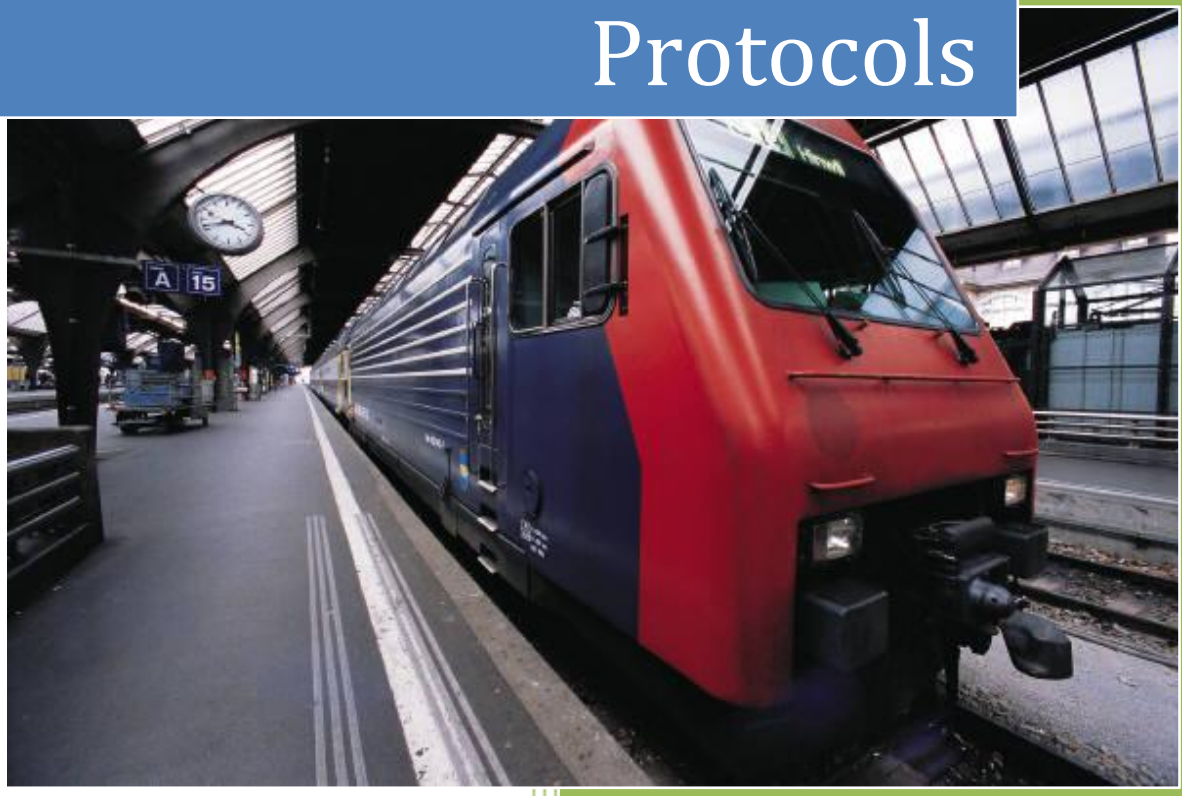
2010

Report Concerning Data Sharing Protocols



Governor's Office of Information Technology

3/1/2010

STATE OF COLORADO

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Bill Ritter, Jr.
Governor

Michael Locatis
State Chief Information Officer

March 1, 2010

Members of the Colorado General Assembly,

In accordance with C.R.S. §24-37.5-703 (6) et. seq., I am pleased to present the first "*Report Concerning Implementing Data Sharing Protocols*" to the members of the Colorado General Assembly.

The Government Data Advisory Board was seated in August 2009, and has been actively developing its strategy as well as supporting state grant applications, such as the State Longitudinal Data Systems (SLDS) and Race to the Top programs under the American Recovery and Reinvestment Act (ARRA). Additionally, the Governor's Office of Information Technology (OIT) established the state's Data Management program and named the nation's first State Chief Data Officer in July 2009.

