Government Data Advisory Board (GDAB) Annual Report, January 2012

STATE OF COLORADO

GOVERNOR'S OFFICE OF INFORMATION TECHNOLOGY

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John W. Hickenlooper
Governor

Kristin Russell
Secretary of Technology and
State Chief Information Officer

January 15, 2012

Kristin Russell, Secretary of Technology & Chief Information Officer
601 E. 18th Avenue, Suite 250
Denver, CO 80203

Dear Secretary Russell,

I am pleased to submit the Government Data Advisory Board's annual report, as required by Colorado Revised Statute 24-37-5-705.

The Government Data Advisory Board finishes its third year and has made forward progress in data sharing initiatives throughout the state. The Board is making recommendations around statewide privacy policies, bulk sharing of educational data and expects to complete a universal application process recommendation for early childhood in early 2012. In addition, the Board approved the creation of the Colorado Information Marketplace, which will launch in 2012. The Colorado Information Marketplace provides the governance structures and templates to create reusable data sharing agreements within the state, with an emphasis on the security and privacy of state data. It furthers government transparency by cataloging the sharable data sets approved and published by the state, local, county, tribal, non profit and public entities.

We look forward to continuing our work in 2012 and supporting the state's efforts in data sharing and transparency.

Sincerely,

Sherri Hammons

Sherri Hammons
Chief Technology Officer, OIT
Chair, Government Data Advisory Board

Enabling the effective, efficient and elegant delivery of government services through trusted partnerships and technology

EXECUTIVE SUMMARY

The Government Data Advisory Board (the "Board") was created through HB 09-1285. Its primary mission is to provide Recommendations and advise the State Chief Information Officer (CIO) regarding the ongoing development, maintenance, and implementation of the interdepartmental data protocol.

The Board is tasked with presenting an Annual Report of its activities to the 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 major GDAB endeavors for calendar year 2011 were targeted through 3 subcommittees whose full reports may be found in the appendices of this report and were:

1. The Education Date Subcommittee
2. The Early Childhood Universal Application Subcommittee
3. The Privacy Subcommittee

In addition the Health IT program coordinated its plans and initiatives with the board.

2012 will be a major implementation year for many new IT initiatives set forth in the Governor's Office of Information Technology FY12 playbook. In addition to completing outstanding Recommendations and Strategic Activities required to fulfill the board's legislative directives, the Board believes that it can provide valuable advice and Recommendations to the Chief Information Officer and senior OIT staff for many of the stated initiatives, but particularly for the ones that have a possible data sharing posture as follows:

- Initiate the Colorado Information Marketplace.
- Establish public/private R&D team to explore new trends and technology, as well as information sharing opportunities.
- Develop Health IT program strategy and data architecture.
- Launch statewide, unique Identity Management service, which will include Master Data Management, as well as Identity Management (Single Sign On).

Strong communication across a wide range of stakeholders will be essential to the short and long term success of the state's data sharing efforts and urges OIT to implement a communication plan for the following:

- Conduct a data sharing communications outreach to all cabinet members and state legislators.
- Conduct a communications outreach at the application user level emphasizing the importance of data quality best practices.

- Initiate quarterly updates of OIT IT Directors (Agency Services) for all new Board policies, templates, strategic initiatives etc.

Additionally, the success of the Board hinges on full and active membership as outlined in HB 09-1285. The Board seeks executive support to ensure full agency participation in this process, across all branches of government. The Board also seeks executive support to fill existing board vacancies.

The Board is excited to see the momentum that 2012 brings. The Board looks forward to continuing our support of information sharing and information management and believes it is really one of the primary areas which can impact government service delivery to our citizens and policy makers for the better.

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BACKGROUND AND OVERVIEW

The Colorado Legislature 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 (the "Board"). The Board was specifically established to advise the State CIO on activities and policies necessary to developing the interdepartmental data protocol created in HB 08-1364 and to continue the work of the Council.

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 e n t e r p r i s e d a t a s h a r i n g 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.

"Enterprise" is defined as the State of Colorado Executive Branch Agencies.

"Core data sets" are defined as one or more data elements strategic and/or critical to State agency operational or programmatic needs.

Board Roles

The Board has two primary roles. The first is to assist the State CIO and CTO in determining the state's data strategy, policies, standards, architecture and assisting with issue management. The Board's second role is as advocate: both from within their communities to OIT regarding stakeholder needs and concerns; and, to their community as key communicators regarding the state's progress, concerns and challenges.

