

The CIO meets regularly with the Governor's cabinet, OBPP, individual agency directors, and agency CIOs. Legislative oversight of executive branch IT activities comes from the Legislative Finance Committee (LFC), legislative hearings and testimony, interim committees and legislative audits. SITSD reports quarterly to the LFC on major IT projects, policies, standards, and exception requests.

IT governance within each agency is a function of individual agency business practices. Agencies make internal decisions on IT staffing levels, project selection, funding levels, acquisitions and sourcing. Although state standards do exist for some software products, exceptions for specific agency requirements are common.

IT Funding

Agencies IT expenditures are primarily funded through two mechanisms:

- HB 2 - Through base funding, decision packages and SITSD fixed costs, agencies have the ability to use internal resources, contract with a third party or utilize SITSD enterprise services to procure and implement information technology.
- HB 10 - The long range IT program is used for major IT expenditures for system development, enhancement and/or replacement.

MITA Statute and IT Policies

Much of state IT development and operations are directed by Title 2 Chapter 17 Part 5 of the Montana Code Annotated (MCA), the Montana Information Technology Act (MITA). MITA establishes policies and principles for the development and use of information technology for the state. For example, MCA 2-17-505(2) states: "It is the policy of the state that the development of information technology resources in the state must be conducted in an organized, deliberative, and cost-effective manner." Subpart 4(f) further guides IT development and resources by stating: "In order to minimize unwarranted duplication, similar information technology systems and data management applications are implemented and managed in a coordinated manner."

Section 2-17-531 of the MCA allows for the "transfer of funds, equipment, facilities, and employees" to the Department of Administration. It states: "The department shall provide for the cost-effective use of information technology resources. In order to ensure that needless duplication of efforts in this field does not occur, the department may order the transfer of appropriated funds, custody, and control of equipment and facilities and employees to the department as may be necessary to implement this program. Upon

transfer, as authorized in this section, a credit account must be established in the name of the agency from which transfer is made in the amount of funds appropriated and the market value of equipment and facilities. A credit account must be used to defray the costs of associated charges from the department as provided in 2-17-512”.

While the department began the development of enterprise level policies directed at the management and control of IT resources, there has not been a transfer of funds, equipment, facilities, or employees using the authority in the MCA.

F. Montana Information Technology Infrastructure

1. Montana Data Centers

Montana’s two primary data centers, the SMDC in Helena and a disaster recovery site in Miles City, were built to reduce the state’s risk of a disaster, improve the reliability and availability of IT systems, and provide room for expansion. The SMDC was opened for operations in August of 2010, and the MCDC was opened in April of 2012. SITSD has moved all of its server and storage equipment out of the Mitchell Building.

State of Montana Data Center (SMDC)

Montana’s SMDC was designed to replace the aging data center located in the basement of the Mitchell Building. The Mitchell Building was not constructed to as a computer facility, and its deficiencies put the state at risk for numerous and prolonged outages.

For over 17 years the Uptime Institute has classified data centers into four tiers and measured their availability. Newer, larger, and more costly data centers provide significantly better availability through redundant components. SITSD’s SMDC is possibly a Tier 3 data center competitive with all but the most advanced national data centers. Agency level facilities are likely Tier 1 facilities if they have a backup generator and less than Tier 1 if there is no backup generator.

Table 4 Data Center Tiers

Tier	Description	Availability	Annual Outage Time
1	<ul style="list-style-type: none"> - Dedicated space for equipment - Uninterruptible Power Supply (UPS) to filter power fluctuations and outages - Dedicated cooling equipment that runs 24/7 - Backup generator to power IT equipment during extended power outages. 	99.671%	28.82 hours
2	<ul style="list-style-type: none"> - Dedicated space for equipment - Uninterruptible Power Supply (UPS) to filter power fluctuations and outages - Dedicated cooling equipment that runs 24/7 - Backup generator to power IT equipment during extended power outages. - Redundant power and cooling components to provide maintenance opportunities and protection against equipment failures 	99.741%	22.69 hours
3	<ul style="list-style-type: none"> - Dedicated space for equipment - Uninterruptible Power Supply (UPS) to filter power fluctuations and outages - Dedicated cooling equipment that runs 24/7 - Backup generator to power IT equipment during extended power outages. - Redundant power and cooling components to provide maintenance opportunities and protection against equipment failures - Multiple (1 active, 1 backup) power and cooling distribution paths 	99.982%	1.58 hours

4	<ul style="list-style-type: none"> - Dedicated space for equipment - Uninterruptible Power Supply (UPS) to filter power fluctuations and outages - Dedicated cooling equipment that runs 24/7 - Backup generator to power IT equipment during extended power outages. - Redundant power and cooling components to provide maintenance opportunities and protection against equipment failures - Multiple active power and cooling distribution paths 	99.995%	.43 hours
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The SMDC is 15,024 square feet with 6,264 square feet currently allocated to the data floor area. The SMDC has room for 247 standard racks (600mm x 1200mm) on the data floor. The data room sits on a raised floor with cabinets arranged in a hot and cold row configuration. An automated environmental monitoring system allows the facility to be monitored for temperature and humidity levels. The facility is secured with a badge access and biometric system. All entrances are monitored by personnel 24x7x365. All entrances require a badge or biometric verification. Personnel view the entrances to the facilities through a camera system. A Closed Circuit TV (CCTV) system is set up throughout the facility and monitored 24x7x365. All incidents are researched and tracked to ensure there has been no breach in security. Video is stored for an extended period of time. An emergency action plan is in place and will be followed in the case of any emergency.

The SMDC was constructed to provide 150 watts of power per square foot. The SMDC is supported with an Uninterruptible Power Supply (UPS) system for battery backup and two 1000 kW generators capable of providing backup power for extended periods of time. At the moment of a utility power loss the backup power systems automatically engage. In the event that there is an extended utility power outage, refueling agreements are in place to keep the generators running until utility power resumes.

The SMDC features a state-of-the-art primary cooling system by KyotoCooling. This system is specifically designed to save energy for data centers. The UPS is 94.4% efficient and the enclosed cabinets can increase cooling efficiency up to 60%. Estimated annual electrical savings for the state totals \$259,000.

A majority of executive branch agencies have moved their servers into the SMDC. Agencies that are not attached to the Governor are being encouraged to participate. As part of the data center effort, a cross-agency collaborative team has worked on business cases to assist agencies with virtualization, further server consolidation, and savings through equipment replacement. The goal is to reduce energy and other costs by reducing the number of agency data centers. Through incentive programs offered by NorthWestern Energy, the state is on track to receive incentive monies up to \$1 million. The initiative was used to defray costs in the agency transitions to the Helena data center.

There are 190 physical server racks positions available at the SMDC. 52% of the racks are occupied, 16% by SITSD and 36% by agencies. The SMDC hosts equipment from 18 state agencies and two outside organizations: Montana Interactive (MI) and the State of Oregon. MI holds the contract for the development of Internet-based e-Government services. Agencies with equipment are:

COR	CSI	DEQ	DLI	DNRC	DOA
DOR	FWP	HHS	LEG	MDT	MPERA
MSF	MSL	OPI	PSCSI	SOS	TRS

Miles City Data Center (MCDC)

The MCDC production environment was established in April 2012 with the installation of a backup mainframe. Additional capability for tape and storage replication for the mainframe was installed in August 2012. After establishing a 10GB network link to the MCDC, SITSD moved the main backup disk storage system from Helena in December 2012. When the University of Montana moved equipment into the MCDC, they brought an additional 10GB link from another carrier. SITSD has taken advantage of this and established an agreement with UM to allowed SITSD to use UM's 10GB link as an additional route for redundancy purposes.

There are 95 physical server racks positions available at the MCDC. 44% of the racks are occupied, 35% by SITSD and 9% by agencies. The MCDC hosts 10 state agencies and two outside organizations - Montana Interactive (MI) and the University of Montana. Agencies with disaster recovery equipment at the MCDC are:

COR	DNRC	DOA	DOR	HHS
LEG	MDT	OPI	PSC	SOS

SITSD has also established a policy of wiring each equipment rack with power from two different sources. This enables maintenance on one side without disruption of service as long as the equipment inside the rack is dual powered and plugged in properly. Dual power sources allow power system maintenance during business hours, minimizes the chance of a power outage, and provides higher availability state customers.

Both data centers have redundant Meet Me Rooms (MMRs). A MMR is where vendor telecommunications cables enter the building and are connected with interior building wiring. A MMR allows SITSD to perform network infrastructure upgrades without interruption of service. The policy is to perform any necessary maintenance or upgrades in one MMR before performing any work in the other MMR. This minimizes the risk of an accidental network outage.