OIT's focus on agile application and service delivery means that strong concentration and emphasis on the underlying data required for employees, agencies, legislators, and others to do their work *must* be a top priority. The "businessization" of government requires a disciplined approach to dismantling data silos, implementing infrastructure to enable sharing across agencies, branches, and levels of government, and tools to build capacity for knowledge and performance management.

We look forward to continuing our work in 2010 and supporting the state's efforts in cross-agency data sharing and enterprise data management. I remain committed to advancing our bold agenda and to examining innovative approaches to make data management more efficient and effective in both cost and service.

Sincerely,

Michael Locatis

Michael Locatis
State Chief Information Officer

Background and overview

The Colorado General Assembly approached the issue of enterprise data sharing with the passage of House Bills 08-1364 and 09-1285. HB 08-1364 directed the Governor's Office of Information Technology (OIT) to convene a Data Protocol Development Council ("Council") to assist in designing and implementing an interdepartmental data protocol. The goals of the cross-departmental data protocol are to facilitate information sharing across agencies, and to assist in formulating and determining the effectiveness of state policies.

The mission of the Council was to provide guidance, policies and procedures for implementing a data sharing architecture across the state enterprise to achieve the stated goals and objectives of HB-1364. HB 08-1364 was driven by the need to:

- analyze and determine the effectiveness of state policies and resources by examining an issue across multiple state agencies;
- formulate informed strategic plans for the application and use of state resources based on strong, accurate, reliable, multi-dimensional data; and,
- enable more efficient collecting, storing, manipulating, sharing, retrieving, and releasing of data across state agencies.

The Council made a number of recommendations in its final report to the State CIO and Legislature in February 2009. Number one among these recommendations was the establishment of a formal governing board to advise on enterprise policies, directions and priorities for data governance and management across state government agencies. This formal data governance process will describe the “rules of engagement” by which all State Executive Branch agencies will follow regarding data sharing and data management.

Based on the Council’s recommendation, the Legislature introduced and passed HB 09-1285, which created and defined the Government Data Advisory Board (“Board”). The GDAB, seated in August 2009, is a multi-agency central governance authority, comprised of representatives of 12 state agencies, local governments, non-governmental organizations and research institutes, and a wide variety of education stakeholders. The GDAB's mission is to provide guidance and recommendations on how the state should govern and manage data and data management systems to improve the efficiency and effectiveness of state government, citizen service delivery and policy-making. The GDAB is one of the very few such Boards in any state in the country, established in legislation and appointed by the Governor, to provide the central governing structure for enterprise data sharing initiatives.

Mission

The Board's mission is to provide guidance and recommendations on how the state should govern and manage data and data management systems to improve the efficiency and effectiveness of state government, citizen service delivery and policy-making.

Vision

The vision for ***enterprise data sharing*** is to foster collaboration, innovation and agility in delivering government services to the citizens of Colorado through the seamless, efficient, strategic exchange of core data sets resulting in increased effectiveness of government operations.

Per HB 09-1285, the GDAB has the following duties:

- To advise the chief information officer concerning best practices in sharing and protecting data in state government.
- To recommend to the Chief Information Officer rules and procedures that a state agency shall follow in requesting, or responding to a request for, data from another state agency, including but not limited to strategies for enforcing said rules.
- To advise the chief information officer concerning rules and procedures for responding to data requests submitted by an entity outside of state government.
- To recommend to the chief information officer a schedule of fees that the office may charge to state agencies to supervise and administer interdepartmental and external data requests, that a state agency may charge another state agency in responding to an interdepartmental data request, and that a state agency may charge to respond to a data request submitted by an entity outside of state government in recommending the fee schedule, the advisory board shall ensure that the fee amounts do not exceed the direct and indirect costs incurred by the office or by the state agency that is responding to a data request.

The Board is tasked with presenting an Annual Report of its activities to the State Chief Information Officer ("State CIO") by January 15th of each calendar year. The State CIO then updates the Governor's Office and Legislature by March 1st each calendar year.

The Board held its first meeting on August 21, 2009. The Board has organized itself into three working subcommittees, in addition to the Education Data Subcommittee that is specifically established in statute. The Board identified 18 areas of strategic planning for the 2010 calendar year that when taken together will help meet the deliverables legislated by HB 09-1285.