Board Alignment with OIT Operations

The Board operates as one part of a well-organized process that includes the Office of Enterprise Architecture and the Colorado Information Marketplace.   As part of Colorado's strategic plan, OIT has adopted a set of guiding principles:

- Security and Privacy are core missions.

- The Board will engage the State's highly skilled and dedicated workforce.

- Information is one of our most valuable assets and should be shared.

- Businesses will maintain data sovereignty.

- Our technology should be agile enough to meet the changing needs of agencies and citizens.

- The Board will strive to constantly improve cost effectiveness.

- Improve information availability and interoperability within the state:

  o A consistent view of information over time;

- o A catalog of information available to state agencies, including the governance and standards around the information; and

  - o Improved availability of data that cannot be shared in its raw form, but that could be made available in aggregate for analysis and reporting.

- Reduce costs and redundancy:

  - o Standards and services for reuse;

  - o Reduce capture of data when it already exists and is available; and

  - o Reduce training of analysts around information interpretation.

- Increase information agility:

  - o Information is available for real time reporting;

  - o Catalog outlines the interpretation of the data; and

  - o Ability for users to access specific, custom sets of data through a self-service portal.

- Increase information security:

  - o Governance models cover the data and are consistent across databases;

  - o Information security policies and practices follow industry, federal and state standards (i.e. HIPPA, FERPA, 42 C.F.R. Part II);

  - o Roles Based Access Control (RBAC) around who may access and use the data; and

  - o Auditable information around access and reporting.

Program Scope

The Board had its kick-off meeting on August 21, 2009 and sunsets in ten years, in 2019. While the data sharing protocol outlined in HB 08-1364 specifically focused on unit records, the Board can and will provide Recommendations on records of any type. Unit records will continue to be a priority to the Board due to the privacy and compliance related issues surrounding them. Unit records are defined as records pertaining to individuals, and thus have specific privacy and security components related to the collection, storage, transfer, and maintenance of those records that must be recognized and adhered to.

The Board has the following responsibilities:

- Advise on the development, maintenance, and implementation of the data sharing protocol;

- Advise on the best practices for sharing and protecting citizen data;

- Review, advise, and provide input into the strategic plan for improving data governance;

- Advise on compliance, privacy and security data requirements;

- Advise on internal and external data policies and procedures;

- Advise on financial and budgetary components required for implementation; and,

- Specifically Recommend education data sharing and management strategies.

Finally, the Board will develop Recommendations with time frames and priorities for developing and implementing the cross-departmental data protocol. Procurement, development, and/or implementation of Board Recommendations are outside the Board's scope of work.

Goals

The goal of the cross-departmental data protocol is to facilitate information sharing across agencies and assist in formulating and determining the effectiveness of state policies. The goals of the Board in its advisory capacity to the State CIO regarding implementation of the protocol are as follows:

Goal 1: Develop Recommendations for enterprise data sharing, integration and consolidation.

Goal 2: Recommend policies and procedures for managing data and resolving conflicts.

Goal 3: Identify areas to reduce operational costs and complexity.

Goal 4: Provide Recommendations to improve data privacy, regulatory compliance and access management.

Goal 5: Identify change management opportunities (service delivery, process improvement, organizational re-alignment).

Program Deliverables

The key deliverables for this program include:

Deliverable	Description
Annual priority document	The Board will develop an annual priority document that will target the work the Board will focus on during its current year. Years run from August to July. These documents may be modified and amended via Board procedures as unforeseen or urgent needs are identified by the Board or stakeholders.
Policy documents	Policy documents will be written by the Board for each identified enterprise policy need. These documents will be delivered to the Chief Technology Officer in the OIT.
Education Data Subcommittee report due to Board	These reports are due to the Board twice a year, per legislation, on the first of December and the first of June.
Board report due to State CIO	This report is due annually, per legislation, by January 15.
State CIO report due to Governor & Legislature	This report is due annually, per legislation, by March 1.

Issues

The following issues will be considered by the Board as its work progresses:

- Cultural and change management issues within state agencies.
- Explore a funding source to implement an enterprise program and system infrastructure to support the cross-departmental data protocol.
- Meet compliance standards set by federal and state statute and regulation.
- Ensure that Recommended statutory or regulatory changes can be met in a timely manner.
- Anticipate privacy and security concerns of citizens.