Over the last two years the data centers have undergone several security audits from PCI Compliance, HIPAA, the Department of Homeland Security and the IRS. In all cases, the data centers passed and in the most recent audit from the IRS, the data centers had zero defects.

Data Center Network Connections

The design philosophy of redundancy extends to the datacenters' network connections. The state employs diverse carrier Internet links and diverse carrier wide area network (WAN) links between both data centers, as well as through the Billings iConnect fiber hotel for fail-over of state and university traffic.

The State of Montana uses Cisco System's Overlay Transport Virtualization (OTV) technology between the state data centers as part of the state's disaster recovery strategy. This allows the state to have a warm application readiness environment at the MCDC which can be production available in a manner of minutes.

Upgrade Plans

SITSD is planning to implement an upgraded electronic lock system on the racks on the data floor to record exactly when and by whom a rack is opened and closed. This will enhance the security of the equipment and data. SITSD is also requesting funding to implement a system that will monitor components in the data centers and identify potential trouble spots before they become an issue. The monitoring will also provide insight on power utilization and air flow cooling. The division should also be able to identify exactly what components from end to end may be impacted from any work performed, whether it be power or network.

2. Disaster Recovery

Protecting the state's IT infrastructure from minor and major disasters requires multiple layers of protection, redundant capabilities and frequent disaster recovery exercises. In many areas the state is well protected by design, but there are other areas that require significant improvements. Some of the following material is also covered in section D1 – Data Centers and section D3 - Network Infrastructure.

Planning and Practice

Disaster recovery planning and testing is a continuous responsibility that requires practice and repeated testing. SITSD ensures disaster recovery capability the following activity at both enterprise data centers:

- Test generator failover capability twice a month.
- Shut power off to the building once a quarter to simulating a power outage. The tests last a minimum of one hour.
- Repeat the power-off test whenever work has been done on a generator. This ensures 100% functionality after maintenance.
- Conduct monthly 15-minute table top exercises as well as bi-annual technical testing to ensure recovery capabilities are provided and processes are documented appropriately.

In December 2012, the MCDC had its first live test to validate its ability to recover services in the new backup data center. Since that time, other testing has occurred, which proves the capabilities of the disaster recovery center.

Redundancy

Redundancy in infrastructure guarantees that a single point of failure does not cause an outage. One of Montana's key disaster recovery components is the MCDC. Its primary purpose is a disaster recovery site for the SMDC. Montana is one of a few states that can move all SMDC enterprise systems to a second location within a matter of minutes. SITSD employs Cisco System's Overlay Transport

Virtualization (OTV) technology between the state data centers. This allows the state to maintain a warm application readiness environment at the MCDC which can be turned into a production environment in minutes.

In addition, the state employs redundant components in several other areas:

- The SMDC has dual generators for backup power.
- SITSD has also established a policy of wiring each equipment rack with power from two different sources. This enables maintenance on one side without disruption of service as long as the equipment inside the rack is dual powered and plugged in properly. Dual power sources allow power system maintenance during business hours, minimizes the chance of a power outage, and provides higher availability state customers.
- Both data centers have redundant Meet Me Rooms (MMRs). A MMR is where vendor telecommunications cables enter the building and are connected with interior building wiring. A MMR allows SITSD to perform network infrastructure upgrades without interruption of service. The policy is to perform any necessary maintenance or upgrades in one MMR before performing any work in the other MMR. This minimizes the risk of an accidental network outage.
- The state employs leased diverse carrier Internet links and diverse carrier WAN links between both data centers as well as through the Billings iConnect fiber hotel. This provides fail-over capability for state and university traffic.

Network Redundancy

The state's two data centers, the primary in Helena and a backup in Miles city, are connected via redundant Cisco core routers and switches over redundant diverse carrier 10 Gb and 1 Gb links. Diverse carrier links follow different geographic paths, vendors, and equipment so a single failure point cannot disrupt both the primary and backup links.

Both data centers are equipped with Cisco's switching platforms which support the state's storage and server environments. This switching technology supports diverse and redundant 1 Gb and 10 Gb connections for servers and application replication. Montana also uses Cisco Overlay Transport Virtualization technology between the state data centers as part of the state's disaster recovery strategy. These technology upgrades allowed the state to have a warm application readiness environment at the SMDC.

This infrastructure and technology has allowed the state to transition from a contracted disaster recovery model to an internal disaster recovery model. Contracted disaster recovery forced the state to join SummitNet to an out of state cold site, requiring days to implement a full recovery. With the internal disaster recovery model and the SMDC, Montana can recover at the MCDC in a matter of minutes.

3. Network Infrastructure

SummitNet Overview

This overview of the network infrastructure may be aided by viewing the state's [Network Diagram](#).

Montana's SummitNet enterprise network has evolved over the last 5 years from a single data center and legacy single-homed, Frame-Relay/ATM, remote circuit model to a dual data center with Multiprotocol Label Switching (MPLS), remote circuit fail-over model. The state has used its telecommunication carrier contracts as well as partnered with the Universities to procure the various fiber/optical high speed Wide Area Network (WAN) links to support this new model. These links provide the critical bandwidth needed to support the state's ever growing application and Web traffic needs as well as support critical backup/replication operations between data centers for disaster recovery readiness.

The state's two data centers, the primary in Helena and a backup in Miles city, are connected via redundant Cisco core routers and switches over redundant diverse carrier 10 Gb and 1 Gb links. Diverse carrier links follow different geographic paths, vendors, and equipment so a single failure point cannot disrupt both the primary and backup links.

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The state's enterprise network supports over 500 remote state offices across the state. While the state still has a small base of legacy single-homed Frame-Relay/ATM-based remote circuits, the majority of the state remote sites have been transitioned to MPLS-based circuits. MPLS provides converged network capabilities in a single circuit as well as the ability to fail-over to either the Helena or Miles City Data Center. A converged circuit combines voice/video/data on one circuit. In the past this required three separate circuits. The fail-over abilities of these circuits strengthen the state's disaster recovery plan by allowing each site's business traffic to fail to either data center.

The state is served by two internet portals located in Helena and Billings. The portals are provided by separate carriers. Today each portal is running at 600 Mb, with scalability to 1 Gb. The routers supporting these portals are capable of 10 Gb of throughput. For fail-over/redundancy purposes these routers have been deployed in Helena, Billings, and Miles City.

Future

Cloud-based applications and media intensive (voice, video and graphics) applications are driving the need to support higher data rate capacities within the data centers, between the data centers, and to the internet. Agencies such as DPHHS are implementing cloud-based call center and electronic medical records applications as a result of new federal requirements. The state will need to position itself for 40

Gb/100 Gb core data center switching capacity as well as increase inter-data center carrier links to the 40 Gb/100 Gb data rates in order to support these new technologies.

These new technologies are also demanding more dedicated bandwidth at remote state offices. Today remote data circuits are a mixture of copper T1-based facilities and fiber-managed ethernet. Sites such as the State Prison in Deer Lodge have consumed all the capacity available over the copper T1 facilities. This required the state to procure a 100 Mb fiber-based managed ethernet solution which in turn required the state to invest in a partial fiber build installed by the carrier. In the future, agencies will have more application requirements that exceed the available bandwidth.

SITSD continually negotiates with various contracted carriers to provide network services in a cost effective manner, and partners with other carriers to leverage existing facilities to avoid unnecessary costs. For example, Charter Communications, a contract carrier, partnered with Vision Net and Frontier Communications, independent carriers, to provide increased capacity into Libby. The Libby project, anticipated to be completed sometime this fall, provides badly needed bandwidth out of Libby to SummitNet.

Lastly, the state's internet business needs have shifted over the years from simple informational use to collaborative business usage. More state services are now offered online providing the public increased availability and convenience. In addition, the state is employing video conferencing and collaborative meetings instead of time consuming and costly travel. These requirements are steadily growing the state's internet bandwidth. The state anticipates increasing its internet portals to their full 1 Gb capacity by FY16 and pursuing additional 1 Gb capacity by FY17/18.

4. Land Mobile Radio Systems

Public safety communications focuses on the planning, development and promotion of public safety interoperable communications for Montana first responders. Interoperable communications includes land mobile radio (LMR) and broadband technologies. The statewide trunked LMR system is an interoperable system of systems that is used primarily by local emergency response agencies (law enforcement, fire, etc.) and the Montana Highway Patrol for operational and tactical communications.