Education Data Subcommittee of the Government Data Advisory Board

The Education Data Subcommittee ("Subcommittee") was created through HB 09-1285 as a subcommittee of the Government Data Advisory Board ("GDAB"). Its primary mission is to provide recommendations for the creation of a statewide comprehensive P-20 education data system.

Per HB 09-1285, the Subcommittee has the following duties:

- To recommend to the State Chief Information Officer ("State CIO") and the GDAB protocols and procedures for sharing education data among charter schools, school districts, boards of cooperative services, the Department of Education, the Department of Higher Education, and state institutions of higher education.
- To recommend to the State CIO and the GDAB appropriate information technology.
- To recommend to the State CIO and the GDAB appropriate reporting formats for education data.
- To recommend data element standards for individual student records for use by charter schools, school districts, boards of cooperative services, the Department of Education, the Department of Higher Education, and state institutions of higher education.
- To recommend electronic standards by which charter schools, school districts, boards of cooperative services, the Department of Education, the Department of Higher Education, and state institutions of higher education may share data currently being shared through other means, including but not limited to interoperability standards, standards and protocols for transfer of records including student transcripts, and the use of data-exchange transcripts.
- To recommend the design and continuing development of a statewide comprehensive P-20 education data system.

Mission

The Subcommittee's primary mission is to provide recommendations for the creation of a statewide comprehensive P-20 education data system.

Vision

The vision of the Subcommittee is to advise the State CIO and GDAB in creating a comprehensive P-20 education data system that permits the generation and use of accurate and timely data to support analysis and informed decision-making at all levels of the education system. The intent of this system is to increase the efficiency with which data may be analyzed to support the continuous improvement of education services and outcomes, facilitate research to improve student academic achievement and close achievement gaps, support education accountability systems, and simplify the processes used by State and local educational agencies to make education data transparent through Federal and public reporting.

Summary of recommendations from GDAB and the Education Data Subcommittee

The Board has met only a few times, but makes the following recommendations to the State CIO for immediate implementation:

1. OIT should inventory all state data systems and develop an understanding of where the state's data is located and used.

   The first step in understanding the various types of data collected and used by various state agencies is to inventory and define what data is collected by the state and where it resides. OIT should organize and coordinate this inventory process among all state agencies. This inventory information about the data should then be made available to all agencies to facilitate data sharing processes and strategically to identity opportunities for data re-use and consolidation.

2. OIT should develop a data stewardship and ownership policy.

   Data Stewardship means the formal accountability for business responsibilities ensuring effective control and use of data assets. A data steward is a business leader or recognized subject matter expert designed as accountable for data stewardship responsibilities. Data stewards manage state data assets on behalf of the state and their agency. They have the responsibility for setting business policies, standards, architecture, procedures, data names, definition, data quality requirements and business rules.

   This recommendation includes formalizing and organizing the stewardship activities and processes statewide based on information subject areas. It also includes creating a common baseline of information such as a statewide foundation for data sharing, information discovery and future architectures.

Education Subcommittee Recommendations to the State Chief Information Officer

The Education Subcommittee is currently working to develop recommendations in the following areas:

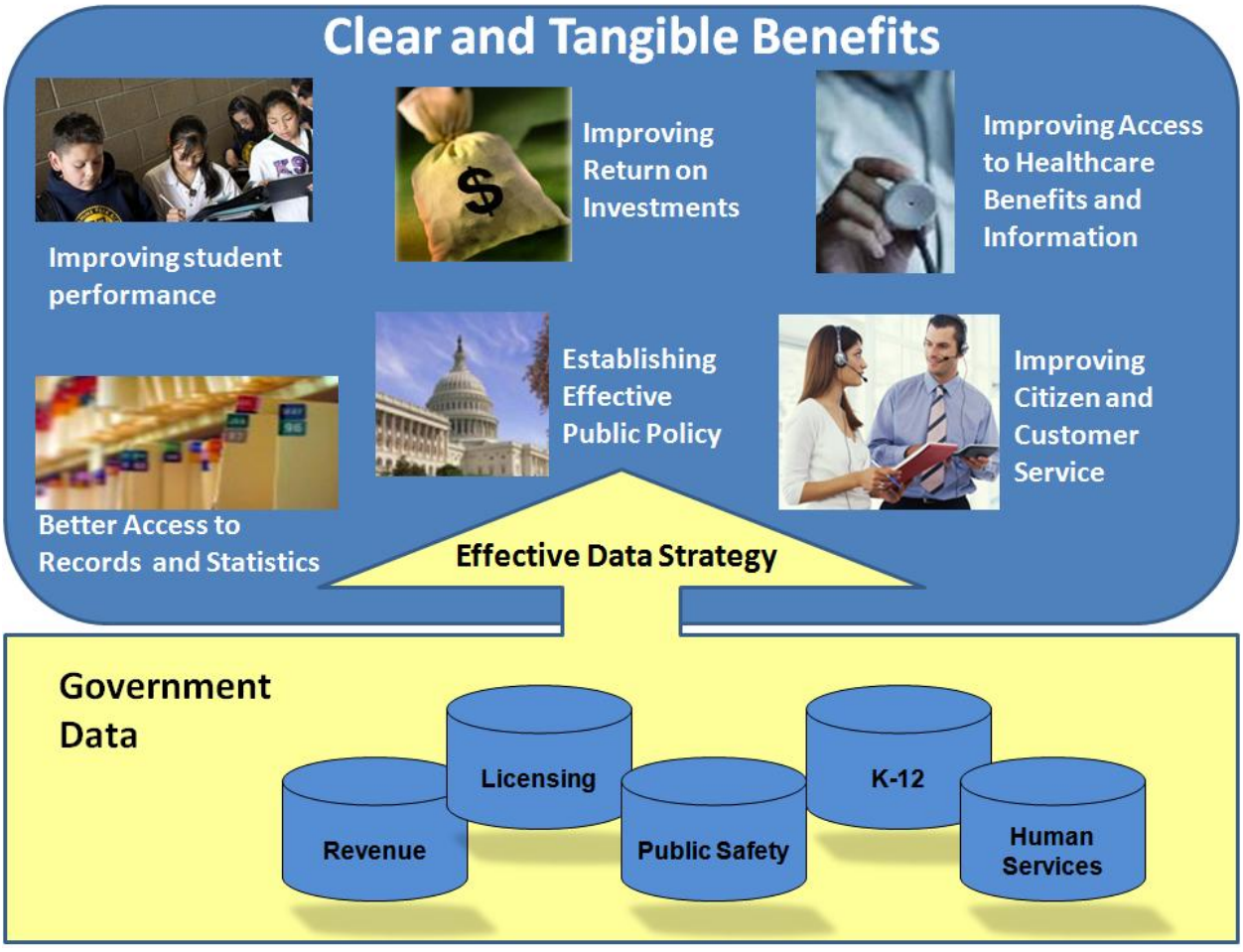
- Protocols and procedures for sharing education data
- Information technology and reporting formats for education data
- Data element standards
- Electronic standards
- Design and development of a statewide comprehensive P-20 data system

The Education Subcommittee will also update its recommendations to the State CIO based upon the deliverables in the State Longitudinal Data Systems and Race to the Top grants, if awarded.