Sponsors and Stakeholders

The following stakeholders have been identified as having a key interest in the program:

Stakeholder/Group	Stakeholder Interest
Executive Sponsorship *OIT Executive Team	OIT is responsible for implementing and delivering the capabilities envisioned with the cross-departmental data protocol and enterprise data sharing initiatives.
Governor's Office * Policy advisors as identified	The Governor's Office drafted HB 08-1364, the initial legislation, in order to help achieve its objectives on a number of policy fronts, including education improvement efforts. The legislation and the work of the Board are a high priority of the Governor's Office.
Colorado Legislature	The Legislature has seen bi-partisan support for its legislation in challenging the state to develop more efficient and effective data management, exchange and delivery capabilities. It knows that the state can be much more effective in its ability to capture, share, store, and analyze data. It also wants the state to do a better job with regards to performance management and service delivery. The Legislature is keenly interested in how the Board's work proceeds.
Colorado State Agencies	Almost all Colorado state agencies will be impacted by the work done by the Board. The impact areas will include policy, technology, financial, and business process. There will also be cultural changes that will be a natural outcome of the Board's work, and it's important to keep the Agencies as informed as possible during these processes.
Office of the Attorney General	The Office of the Attorney General has a keen interest in ensuring strong policies in the areas of privacy and compliance.
Secretary of State	The Office of the Secretary of State is partnered with other state agencies and aims to continue those and other relationships by cooperating in this effort to ensure any future data exchanges meet compatibility, security and privacy interests.

Local Government Agencies and Entities	The State is a strong business partner with local governments across the state for many government service program delivery efforts. These include education, health care, social service, environmental, public safety and other vertical markets. All of the major data sharing initiatives that currently fall under the purview of OIT and HB 08-1364 include both state and local agency efforts, and thus these local governments will be directly impacted by Board directives. Additionally, it is known that there are any number of other data sharing efforts underway at the local level that will ultimately be impacted by Board policy decisions. Efforts should be made to provide crisp, timely communication to local government agencies so that human and financial resources expended on these projects are spent in ways that are aligned with the state's efforts, so that these efforts don't have to be re-done in the future.
State Agency Data Sharing Projects * Colorado Children's Youth Information Sharing Project (CCYIS) * State Longitudinal Data System Project (SLDS) * State Traffic Records Advisory Committee (STRAC) * Others as identified	These projects will be directly impacted by the Board's policy development efforts and technology architecture Recommendations. These projects will also have urgent multi-agency, multi-governmental level needs that will need to be addressed in a timely manner by the Board so that these projects stay appropriately synchronized with state-level efforts.
Nongovernmental and Research Organizations	These organizations will be impacted by the Board's infrastructure Recommendations for access to state data. Additionally, these organizations will be impacted by the fee structure Recommended by the Board for access to state data.
General Public	The general public includes, but is not limited to, citizens, businesses, organizations, and media who all have a stake in how the state manages the data entrusted to it.

Roles and Responsibilities

The Board responsibilities are outlined in the Board Procedures. This section outlines the roles and responsibilities of key stakeholders that the Board will need to fulfill its mission to the best of its ability.

Role	Resource Name	Responsibility
Executive Sponsorship	State CIO and members of OIT Executive Leadership Team	Champion the project amongst the Governor's Office, Cabinet members, and Legislature. Explore and develop funding sources. Develop high-level program objectives. Provide program-related staffing as needed, including project management, financial, administrative, and technical advisory support.
Governor's Office	Senior Policy Advisors	Champion the project amongst the Governor's Office, Cabinet members, and Legislature. Explore and develop funding sources. Develop high-level program objectives.
Colorado State Agencies	Executive Directors	Provide subject matter experts to the Board for subcommittee or policy work. Communicate with the Board on agency needs and priorities. Champion project throughout their agency.
Office of the Attorney General	Assistant Attorney Generals as required	Provide review and counsel on Board-related legal issues. Provide review and counsel on compliance, legal, and privacy policies created by the Board.
State Agency Data Sharing Projects	Directors and Boards of each initiative	Provide updates on initiative progress as required. Provide communication via email or presentations to the Board regarding priority issues on which they need guidance.

2011 YEAR-IN-REVIEW STRATEGIC PLAN
Strategic Plan Elements & Accomplishments

The major GDAB endeavors for calendar year 2011 were targeted through 3 subcommittees whose full annual reports can be reviewed in the appendices of this report and were:

1. The Education Date Subcommittee,
2. The Early Childhood Universal Application Subcommittee,
3. The Privacy Subcommittee.

In addition the Health IT program coordinated its plans and initiatives for information sharing with the board.

Also, in 2010, the Board as a whole identified 18 activities (areas of strategic planning) that when taken together will help meet the deliverables legislated by HB 09-1285 and were developed into a set of Recommendations for 2011.   As the Board began taking action to accomplish each of these strategic planning objectives/Recommendations, it was unanimously decided to merge some of the activities that were similar in nature or output and the list was reduced to 12.   The table below outlines these amended activities.