Background

2003 - 2012 experienced rapid deployment of interoperable land mobile radio (LMR) systems across the United States, encouraged by federal LMR interoperability initiatives and fueled by significant federal grant funding. LMR technology moved from analog to digital.

A recent U.S. Department of Homeland Security (DHS), Office of Emergency Communications (OEC) engagement with stakeholders revised the baseline and prioritized Montana's LMR network. The Statewide Communications Interoperability Plan contains the [priority list of proposed sites, microwave expansion areas, and trunked locations](#).

The current statewide trunked LMR network has an operations and maintenance dilemma. Federal law requires 80% of the DHS grants awarded to states to be passed through to local governments. Since federal law mandates local government funding and ownership, all infrastructure ownership and management is fragmented at the state and local level.

Biennium Project Accomplishments (2013-2014)

This network overview may be aided by viewing the state’s [Public Safety Communications Microwave System diagram](#).

The 2013 Legislature appropriated \$3 million for the operations and maintenance of the statewide systems. Funding was and is being used for upgrading trunking system software and hardware, extended warranty services for the trunking equipment and microwave network; and communications circuits and co-location leases. Major improvements over the last two years include:

- In 2013 a second master zone controller was deployed in Sidney, Montana.
- Infrastructure (buildings, towers, power, and back-up generators) were installed at two sites: NE Billings in Yellowstone County and Marion Fire in Flathead County.
- Hops between Colburn/NE Billings to Pompey’s Pillar microwave hops were completed.
- Trunking equipment was installed at the Aeneas communications site (funded by Flathead Co.)
- Three trunking sites (Marion Fire, Santa Rita, and Opheim) were completed under the Boarder Interoperability Demonstration Grant managed by Flathead County.
- Infrastructure was completed at the Hysham site in Treasure County.
- Trunking sites at Butte and Greycliff were completed.

In addition, the microwave hop between Pompey’s Pillar to Hysham is currently in progress,

Current Status

Funding continues to be the critical missing resource. Priorities for the current existing state funding are to maintain and operate the current systems and complete the Pompey’s Pillar-to-Hysham microwaveproject. Unfortunately there is no state or federal funding available to complete the microwave hops between Hysham and Hathaway. Current federal and state funding for the continued build out to new sites is based on population density and additional highway coverage. Local coverage is not a top priority.

Table 6 Land Mobile Radio Status

Component	Planned	Complete	Remaining
Infrastructure (buildings, towers, power, back-up generators)	141	101	40
Microwave	140	90	50
Trunking	121	56	65
Cost (through 2013)		\$70M	\$50M

5. Security

Introduction

Security of data and IT infrastructure is becoming increasingly important. Montana recognized the growing risks and appointed an enterprise Chief Information Security Officer in spring 2014. Montana bases its cyber security program on the National Institute of Standards and Technology (NIST) Special Publication 800-53 security standards. NIST standards cover technical, operational, and managerial controls that meet state, federal, and agency requirements. Each agency is responsible for its cyber security program, and progress varies across agencies. SITSD continually enhances its security programs and services.

The variety and volume of cyber security threats is growing. The top three threats for Montana are:

1. Web application attacks – Attackers use stolen credentials or exploit vulnerabilities in a web application such as SQL injection to gain access to a system and steal data.
2. Stealth attacks – advance malware that uses invasion techniques that keep them under the radar of reliable detection mechanisms.
3. Insider threat – Employees and/or contractors misuse data, open a malicious email, leave a default password in place, etc.

Other developing threats for the State of Montana include:

1. Vulnerabilities and attacks on mobile devices – Cryptolocker and other malicious attacks on phones and tablets
2. Social attacks – targeting Facebook, Twitter, LinkedIn, Instagram, etc.
3. Attacks on cloud based applications.

The 2013 Legislative session, HB10 – Long Range Information Technology Projects, included funding for the Data Protection Initiative. This initiative included three components:

- Implementation of an enterprise system of user access control and verification
- A statewide security risk assessment and penetration test
- Implementation of multi-factor authentication; the use of two forms of identification to allow access for a user to a system.

Biennium Progress

The three components of the Data Protection Initiative experienced major progress. The user access control and verification project is underway and on schedule. The planned implementation date is July 2015. The risk assessment and penetration testing phase is complete. In November 2014, five participating agencies were briefed on the results. The enterprise risk assessment will provide recommendations for the next phase of the Data Protection Initiative. SITSD also completed the implementation of multi-factor authentication.

In addition to the Data Protection Initiative, progress was made in other areas.

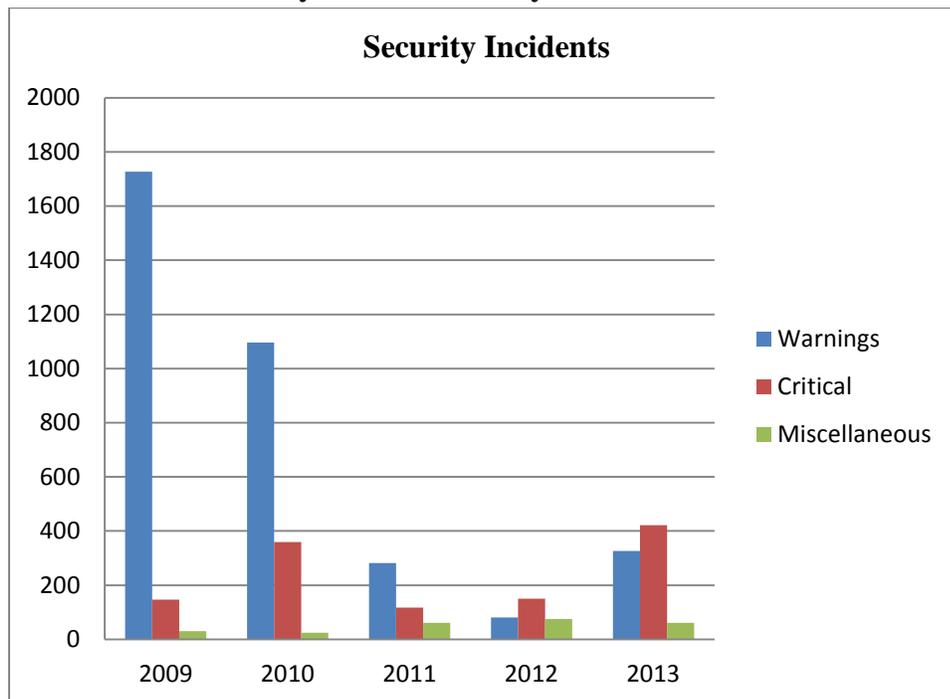
- An Enterprise Security Risk Management Policy was adopted.
- Security services within SITSD were consolidated to better serve state agency security requirements.

- SITSD added additional security personnel.
- Implementation of basic security training for all state employees. 75% of state employees completed this training.
- SITSD established a new Security Risk Assessment Service. This provides a review of an information system to an agency with mitigation recommendations.
- SITSD implemented a Security Incident and Event Management (SIEM) solution. The log system collects information from many sources and reviews it for identification of security incidents.

Incidents

SITSD monitors the state network and systems on a 7x24 basis, and analyzes data that is provided from intrusion detection systems, firewalls, internet filtering, as well as other miscellaneous reports. SITSD tracks all incidents and compiles an incident report that is shared with customers and internal managers. Incidents are categorized as Warning, Critical or Miscellaneous. The following chart provides a recent history of security incidents. An incident is a violation or imminent threat of violation of computer security policies, acceptable use policies, or standard security practices.

Chart 1 Security Incident History



Critical incidents have been climbing significantly. This is a national trend that is related to zero day attacks, attacks that originate days before software firms are aware of the vulnerability, and days before patches are available. Anti-virus software is ineffective against zero day attacks. The increase in miscellaneous incidents over the last few years is attributed to the establishment of reporting requirements and better recording of security incidents.

Security Monitoring

SITSD monitors the state network and systems on a 7x24 basis. This activity is achieved through the enterprise Service Desk using internal tools such as the SIEM tool described earlier. Callout procedures have been established with agencies and critical incidents are addressed immediately when identified.

Montana also participates in the Albert Project, which is provided by the Multi-State Information Sharing and Analysis Center (MS-ISAC) and sponsored by the Federal Department of Homeland Security. This service also monitors activity on the Montana network analyzing the data and identifying any potential incidents.

SITSD also has an established enterprise vulnerability management process. Vulnerability management is a security practice that is designed to proactively prevent the exploitation of IT information technology vulnerabilities. SITSD monitors security sources for vulnerability announcements, patch and non-patch remediation efforts, and emerging threats that correspond to hardware and software administered by and supported within the state. Communications to customers regarding actions that need to be taken and severity levels of vulnerabilities are completed as soon as information is compiled and made available.