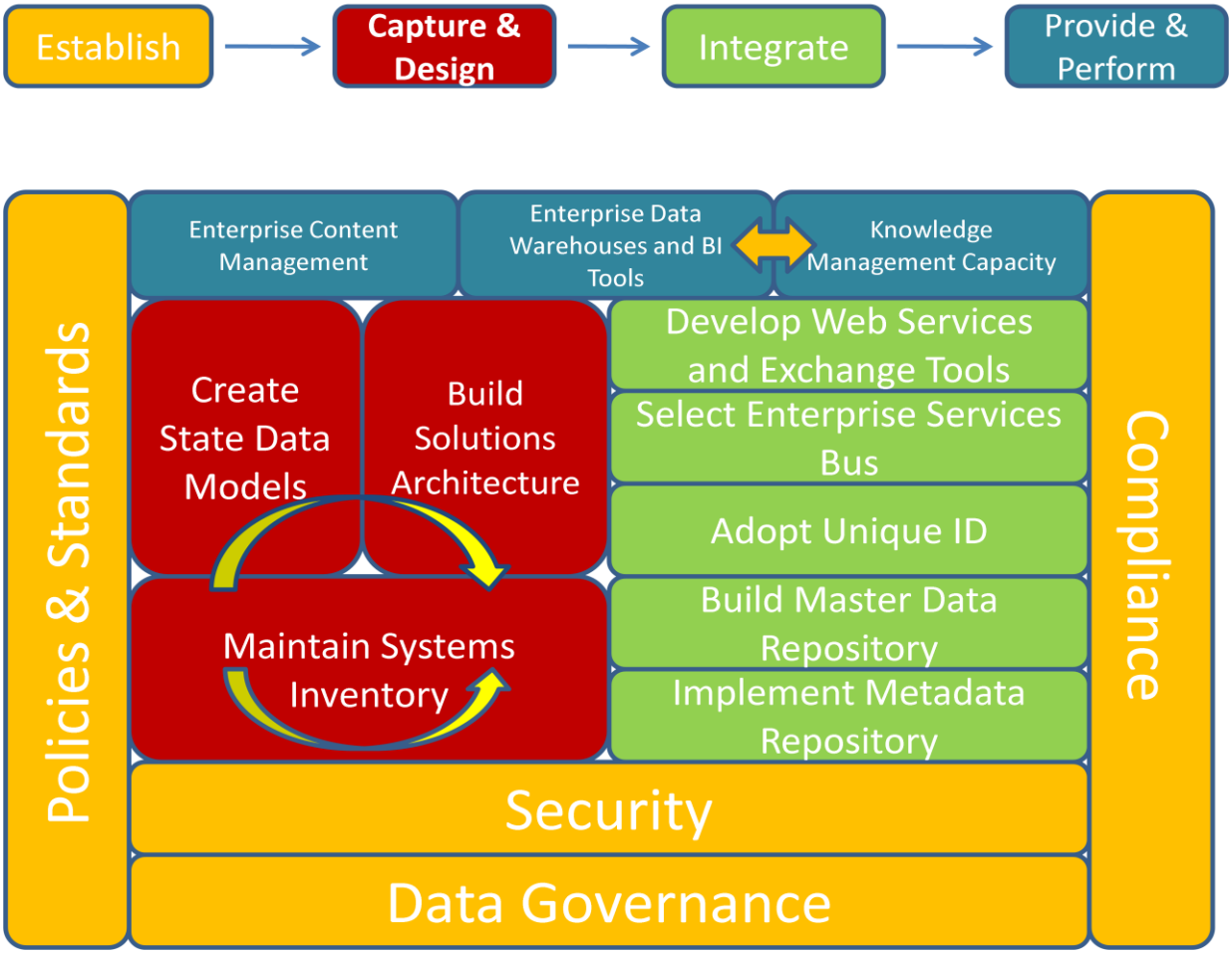
OIT Work to Support Enterprise Data Sharing

OIT is the central authority for all information technology (IT) systems, resources, and budget in the state of Colorado, and is authorized to set standards, policies, and guidelines for how those IT assets operate, communicate and are managed. OIT has been examining the issue of data management for two years, bringing together cross-functional, multi-agency teams, interviewing stakeholders, benchmarking other states, and doing other critical research to determine the most effective way to establish a new data management program in an environment of historically siloed agencies and systems.

OIT's focus on agile application and service delivery means that strong concentration and emphasis on the underlying data required for employees, agencies, legislators, and others to do their work *must* be a top priority. The "businessization" of government requires a disciplined approach to dismantling data silos, implementing infrastructure to enable sharing across agencies, branches, and levels of government, and tools to build capacity for knowledge and performance management.