1	Recommend that OIT inventory all state data systems and understand where the data are located and used.
2	Develop a data stewardship and data ownership policy.
3	Develop use cases for data sharing to identify "low hanging fruit."
4*	Identify industry best practices and apply to state processes where feasible.
5	Develop a sample memorandum of understanding for sharing data, as well as acceptable data usage and data retention and destruction policies.
6	Develop a data sharing request policy including data reciprocity.
7	Develop an escalation process if a request for data is denied.
8	Develop data sharing agreement templates.
9	Analyze legal liability issues and adopt appropriate policies and privacy standards.
10	Develop a data quality policy.
11	Address trust as a cultural issue within the data sharing community if it arises as an issue. If that issue materializes, a special activity will be organized by the Board.
12	Analyze data sharing fee structure.

*Number 4 was spread across each of the other activities and became a part of the activity milestones.

The status of each Recommendation is outlined below.

The 2011 Board Recommendations proposed to the State CIO were formulated upon the initial strategic planning activities created by the Board to fulfill the requirements of the legislation as stated above.   Below are the Recommendations and status of each, or a brief sumamary of what actions, if any, were taken by the board.

- **Conduct town halls with the CISO to brief agencies on the data classification policy and other pertinent topics.**

  The GDAB realized early on that it would be premature to conduct town halls to brief agencies without the deliverables that the Privacy Subcommittee was formed to address by September of 2011.   Hence, this Recommendation redirected its focus from town halls to inviting the State CISO to participate and advise the Privacy subcommittee on completing its deliverables which included: Data Privacy Policy, Data Sharing Agreement, Data Privacy Checklist, Entity Data Privacy Checklist, and a Data Use Agreement.   These were delivered to the Board in September of 2011 and are anticipated to be approved early in 2012. Additionally, as part of the OIT FY12 Playbook and Information Security Initiatves, the State CISO will establish security awareness brown bags and seminars for OIT staff, state agencies, and local governments, and will be developing security architecture standards that will be addressed in future GDAB data sharing initiatives.

- **Document data management-related controls for the state's IT project management function.**

  This Recommendation was not addressed by the Board in 2011 due to time and resource constraints.

- **Draft a transition communication plan.**

  This Recommendation was fulfilled by including a high level overview of the GDAB in OIT's master transition document that was provided to the Hickenlooper administration in January of 2011.

- **Provide periodic updates by OIT's Office of Enterprise Architecture at   the Board quarterly meetings.**

  This Recommendation was fulfilled by OIT representatives providing updates to the Board in the April, July, September, October, and December meetings that were held throughout 2011.

- **Conduct a data sharing communications outreach to all cabinet members and state legislators.**

  Due the recent change in Governor administrations, and subsequent change in Cabinet leadership this Recommendation remains underway.

- **Conduct a communications outreach at the application user level emphasizing the importance of data quality best practices.**

  This Recommendation remains underway and is included in the work being done by the State's Chieft Technology Officer.

- **Initiate quarterly updates of OIT IT Directors (Agency Services) for all new Board policies, templates, strategic initiatives etc.**

  The Board is in the process of developing new policies, reviewing and approving templates submitted by the Privacy Subcommittee to publish for public use, and launching new strategic initiatves for information sharing which are all expected to be ready in early 2012. Updates will be delivered statewide, including Agency IT Directors as part of the broad communications plan in OIT.

- **Continue and complete the inventory of the state's data systems using up to five current data sharing state initiatives.**

  The scope of this Recommendation was modified to collect an inventory of Data Sharing Initiatives outlining who is sharing, what is being shared, identify any standards being used or in place for sharing, and identify common data elements consistently captured across disparate departments applications, systems, projects, or programs.   This inventory is in progress and is anticipated to be initially complete in early 2012; however will be an on-going initiatve and growing as additional sources of data are identified and inventoried.

- **Complete, adopt and implement data stewardship and ownership policies.**

  This Recommendation is being fulfilled by the recent development of the Colorado Information Marketplace (CIM) which includes an enterprise data governance framework and has been provided to the Board for internal review and approval; anticipated for public release in early 2012.

- **The Board recommends that the Office of Information Technology's Chief Financial Officer works to integrate costs associated with data sharing between state agencies**

into the statewide IT consolidation framework as a common policy cost. The Board believes that this incorporation will help ensure that data sharing costs do not exceed the direct and indirect costs of sharing data between the various agencies and will provide a common framework for sharing the information technology costs of data exchange. The Board encourages this work to be done in order to incorporate currently approved projects such as SLDS into this framework in order to facilitate their completion and ongoing operations. The Board further Recommends that these efforts be used to track actual information technology costs for data sharing projects and that this data be used to assist in the development of fee structures beyond sharing between state agencies.