Disaster Recovery

In December, 2012, Miles City Data Center had its first live test to validate its ability to recover services from the Helena datacenter. Since that time, other testing has occurred, which proves the capabilities of Miles City as a disaster recovery center. Montana is one of a few states with the capability to move all enterprise systems over to a second location within a matter of minutes. SITSD conducts monthly table top exercises as well as bi-annual technical testing to ensure recovery capabilities are provided and processes are documented appropriately.

Proposed Future Activities

SITSD's goal is to build an enterprise information security program that creates consistency, aligns resources, coordinates situational awareness and incident response, and provides adequate security for all state agencies. The Data Protection Initiative – Phase 2 is a key component with implementation planned over the next 2-3 years. Other items on Phase 2 include:

- Network access control and compartmentalization: This type of system verifies devices authenticating to the network to ensure that devices are up-to-date and have proper protections in place. This system also segments key systems to isolated environments to further protect confidential data.
- Enhancement to the Access Control and Verification System: This project will expand the state's access control and verification system to include non-state individuals that have a need access to confidential state data.
- Enterprise Web Firewall: As part of protecting web systems that are available to the citizens of the State of Montana, the current web firewall protection system needs to be implemented for all state web sites. This will provide an additional layer of protection for citizen data and address vulnerabilities that are not protected by any other system that is in place.
- Physical Security of network devices: The State of Montana has a responsibility to provide reliable and protected telecommunications infrastructure to state agencies for business use

purposes. This includes physically securing all network devices so that deliberate or accidental disruptions of network service do not occur to state employees.

- Data Loss Prevention: This system will detect and prevent potential data breaches by monitoring data while in use, in transit, and at rest. A Data loss/leak prevention solution is a system that is designed to detect potential data breach / data ex-filtration transmissions and prevent them by monitoring, detecting and blocking sensitive data while **in-use** (endpoint actions), **in-motion** (network traffic), and **at-rest** (data storage).

Other planned actions in addition to Phase 2 of the Data Protection Initiative include:

- Incorporation of the National Cyber Security Framework into the Enterprise Security program
- Addition of forensics capabilities within the security operations area of SITSD
- Offering of an Information Security Manager Service for customers

6. Applications and Systems

The 2014 agency performance reports included information on significant agency applications/systems. Agencies were asked to identify applications or systems that met one or more of the following criteria.

- All application/systems that support state essential functions.
- A major system identified in an agency IT plan since 2004.
- Systems with implementation costs exceeding \$500,000.

SITSD requested information on major milestone years and on estimated system costs.

- implementation year
- year of the last major upgrade
- year of the next planned upgrade
- anticipated retirement year
- annual operations and maintenance costs
- cost of the last major upgrade
- current replacement cost estimate

The summary spreadsheet that lists the agency application inventory can be found in [Table 6 - Montana Application/System Inventory](#). A total of 244 applications/systems were listed by agencies. Many hundreds of smaller applications were not logged.

Agencies normally do not track IT expenditures by application/system. Normal SABHRS account codes are not designed to handle this type of cost aggregation. Some large federally funded agencies take extra steps to document their system costs for federal reimbursement purposes. Their estimates on operations and maintenance costs are more detailed and accurate.

7. IT Equipment

The State of Montana maintains information technology infrastructure in over 250 locations in the State. Two data centers were built to help agencies decrease infrastructure costs and increase efficiency. The primary data center is located in Helena and the secondary data center is located in Miles City.

As per MCA 2-17-521 (4)(a)(d), an inventory of the state's information technology infrastructure was conducted between June 19th and September 16th of 2014. SITSD staff queried agencies for all hardware infrastructure maintained by the agencies. SITSD also asked for information on estimated costs for maintenance of the storage devices.

As a result of the inventory, the following major observations were made from an infrastructure perspective:

- The state saves over \$6.5 million per year via the use of virtualization, additional capital savings could be realized with wider adoption of virtualization of computing resources.
- Unsupported and end-of-life operating systems will create operational and security challenges in the next 18 months.
- There were 272 agency server rooms, 3 SITSD server rooms (Mitchell, Palmer, iConnect), and 2 State Data Centers reported this biennium (down from 283 server rooms reported in 2011). These sites host 827 physical servers, 2,878 virtual servers and 75 storage area networks (SAN).
- 21 of the agencies have made use of one of the two State Data Centers either in part or in whole; however, 13 of the agencies have all of their hardware outside of the State Data Centers. In Helena, there are more agency owned physical servers external to the SMDC (169) than internal (136).
- The state has 827 physical servers, a decrease from 1,135 in 2011. 279 of these servers support 2,878 virtual servers, an increase from 604 virtual servers in 2011. A virtual server environment decreases infrastructure costs, reduces energy use, increases flexibility, and has a lower total cost of ownership.
- Only 52% (39 out of 75) of the agency owned virtual server environments and only 31% (156 out of 504) of their physical servers would be available to provide services after a disaster.
- The majority of the storage in the State (2.6 PB) is located at one of the State Data Centers; however, there are 67 agency owned storage devices (1.7 PB) not located at either of the State Data Centers with 20 of those in Helena.
- The annual maintenance cost for agency storage as reported is over \$450,000 per year for 1.7 PB (\$265 per TB) in contrast to SITSD's annual maintenance cost of \$120,000 for 2.6 PB (\$46 per TB). Utilizing a few (8) large storage devices is much more cost effective than many (67) smaller devices due to the high cost of the controllers required for each device (disk is not the cost driver).

G. Enterprise IT Services

Montana provides over 228 e-Government services on the Online Services menu on Montana.gov, [Montana's Official State Website](#). There are additional e-Government services that are provided to state employees and specific groups. 40 services were added in 2012 and 22 services were implemented in 2013. The following list provides a sample of what is available.

- Montana Prescription Drug Registry
- Income Tax Express mobile service
- Asbestos Project Permitting
- Brand Rerecord.
- MHP Citations Roadside Payments
- Inmate Banking
- Burn Permits (County projects)
- Property Tax payments

Montana's agencies have hundreds of individual applications and services that support their programs and constituents. Describing the agency systems and applications, or even listing them, would be lengthy and most likely inappropriate considering their agency-specific scope. But it is possible to describe the few dozen enterprise-wide IT services delivered by SITSD. These enterprise services are consumed by agencies, the university system and local governments.

SITSD's service strategy is to offer a wide range of cost effective services from multiple providers that when viewed in aggregate, provide state agencies and local governments with attractive choices that can maximize support for their business processes while minimizing expenditures and resource investments. Cost effective shared IT services is the goal.

The scope of SITSD's service offerings is broad and very similar to peer states. Outside of a few isolated services such as fax, e-signatures, cell phones, and business analysis, SITSD's catalog of services is typical for a central state IT organization. SITSD's catalog of services includes:

- Network Services: data, voice, and video transport, internet access, LAN and wiring services, wireless, VPN.
- Voice Services: voice mail, VOIP, Automatic Call Distribution (ACD), Interactive Voice Response (IVR), call recording, long distance, desktop equipment.
- Hosting: servers, web servers, databases, storage and backup, applications mainframe, data center space and racks.
- Professional Services: project Management, database management, desktop support and management.
- Communications: email, instant messaging, audio and video conferencing, SharePoint collaboration.
- Software Development: application development and web development
- ECM: document management/archiving, forms management, workflow, report management.

In addition to the services listed above, for which SITSD charges agencies that consume the services, SITSD also offers a group of enterprise services that are handled differently. Enterprise services benefit

the entire state, and agencies reimburse SITSD based on the size of their IT operations, not on the quantity of service consumed. Enterprise services amount to roughly 15% of all SITSD services.

- Support for IT councils and advisory groups
- Strategic IT planning
- IT procurement and contract management
- Enterprise security and systems monitoring
- Oversight responsibilities from the Montana Information Technology Act
- State-wide continuity of operations program
- State telephone operators
- Website hosting for mt.gov
- Office of the CIO

SITSD also has a management, coordination and operations role in running the statewide public safety radio system, a trunked mobile radio system for state and local public safety officers.

H. Montana IT Performance

1. Performance Metrics

Performance metrics are the yardstick by which Montana can measure the effectiveness of its IT investments. Metrics improve decision making and ensures IT management focuses on delivering business value to the state. What is measured gets managed. For metrics to be effective they must be directly related to the state’s business strategy and business success. The initial set of metrics is designed to measure progress against a few key components of Montana’s Strategic Plan for Information Technology.