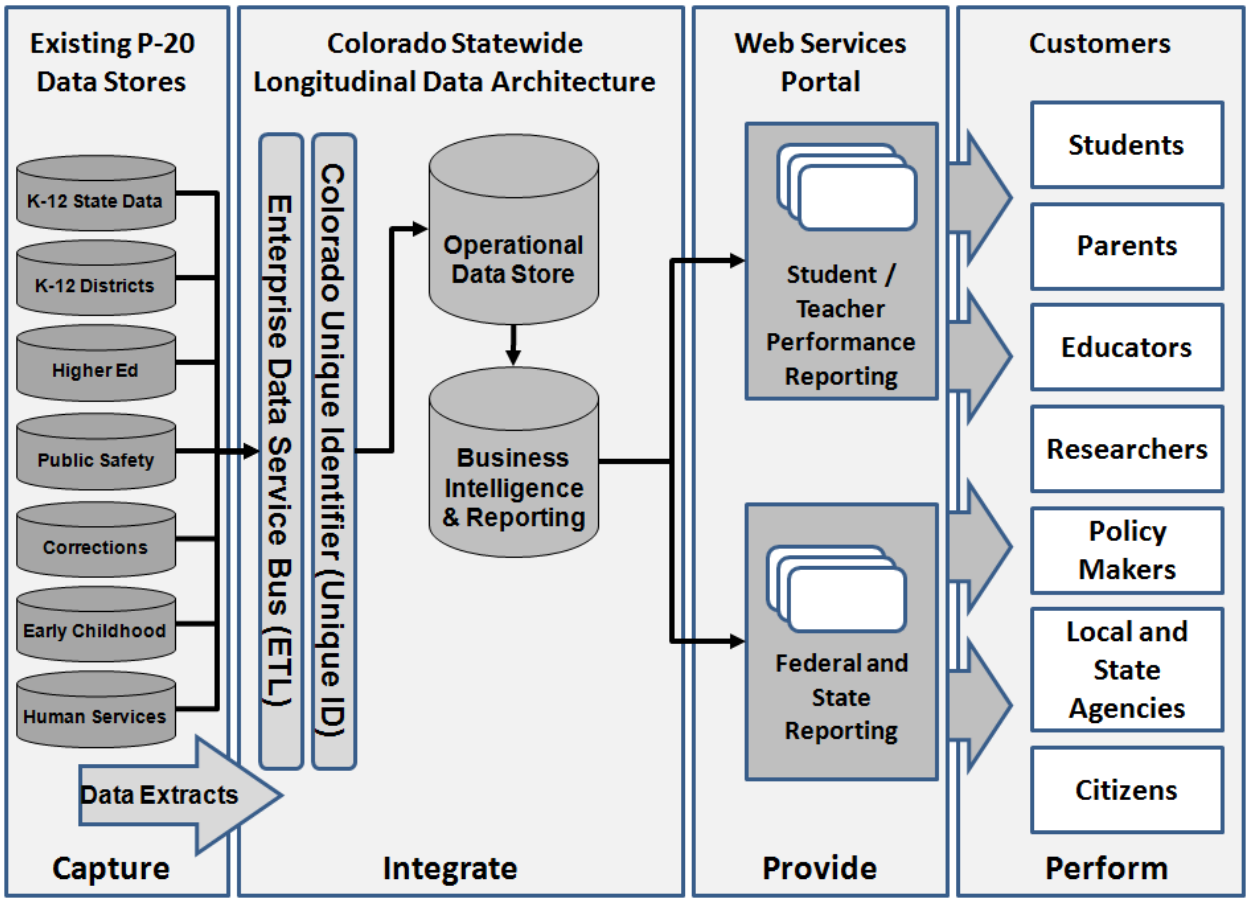
Moving the state to an enhanced data management future based on shared integrated data will improve the speed and quality of decision making and delivery of services to the state's constituents while reducing the duplicative cost associated with non-integrated systems. The figure below illustrates the high-level business and technical overviews of the state's data management system components across four stages of implementation (Establish, Capture and Design, Integrate, Provide and Perform).



This figure outlines how the state will implement and realize the longer term benefits from this strategy. The ambition of the state's vision for this program is commensurate with the dramatic scale of improvement in outcomes being pursued. This program includes initiatives related to understanding and modeling state data, integrating data across state systems, and providing the right data to the right audience at the right time for use in continuous improvement via knowledge management.

There are a number of data sharing efforts and data management projects underway in the state, and OIT is working with many initiatives and agencies already to begin establishing processes and standards. As an example, the figure below is the state's conceptual model for the Statewide Data Longitudinal System (SLDS) proposal for the U.S. Department of Education, and showcases the architectural

foundation for improving student outcomes and performance. OIT is involved in this multi-agency effort to help set architectural standards, data standards, and governance policies and procedures.



OIT has successfully developed a new enterprise approach to delivering technology, leveraging private sector business models and public-private partnerships to modernize the infrastructure and thus enable the agile delivery of new applications and government services to state agencies and citizens as efficiently, cost-effectively, and sustainably as possible.

Colorado's Vertical Domain Approach to Integrated Data Sharing

This work has begun across a number of business domains, including public safety, juvenile justice and mental health, and education. Some examples are below.

Education State Longitudinal Data System

The Colorado Department of Education (CDE), working in collaboration with OIT, the Governor's Office of Policy and Initiatives, and the Colorado Departments of Higher Education, Human Services and Labor and Employment, proposes to build a state longitudinal data system, Project SchoolView™, that meets the demands of the state's ground-breaking P-20 education reform agenda. This agenda, which has been underway for several years, implements true P-20 education alignment across the state's education systems and is anchored by a common definition of postsecondary and workforce readiness

to ensure students exit prepared for postsecondary education and workforce success. Project SchoolView™ envisions a flexible enterprise P-20 information and knowledge management system that will equip users to manage and use information for informed decision making ensuring postsecondary or workforce success.

Colorado Children Youth Information Sharing Initiative

This effort seeks to support the current *Office of Juvenile Justice and Delinquency Prevention* (OJJDP) effort in Colorado on juvenile justice data exchange. This effort is a multi-agency initiative that is addressing the coordination, collaboration and integration of children and youth prevention, intervention, and treatment services. Eight state departments are represented, including Public Health and Environment, Education, Human Services, Division of Youth Corrections, Public Safety, Judicial, OIT, and Health Care Policy and Finance. Local partners are also involved to discuss common issues related to coordination, collaboration and integration as related to services for children, youth and families. A major priority for this initiative is to share data between agencies and systems and to enhance long-range, integrated and comprehensive planning for children and youth around common priorities at the state and local levels.

Early Childhood Service Delivery

Through both legislation and an Executive Order, the state is beginning an initiative that will ensure and advance a comprehensive service delivery system for children birth to eight using data to improve decision making, alignment, and coordination among federally funded and state funded supports and services targeted at young children and their families. A unified, interagency data system to promote sharing and use of common data for planning and accountability will be developed across the four service sector domains of health, mental health, early learning, and family support and parent education. Members of this multi-agency effort includes the Departments of Human Services, Public Health and Environment, Health Care Policy and Financing, Higher Education, OIT, local governmental groups, local school districts, providers of early childhood support services, non-profits, and the business community.

State CIO Recommendations to Support Enterprise Data Sharing

Management of the state's data as a unified program is essential for the state to evolve towards building or buying systems in the future that communicate seamlessly, that secure private and sensitive data, and that eliminate redundant data stores and functions. The value and associated risks of the enterprise's data information assets must be ascertained if they are to be properly managed, shared, and protected. Understanding the criticality, value or relative value of data will help to determine the level of investment in security, access, quality assurance, and recoverability. Managing data, information, and knowledge assets in this way is not strictly an IT initiative – this is an ***enterprise*** initiative demonstrating strong collaboration across business and technology.