Table 8 Montana IT Performance Metrics

State IT Strategy	Metric	Baseline
Minimize government expenditures and increase the value and impact of state delivered services	Executive branch IT expenditures as a percentage of the executive branch operational budget	FY14 3.47%
Share systems, components and functionality across MT agencies, MT political subdivisions and other states	Number of shared inter-agency systems implemented in the previous biennium	9
Deliver mobile access to state services for citizens, businesses and state employees	Number of mobile-enabled systems implemented in the previous biennium	16
Improve privacy of individuals and information contained within IT systems	Number of security incidents and breaches reported to the state CISO	2014 498 Incidents* 0 Breaches

** An incident is a violation or imminent threat of violation of computer security policies, acceptable use policies, or standard security practices. The term “breach” is used to describe the loss of control, compromise, unauthorized disclosure, unauthorized acquisition, or unauthorized access of information.*

SITSD will measure progress over time and report on progress in the IT Biennial Report, which is published at the start of each legislative session.

2. National and Peer State Comparisons

National comparisons of state IT performance are available from multiple sources.

The National Association of State Chief Information Officers (NASCIO) is a nonprofit association representing State CIOs and IT executives and managers from the states, territories, and the District of Columbia. The primary state members are senior officials from state government who have executive-level and statewide responsibility for information technology leadership. NASCIO honors outstanding IT achievements in the public sector through its recognition awards.

U.S. PIRG is a federation of independent, state-based, citizen-funded organizations that advocate for the public interest. U.S. PIRG conducts an annual evaluation of state transparency web sites.

e.Republic is a media and research company focused exclusively on public sector innovation for state and local government and education. They publish Government Technology Magazine, newsletters (GovTech Today, Emergency Management, Digital Communities, Public CIO, Education Roundup), and run the Center for Digital Government. The Center for Digital Government is a national research and advisory institute on IT policies and best practices in state and local government. e.Republic is responsible for three national assessments of the state IT performance:

- Best of the Web
- Open Data Report
- Digital States Survey

The Digital States Survey is the only comprehensive national evaluation of state IT performance. The results from the 2014 national assessments are listed below, along with comments about peer state performance scores.

NASCIO

In 2014, 34 states submitted more than 100 nominations in 11 categories. The categories are listed below. Montana did not submit any nominations. Six of Montana's peer states submitted nominations, although none received recognition. In 2013, two peer states received recognition.

- Cross Boundary Collaboration and Partnerships
- Data, Information and Knowledge Management
- Digital Government: Government to Business
- Digital Government: Government to Citizen
- Enterprise IT management Initiatives
- Fast Track Solutions
- Improved State Operations
- Information Communications Technology Innovations
- Open Government Initiatives
- Cybersecurity
- State CIO Office Special Recognition

The complete report can be found at: [NASCIO Awards](#)

US PIRG

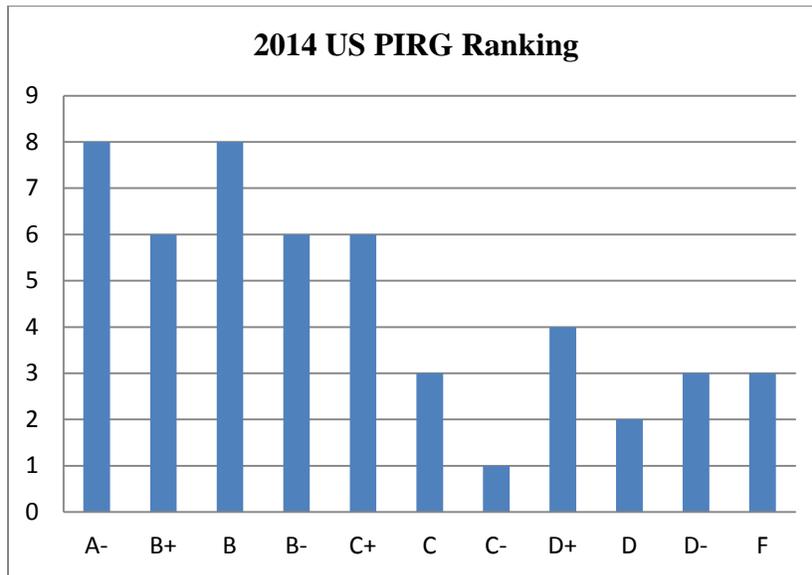
U.S. PIRG is a federation of independent, state-based, citizen-funded organizations that advocate for the public interest.

“Following the Money 2014” is US PIRG’s 5th annual evaluation of state transparency websites. The report found that states are making progress toward comprehensive, one-stop, one-click transparency and

accountability for state government spending. Over the past year, new states have opened the books on public spending and several states have adopted new practices to further expand citizens' access to critical spending information. Many states, however, still have a long way to go to provide taxpayers with the information they need to ensure that government is spending their money effectively.

In the 2014 assessment Montana jumped 29 points; the 4th highest state improvement. Montana received a B rating. Montana's improvement was the result of thoughtful research and action by McKinley Gunter who ensured the appropriate Department of Revenue and Department of Commerce reports were integrated into the State's Transparency portal.

Chart 2 2014 US PIRG Ranking



The report included the following comments on Montana: *In 2013, Montana improved its website to provide centrally accessible information on tax expenditures and economic development subsidies. Every year, Montana spends millions of dollars on deductions and special tax exemptions and exclusions given to individuals and corporations, which have the same bottom-line effect on the state budget as direct state spending since they must be offset by cuts to other programs or by raising other taxes. In 2013, Montana made information on these expenditures available from the transparency website by providing a link to the state's tax expenditure reports. Similarly, state officials linked the transparency website to the Department of Commerce's portal for economic development subsidies, which empowers Montanans to monitor the awards given to companies to grow the economy. The portal contains award information for 17 programs dating back to 1989. While it features recipient-specific information on the number of jobs that were supposed to be created by each subsidy, the portal is missing information on the number of jobs actually created.*

The complete report can be found at [Following the Money 2014 | U.S. PIRG](#)

2014 Best of the Web

The annual Best of the Web recognizes and honors outstanding government portals and websites based on their innovation, functionality, productivity and performance. Elements such as upgraded eCommerce capability, mobile first design, intuitive search, improved transparency and integration of social media are considerations. In 2014, Montana was not recognized as a state portal finalist or in any of the 5 individual categories. Among peer states, Hawaii won the “state portal category,” and Maine the “state government to citizen category.”

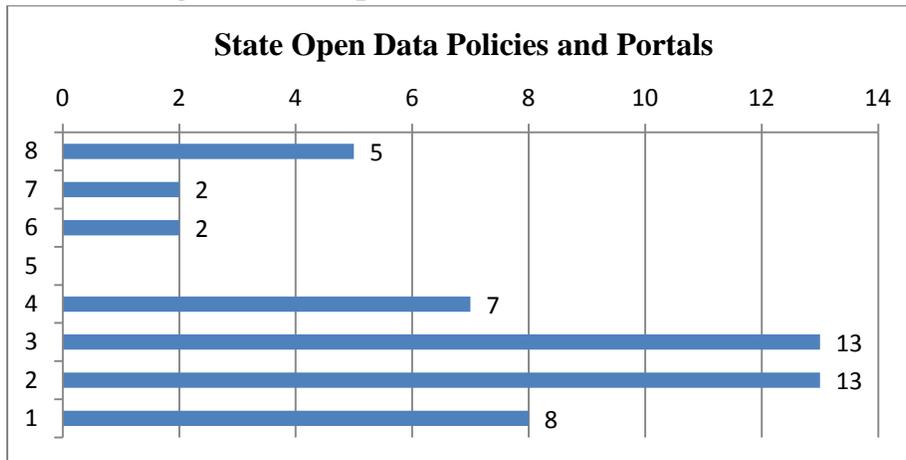
The complete report can be found at [Best of the Web & Digital Government Achievement Awards 2014 - Winners Announced](#)

Digital States Open Data Report

Some states are employing open data to encourage transparency, accountability, increase public participation and promote economic growth. Open data is data that is freely available without restrictions. States publish data sets on a wide variety of topics, such as education, health care and public safety. Open data can promote innovation within government and the private-sector; however, states vary widely in promoting open data.

The Open Data Report scores states on their open data policies established through executive order or legislation and on their open data portals. The evaluation had a maximum possible score of 8. Montana scored 3 and Montana’s peers averaged 3.36. The scores reflected the fact that only 4 of the 12 peer states have policies relating to open data.