There are many benefits that a progressive data management strategy can provide across the enterprise in a variety of areas including:

- *Education* - Ensures that a seamless education system from pre-school to graduate school is preparing our young people for the demands of the 21st Century by linking records over time (PreK-20), analyzing performance, and studying educational effectiveness.
- *Social Services* –Creates means to capture data once – regardless of point of entry into the state system - about a child, youth or family, and use that data across multiple state service programs to directly certify them for supplemental or additional services based on child or family eligibility. This program has a twofold benefit: ensuring that all children and families receive the benefits that they may not otherwise have applied for, and reducing fraudulent claims against the system by comparing the records.
- *eGovernment Services* – Provides single-sign on for citizens and businesses to have access to all of their current state account information (driver information, vehicle registration, tax information, benefits, etc.) through one portal. Digital signature services would be available to complete transactions electronically, end-to-end, with the state. The state would also be able to provide services such as address change that get completed once and shared with all agencies with which the individual does business.
- *Workforce and Economic Development* – Creates strategic, targeted and systemic responses to economic conditions and labor market changes. Information sharing can help support the development of timely, accurate information to identify key industries, examine the state of regional economies, explore the root causes of skills gaps, and promote strategic planning that addresses the needs of workers and employers alike.
- *Law Enforcement* – Improves state and community security and safety postures. All major reviews of the nation's response to the terrorist attacks of 9/11 maintain that integrated information technology and improved information sharing across agencies at all levels of government are vital to an effective homeland security strategy.
- *Policy Making* - Helps lawmakers and policy makers answer questions and predict program results to help ensure the best use of limited State resources and effectiveness of State programs.

There are benefits to policy development, resource alignment, and collaboration, as it is cheaper to share and secure data than to recollect, store, maintain, secure in multiple, often redundant, data stores. Some additional benefits include, but are not limited to:

- Permitting cross-departmental enterprise data analysis and forecasting;
- Allowing for validation of programs across agencies;
- Allowing for verification, refutation and refinement of findings with metrics that provide validation;
- Promoting new research;
- Using evidence-based policy making;
- Encouraging diversity of analysis and testing of new or alternative hypotheses for policy making and results; and,
- Resourcing without duplication of data collection.

In addition to the recommendations from GDAB and the Education Data Subcommittee, OIT recommends the following activities to accelerate this work forward:

Create an information sharing culture

Addressing the cultural and trust issues relative to information sharing is critical to the long-term success and sustainability of the program. State agencies are mindful stewards of the data entrusted to them by the citizens of this state. Legitimately, there are concerns regarding privacy, confidentiality, compliancy and liability in any data sharing initiative. Specifically, these are to be addressed and worked through on an initiative-by-initiative basis. Generally, OIT recommends a thoughtful and deliberate approach to encourage data sharing that includes discussion on the cultural, educational, change management and financial incentives that may cause inadvertent barriers to the ultimate achieval of the goals of this program.

Enterprise data standards and data governance

Smart data collection, management and usage require enterprise architecture and data architecture standards to enable information sharing and reuse. The Data Management program will provide five primary tools to the enterprise to facilitate data discovery, integration, sharing, re-use, and systems development activities. These are:

- Enterprise Systems and Data Inventory
- Business Data Value Matrix
- Master Data Repository
- Metadata Registry
- Enterprise Data Models

All branches of state government should be encouraged to contribute and use these tools to move all information management efforts forward in a cohesive manner.

Alignment of technology spend on data sharing efforts

At any time, but especially given today's challenging economic climate, it is important to spend state dollars as wisely as possible. Investing in solutions, tools and other infrastructural components that will enable data sharing across the enterprise will give the state the ability to leverage its purchasing power to the greatest extent possible. Recommendations to this end include:

- Leveraging data, tools and infrastructure across the enterprise.
- Developing solutions that serve multiagency business needs to facilitate organizational collaboration and partnership.
- Identifying opportunities and priorities to consolidate and exchange core data set with state, local, federal and business partners to further increase efficiencies, analytical and predictive capabilities, improve policy-making and citizen services.
- Coordinating grant applications and awards with data sharing as a component.

Involvement in future legislation with data sharing as a component

OIT has had a successful partnership with the General Assembly over the past few sessions with regards to data sharing legislation. We look forward to continuing this good work and aligning data sharing and data management efforts across all lines of business that the state serves.