Chart 3 Digital States Open Data



The complete report can be found at [Center for Data Innovation » State Open Data Policies and Portals](#)

Digital States Survey

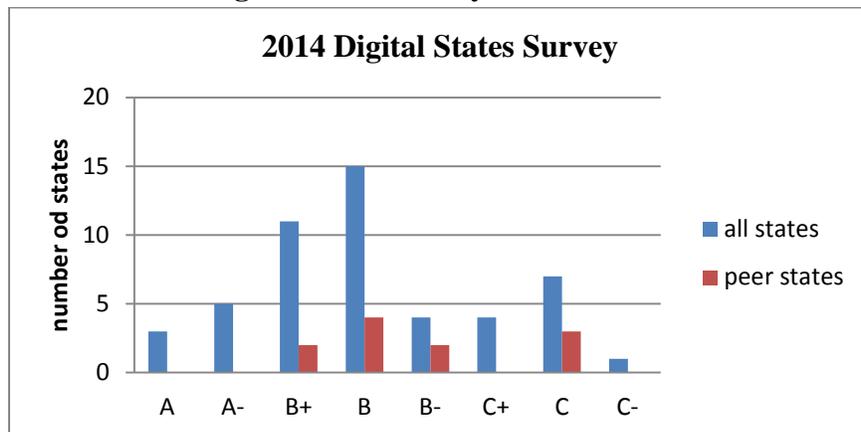
The survey evaluated states based on a set of criteria which included actions supporting state priorities and policies to improve operations or services, hard- and soft-dollar savings/benefits, progress since the last survey, innovative solutions, and effective collaboration.

Of the 50 states surveyed, 21 improved their grade since 2012, 17 states remained the same, and 12 states saw a drop. “As a group, the states are doing well and even the states with lower grades didn’t drop by much,” Center for Digital Government Executive Director Todd Sander said. All 12 states with decreased grades dropped by just one step, going from an A- to a B+, for instance.

The distribution of grades is trending up in 2014, with eight states in the A range, the same as in 2012, and 30 states in the B range, up from 22 in 2012. Twelve states received grades in the C range, and no states scored lower than a C-, compared to 2012, when Florida and Idaho both received D grades.

Montana’s 2014 grade was a B, up from a C+ in 2012.

Chart 4 Digital States Survey Results



Montana’s improvement was attributed to three factors:

- Aligning the IT strategy with Montana’s business goals
- Implementation of transparency, business, and data portals
- Implementation of a Security Risk Management Policy.

The report included the following comments on Montana: *Montana’s IT aligns with Gov. Steve Bullock’s initiatives of better jobs and education and effective state government. From providing mobile access for citizens and employees to utilizing technology that increases security, the state is prioritizing projects that will deliver effective services. Enterprise wide IT has become a main point of focus, as the governor and CIO look at shared services, taking a new perspective on the state’s technology. To increase openness, a transparency portal was launched in February 2013, followed by the additions of a business site and data portal. And to increase security, a Security Risk Management Policy was put into place last year, describing NIST controls that must be implemented by all Montana agencies. Government Technology interviewed CIO Ron Baldwin earlier this year about securing employees’ mobile devices in the workplace.*

3. Inter-Agency Collaboration and Sharing

One of the fundamental objectives of MITA is state agency shared data and systems.

- 2-17-505 (2) (b) Whenever feasible and cost-effective, common data is entered once and shared among agencies.
- 2-17-505 (2) (c) In order to minimize unwarranted duplication, similar information technology systems and data management applications are implemented and managed in a coordinated manner.

Shared systems not only lower the cost of information technology, but they also improve the level of service to states' citizens and state employees.

The following examples illustrate some of the significant inter-agency sharing activities.

- **Offender Management System**
DOC expanded access to their offender management system to staff with MT Department of Justice, Office of the Public Defender, Department of Labor, and is currently working with the Department of Health and Human Services for the provision of access.
- **SmartCop**
SmartCop is a Highway patrol in-car system used to run queries and issue citations and provide for centralized Computer Aided Dispatch (CAD). SmartCop provides an integrated information system for the Montana Highway Patrol (MHP) dispatch and patrol and will soon provide the same in-car solution for FWP's Law Enforcement division and MDT's Motor Carrier Services. It includes software, hardware and services to support dispatch operations and an in-car mobile solution including a laptop, printer, card reader, wireless connection and various other equipment.

When fully implemented, SmartCop will give Motor Carrier Services (MCS) officers the ability to conduct vehicle, driver and criminal justice inquiries at the roadside, with a goal of increasing safety and efficiency for the officers. Currently MCS officers must request inquiries from Montana Highway Patrol (MHP) dispatch. SmartCop will also give MCS officers access to electronic citations. This will eliminate the need for Officers to physically transport and store paper copies and eliminates additional data entry of the citations by administrative staff. Finally, the SmartCop suite of applications enables all users to see each other's current physical location. This facilitates mutual assistance between the officers and agencies and is a key safety feature of SmartCop.

- **Data Centers**
SITSD entered into an agreement with the State of Oregon, Department of Administration, ETS allowing either party to request IT services from time to time. This agreement went into effect in April, 2014. A separate agreement allows Oregon ETS to lease rack space in Montana's Miles City Data Center. Oregon and Montana are using each other data centers for backup and recovery operations.

- **Taleo**
In mid-2013, DPHHS and DOA agreed to work jointly to procure and deploy a solution for managing the state hiring process. This project is part of an overall initiative by DOA to standardize the State’s human resources processes and improve the systems and automation used to support HR activities across all State agencies. Requirements were validated in late 2013 and the Taleo solution from Oracle was identified as the solution best fitting those requirements.
- **Enterprise Electronic Content Management (ECM)**
The Department of Administration, SITSD, is leading an effort to procure a state-wide ECM system to replace 9 separate agency systems. A multi-agency team is assembling the technical and business requirements for an RFP that will be releases in July. Montana is pursuing an enterprise-wide identity management system for an access control and verification system for all state employees. Various state agencies also have a need for other outside individuals to have access to confidential data that is maintained by state government. Access to this information needs to be controlled through the expansion of the statewide system.

Table 9 summarizes the past activities and future agency plans for sharing data and IT infrastructure across agencies or other government entities.

Table 9 Shared Systems Summary

Agency	Comments
AGR	Agriculture's grant management system is shared by DNRC, DOC and FWP.
COR	Provided limited access to OMIS for some selected staff in OPD, DLI, DPHHS, Supreme Court, and DOJ.
CPP	Development of an interface between OMIS system and DLI for the purpose of reporting offender employment in the community.
DLI	Development of interface to OMIS system with the Secretary of State
DNRC	The Water Rights Bureau has partnered with the MSL’s NRIS program public for availability of Montana water related data and information, including the National Hydrography Dataset and a Montana Water Rights query system.
DOA	DOA is implementing a cloud based system (Taleo) for hiring/selection for the enterprise. MOM being used by HHS. Oregon and Montana are using each other's data centers for disaster recovery
DOC	Sharing the Agriculture grant management system. Developed a visitor kiosk with MDT in Great Falls.
DOJ	Collaborating with FWP on SmartCop. FWP officers can use the DOJ in-car system. Montana Insurance Verification System (MTIVS) were extended to local courts in August 2012 with expanded access to other Montana law enforcement agencies later that year. Plans to extend it to county treasurers.
DHHS	Provided funding and future usage for DOA's Taleo system. Sharing data with OPI for the SNAP and TANF systems.
FWP	Collaborating with DOJ on SmartCop. FWP officers can use the DOJ in-car system. Sharing Agriculture's grant management system.

MBCC	Juvenile Detention Database and Reporting System (JDDRS) is being linked to the Supreme Court's Juvenile Court Assessment and Tracking system (JCATS). Currently in test.
MPERA	Working with TRS to build account transfers and resolve reporting errors from MPERA PERS system to TRS.
MSL	Data list expanded to include GIS data from outside of MSL. Working with SITSD to improve the mapping interface for the data portal.
OPD	Requested participation in DOJ's IJIS Broker system. Uses Correction's OMIS system.
OPI	Sharing data with DPHHS's SNAP and TANF systems, and sharing student data with the university system.
SOS	Development of interface to OMIS with the Secretary of State
TRS	Building account transfers and resolve reporting errors from MPERA PERS system to TRS. Planning a data exchange and member transfer project for 2014-15.

Responses from agencies indicate that examples of joint projects, shared systems, and collaborative efforts among state agencies are limited. Although there are a few examples of cooperative efforts, actual accomplishments have not yet reached a level anticipated by the Montana Information Technology Act of 2001 (MITA). The State CIO will continue to look for ways to motivate and incentivize agencies to achieve greater costs savings and efficiencies through sharing and collaboration among state agencies.

4. IT Expenditures

The analysis gathered data from a variety of sources including LFD reports, SABHRS and agency web sites. The main financial statistics are below:

Table 10 Montana FY2014 IT Expenditures

Statistic	FY2014 Expenditures
Total state-wide IT expenditures	\$188,342,363
IT expenditures as a percentage of State operating budget	3.47%
IT FTE	876
IT FTE as a percentage of State FTE	6.86%

The expenditure estimates cover the executive, legislative and judicial branches. The university system is excluded. Details on the data sources, quality of the data, accuracy and estimates can be found in *Montana IT Expenditures*, September 1, 2013 by Kyle Hilmer. http://www.leg.mt.gov/content/Publications/fiscal/interim/2014_financemty_Sept/SITSD_Expenditures.pdf

The statistics in Table 10 are conservatively low. Many IT expenditures are not recorded as IT expenditures in SABHRS because accounting staff have not received training on IT coding. For example, consulting services is often used instead of IT consulting services. The IT FTE statistic is also

conservatively low. Positions such as data processing technician, document processor, and management analyst were not counted since specialized IT education and experience was not a prerequisite. Over 180 potential IT positions were not classified as IT positions for this study. Accountants, secretaries and clerical staff working within agency IT organizations were also not counted.

IT expenditures for any single agency should be viewed with caution. Routine agency IT expenditures are occasionally distorted by large capital IT projects.

This analysis included facility, training and travel costs for IT staff. SITSD includes these costs in SITSD’s total expenditures, but they are not included as part of agency IT costs (Non-Personal Services) in the table below. Although these costs are typically not considered IT costs, it was necessary to include them to make valid cross-state comparisons in the section on National Comparisons. Facility, training and travel costs for IT staff are included by the comparison states.

Table 11 - FY14 Montana IT Expenditures

While Montana’s IT expenditures are slowly decreasing as a percentage of overall state spending, more of the IT spending is taking place within agencies, not SITSD. In FY2004 SITSD accounted for 27% of all state IT expenditures.

Table 12 IT Spending Statistics

Fiscal Year	IT Percentage of State Budget (all 3 branches)	IT Percentage of State Budget (executive branch only)	SITSD Percentage of State IT Expenditures
2012	3.73%	3.65%	23.1%
2014	3.47%	3.48%	21.1%

Montana’s IT expenditures were compared to peer states. IT economies of scale quickly distort financial comparisons between states of unequal size, so any comparison must be made between states with similar population sizes. The comparison was focused on 11 states with populations below 1.4 million. Montana has roughly 1 million people. The remaining list of 11 states was trimmed to 4 based on the availability and accuracy of data. Two states, Hawaii and Alaska, were excluded since they publish almost no information on their IT operations. Several peer states have distributed or federated IT organizations where accurate information on IT expenditures is arguable. That left four states (North Dakota, South Dakota, Maine, and New Hampshire) as the basis of comparison for Montana.

Table 13 and its associated charts, 5 through 8, illustrate some of the key comparisons between Montana and the four peer states. Most of the comparisons were made on executive branch IT operations. **Table 13 - Peer State Comparison of IT Expenditures and Staffing**

Montana’s peer states manage to run their state operations with fewer IT people and consume a much smaller proportion of their state budgets. Montana’s IT expenditures are significantly higher by all measures.

I. IT Legislation

1. HJR2 Electronic Records Management

This summary is an excerpt from the final report of the 2013-2104 Education and Local Government Interim Committee written by Pad McCracken, Legislative Research Analyst. It provides an excellent summary of past legislative action and the current status of legislation on records management.

“House Joint Resolution No. 2 (2013) requested the Legislative Council to assign to an appropriate interim committee a study of electronic records management by state and local government. This study was assigned to ELG and was addressed at each of the committee’s meetings of the interim. At the September 2013 meeting, committee staff, along with representatives from the Office of the Secretary of State, the State Archives, and the State Information Technology Services Division, provided background information on the topic. Following this presentation, the committee directed staff to assemble a work group of “any and all” interested parties to contribute to the study and report back to the committee. Committee staff invited the participation of representatives of all branches of state government and state agencies, as well as associations representing local governments, and in October 2013, the HJR 2 Work Group convened for the first time. The work group met monthly through March 2014 and was joined beginning in January by two members of ELG appointed by the ELG chairman, Sen. Tom Facey: Reps. Jean Price and Don Jones. Work group meetings were recorded, and a separate HJR 2 web page was created with links to meeting audio and video, summaries, and other materials.

The HJR 2 Work Group made a final report of its findings and recommendations to the committee at the April 2014 meeting. The report contains full descriptions and rationales of each finding and corresponding recommendations. Broadly, the work group found the following:

1. Improved electronic records management will require a long-term, collaborative effort between the records management and information technology communities.
2. Records management needs to be a higher priority generally.
3. Montana’s public records statutes need to be clarified.
4. Electronic records management improvements will require adequate funding.
5. State and local government need more guidance on electronic records management.
6. Montana needs a way to archive electronic records of permanent value.

The committee accepted the report and directed staff to draft two bills reflecting the work group recommendations. The shorter of the two drafts was a simple appropriation bill to the Montana Historical Society for the contracting with a consultant to develop a digital archives plan. This draft addressed finding #6 above. Following discussions of the necessity of a digital archives, the role of consultants, and different funding mechanisms at both the June and September 2014 meetings, this bill draft failed to win committee approval, on a 6-5 vote.

The larger bill draft was for an ambitious reorganization of Montana’s public records laws, which one work group member compared to “an old cabin that has been added on to over the years and become a dysfunctional hodgepodge.” The bill draft would repeal all of Title 2, chapter 6, MCA, and reassemble

clarified statutes in a new chapter. The review of this draft occupied a great deal of the committee's time and energy at the June and September 2014 meetings, and the draft was revised significantly. Public comment was heard from representatives of local governments and the Montana Newspaper Association. Much of the discussion and amending centered on balancing access and privacy concerns, creating a fee structure that government entities may charge for information requests, and distinguishing whether all persons or just Montana citizens should be able to request copies of public information. The committee acknowledged that the draft would require more attention and likely amendment during the legislative process but felt the effort was worth moving forward and approved it unanimously. The committee bill can now be tracked as LC 448."

2. Enterprise Content Management (ECM)

Montana has been monitoring its electronic records management (ERM) and electronic content management (ECM) systems and processes for several years. In HB 642 (2011) the Montana legislature created a select committee on efficiency in government to research areas such as moving towards a paperless office, and the use of electronic forms, and electronic authorizations, all of which are encompassed in electronic records management. That same year the State CIO commissioned a study of the state's ECM systems. House Joint Resolution No. 2 (2013) requested the Legislative Council to assign to an appropriate interim committee a study of electronic records management by state and local government. The 2013 legislature also appropriated \$1 million for Electronic Records Management/Electronic Content Management (ERM/ECM) as part of HB10.

The early analysis and research identified several problems with ECM in Montana. Agencies do not follow a standardized approach to ECM. Multiple ECM systems are in use by various agencies. The largest system is a central imaging service provided by SITSD, which is used by twelve agencies. An additional nine non-central systems exist, having been purchased or custom-built by agencies.

Standard technical recommendations for imaging are in development, but they have not been incorporated into an enterprise policy. The lack of a single ECM solution contributes to organizational inefficiencies such as:

1. Multiple storage of the same document.
2. Required access to multiple systems in order to search for related information.
3. Lack of preservation of historically significant documents.
4. Limited use of retention schedules, causing over-retention of data and wasted space.
5. High aggregate enterprise costs to support multiple systems.

If a single solution was used, documents would only need to be filed once, only one access would be needed, and the resources requirements could be reduced to meet the needs of one system. In April 2014 the State CIO initiated an RFP process to select an enterprise-wide ECM system. In October the RFP was canceled since vendor cost proposals did not accurately reflect system configurations and costs. In November the CIO made the decision to proceed with a pilot project at DLI with Perceptive's ECM software. Perceptive is currently used at DOJ.

The ECM RFP is currently on hold while SITSD find a way to fairly and accurately compare the total cost of ownership (TCO) for on-site / private cloud implementations versus the total cost of ownership of off-site / public cloud services. This is an industry wide problem that is disrupting businesses, educational institutions, and government agencies all across the country. Since this is such a new industry trend there is very little consensus as to the best approach. SITSD will be evaluating the new proposed model in June or July.

3. Proposed Revisions to the Montana Information Technology Act

The Montana Information Technology Act was enacted in law in 2001 to facilitate effective deployment of IT resources and provide an effective governance structure for Montana IT resources. The law has been in place for fourteen years in what is a rapidly changing environment. Updating the law has been a topic of discussion in the last several biennia, most notably, by the 2011 Select Committee on Efficiency in Government. That committee considered: the review of MITA for possible updates; establish requirements for large project governance; and examining Montana State CIO responsibilities and subsequent powers and tools to oversee IT projects, infrastructure, and investments. In the 2013 Legislative Session, SB312 modified MITA, revising state policy on information technology specifically addressing security and transparency,

SITSD conducted a thorough review of the current statute, and found that the current law is effective with regard to the development and deployment of IT resources and provides for an effective governance structure for those resources.

Although the current law is effective, SITSD is recommending a housekeeping bill to modernize and update the Act. For example, the law does not truly reflect the duties of the CIO as they are currently being executed. Section 2-17-511, MCA, states that the CIO duties are assigned by the Director of the Department, and not specified in statute. A statute revision could explicitly state the CIO is responsible for carrying out the planning and program responsibilities for state government IT, and ensure CIO responsibilities remain constant through changes in administration.

There are several definitions that should be updated as well. These include:

- "Data" now described in statute to mean "any information stored on IT resources" to a more modern definition: any digital asset stored on IT resources, and may refer to any electronics file no matter what the format including but not limited to database data, text, images, audio, and video.
- "Central computer center" would be updated to mean the State Data Center facility administered by the department for use by state agencies.
- "Electronic access system" would be better defined as a telecommunications network that allows information technology to exchange data in a voice, video or electronic data from including but not limited to the internet.

SITSD is currently working with the Governor's Office on a housekeeping bill, LC519, to implement these changes.

I. Major IT Projects

Major IT Projects Identified in 2014 Supplements

The 2014 agency planning cycle included a Supplement process where agencies identified their major IT investments, projects and initiatives programs for the next two years. Supplements were completed in June 2014. A Supplement was required for any project that qualified on one or more of the following criteria.

- An EPP item for an IT spend.
- A budget of \$500,000 or more, whether or not it is an EPP item. The \$500,000 budget is the sum of all grants, current operating budget expenses, new budget allocations, special fees, and other sources of funds and includes costs associated with internal builds. Regardless of the source(s) of the funds, please list them.
- An IT initiative with a budget of \$100,000 or more and also comprises 25% or more of the agency's IT budget, whether or not it is an EPP item.
- An IT project or initiative that impacts other agencies or has the potential for an enterprise-wide impact.

The complete list of Supplements can be found in [Table 14 - Montana IT Supplement Summary](#).

Agency IT Projects from 2012 Agency IT Plans

In the 2012 planning cycle agencies identified 136 IT projects and initiatives of all sizes. The complete list of projects, and their status as of July 2014, can be found in [Table 15 - 2012 Agency IT Projects and Initiatives](#). Table 16 summarizes the progress to date.

Table 16 2012 IT Project Status

Status as of September 2014	Count	Percentage
Completed	30	22%
Substantially completed	6	4%
Ongoing	66	49%
Deferred	7	5%
Canceled	2	1%
No update available	25	18%
Total	136	100%

J. Abbreviations and Acronyms

ACA	Affordable Care Act
ACD	Automatic Call Distribution
AGR	Department of Agriculture
API	Application programming interface
ATM	Asynchronous Transfer Mode
BPE	Board of Public Education
CAD	Computer Aided Design
CAD	Computer Aided Dispatch
CAPS	Child and Adult Protective Services (DPHHS)
CDP	Concept Demonstration Project
CEO	Chief Executive Officer
CEP	Contractor Engagement Proposal
CHIMES	Combined Healthcare Information in Montana Eligibility System (DPHHS)
CIO	Chief Information Officer
CISO	Chief Information Security Officer
CMS	Content Management System
COR	Department of Corrections
COTS	Commercial off-the-shelf
CPP	Commissioner of Political Practices
CPU	Central Processing Unit
CRM	Customer Relationship Management
CSI	Commissioner of Securities and Insurance (State Auditor Office)
DEQ	Department of Environmental Quality
DHS	U.S. Department of Homeland Security
DLI	Department of Labor and Industry
DMA	Department of Military Affairs
DNN	DNN Corporation; software manufacturer and distributor
DNRC	Department of Natural Resources & Conservation
DOA	Department of Administration
DOC	Department of Commerce
DOJ	Department of Justice
DOR	Department of Revenue
DPHHS	Department of Public Health & Human Services
ECM	Electronic Content Management
ELG	Education and Local Government Interim Committee

EPP	Executive Planning Process
ERM	Electronic Records Management
Esri	Environmental Systems Research Institute
ETS	Enterprise Technology Services, Department of Administration, State or Oregon
FBI	Federal Bureau of Investigation
FWP	Department of Fish, Wildlife and Parks
FY	Fiscal Year (For Montana, July 1 - June 30)
Gb	Gigabits
GB	Gigabytes
GEMS	Growth and Enhancement of Montana Students (OPI)
GenTax	Fast Enterprise's integrated tax processing software package
GEMS	Growth and Enhancement of Montana Schools (OPI)
GIS	Geographic Information System
GOV	Governor's Office
HIPAA	Health Insurance Portability and Accountability Act
HJR2	House Joint Resolution 2
HVAC	Heating, ventilating and air conditioning
IJIS	Integrated Justice Information System
IT	Information Technology
ITPR	Information Technology Procurement Request
IV&V	Independent verification and validation
IVR	Interactive Voice Response
JCATS	Supreme Court's Juvenile Court Assessment and Tracking system
JDDRS	Juvenile Detention Database and Reporting System
kW	Kilowatt
LDRPS	Living Disaster Recovery Planning System
LFC	Legislative Finance Committee
LIV	Department of Livestock
LMR	Land Mobile Radio
LOT	Montana State Lottery
MAC	Montana Arts Council
Mb	Megabits
MBCC	Montana Board of Crime Control
MCA	Montana Code Annotated
MCDC	Miles City Data Center
MCS	Motor Carrier Services (MDT)
MDT	Department of Transportation
MERLIN	Montana Enhanced Registration and Licensing Information Network (DOJ)
MHP	Montana Highway Patrol

MHS	Montana Historical Society
MITA	Medicaid Information Technology Architecture
MITA	Montana Information Technology Act
MMIS	Medicaid Management Information System
MOM	Montana Operations Manual
MOU	Memorandum of Understanding
MPERA	Montana Public Employees Retirement
MPLS	Multi-Protocol Label Switching
MS-ISAC	Multi-State Information Sharing and Analysis Center
MSDB	Montana School for the Deaf and Blind
MSF	Montana State Fund
MSL	Montana State Library
MTIVS	Montana Insurance Verification System
MTNG	Montana National Guard
NAIC	National Association of Insurance Commissioners
NASCIO	National Association of State Chief Information Officers
NIEM	National Information Exchange Model
NIST	National Institutes of Standards and Technology
NRIS	Natural Resources Information Systems
OIT	Office of Information Technology (DNRC)
OCHE	Office of the Commissioner of Higher Education
OEC	Office of Emergency Communications (Department of Homeland Security)
OMIS	Offender Information Management System
OPD	Office of the State Public Defender
OPI	Office of Public Instruction
PCI	Payment Card Industry
PERS	Public Employee Retirement System (MPERA)
PMO	Project Management Office
PSC	Department of Public Service Regulation
P25	Project 25 interoperability standards for land mobile radios
RAM	Random access memory
RFP	Request for Proposal
RMS	RMS database by Microsoft
SaaS	Software-as-a-service
SABHRS	State Accounting, Budgeting, and Human Resource System
SAN	Storage Area Network
SANS	Sysadmin, Audit, Networking, and Security Institute
SBS	State Based Systems, a product of the National Association of Insurance Commissioners
SIEM	Security Incident and Event Management

SIMS	Safety Information Management System (MDT)
SITSD	State Information Technology Services Division, Department of Administration
SMDC	State of Montana Data Center
SNAP	Supplemental Nutrition Assistance Program (DPHHS)
SOAR	Student Online Academic Resource
SOS	Secretary of State
SQL	Structured Query Language (Microsoft product)
TANF	Temporary Assistance for Needy Families (DPHHS)
TEAMS	The Economic Assistance Management Systems (DPHHS)
TRS	Teachers Retirement System
T1	T1 line speeds operate at 1.544 megabits per second
UPS	Uninterruptible Power Supply
USAF	United States Air Force
VOIP	Voice over internet protocol
VSP	Virtual Server platform
WAN	Wide area network