The final strategy planning objective, "Analyze data sharing fee structure" was partially completed by electing to channel data sharing fee structures where applicable among state government entities through the OIT common policy process. This approach allows maximum flexibility and utilizes an already existing and successful program as part of the annual state budget process. Appropriate fee structures for non-state government entities of all types still needs to be determined. This will require coordination with the State Internet Portal Authority (SIPA) and other stakeholders.

KEY RECOMMENDATIONS FOR 2012

The Board recommends the following to the State CIO:

2012 will be a major implementation year for many new IT initiatives set forth in the Governor's Office of Information Technology FY12 playbook in addition to completing outstanding Recommendations and Strategic Activities required to fulfill the board's legislative directives. The GDAB Board believes that it can provide valuable advice and Recommendations to the Chief Information Officer and senior OIT staff for many of the stated initiatives but particularly for the ones that have a possible data sharing posture as follows:

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The Board is excited to see the momentum that 2012 brings. It looks forward to continuing our support of information sharing and information management and believes it is really one of the primary areas which can impact government service delivery to our citizens and policy makers for the better.

APPENDIX 1 – BOARD MEMBERS

Board Member Name	Organization
Steve Holland	Department of Public Safety
Diane Zandin	Department of Health Care Policy and Financing
Sherri Hammons	Governor's Office of Information Technology
Dianna Anderson	Governor's Office of Information Technology
Richard Coolidge	Secretary of State
Daniel Domagala	Department of Education
Paul Engstrom	Department of Corrections
Ed Freeman, Denver Public Schools	Rep. of Employee of School Districts
Vacant	Rep. of Person serving on School Boards
Patrick Burns	Rep. of Person from an institution of higher education or nongovernmental organization
Chris Markuson, Pueblo County	Rep. of Employee of City, County, or City and County
Vacant	Department of Transportation
Robert O'Doherty	Department of Public Health and Environment
Ronald Ozga	Department of Human Services
Wayne Peel	Department of Labor and Employment
Dr. Beth Bean	Department of Higher Education
Vacant	Department of Revenue
Vacant	Department of Personnel and Administration
Vacant	Judicial Branch

APPENDIX 2 - DATA MANAGEMENT GLOSSARY OF TERMS AND ACRONYMS

This glossary of terms and acronyms is intended to serve as a communication vehicle for reading and understanding publications produced from the Office of Enterprise Architecture.

AFIS - Fingerprint identification system at the Colorado Department of Public Safety.

ASCII – Acronym for the American Standard Code for Information Interchange, which is a code for information exchange between computers.

AUP - Acronym for Acceptable Use Policy, which is a set of regulations that govern how a service may be used.

Authentication - A process for verifying that a person or computer is who they say they are.

Business Data Steward - A recognized subject matter experts working with data management professionals on an ongoing basis to define and control data. They will be more simply referred to as the data stewards.

Business Domains - Business domains are the natural divisions of the business architecture and are based on either functional or topical scope. Business domains represent the highest level of the state's business architecture blueprint.

Business Reference Model – The Business Reference Model (BRM) provides a framework facilitating a functional (rather than organizational) view of the federal government's lines of business (LoBs), including its internal operations and its services for citizens, independent of the agencies, bureaus and offices performing them. The BRM describes the federal government around common business areas instead of through a stovepiped, agency-by-agency view. It thus promotes agency collaboration and serves as the underlying foundation for the FEA and E-Gov strategies.

CIO – Acronym for Chief Information Officer.

CISO – Acronym for Chief Information Security Officer.

CMP-SSC - Acronym for the Collaborative Management Program State Steering Committee.

Conceptual Model - A layer of modeling that defines business entities and the relationships between these business entities. Business entities are the concepts and classes of things, people, and places that are familiar and of interest to the State.

Consolidated Reference Model - The FEA Consolidated Reference Model Document Version 2. Published in October 0f 2007, contains four of the five models (Performance Reference Model (PRM), Business Reference Model (BRM), Service Component Reference Model (SRM), Technical Reference Model (TRM), that make up the Federal Enterprise Architecture. The Data Reference Model, DRM, is referenced but not repeated in this document due to its complexity and volume. Abbreviated as CRM.

Coordinating Data Steward - The data steward responsible for coordination of data stewardship activities across an information subject area.   This person is responsible for insuring the integrity, quality, security, and coordination of associated metadata across the subject area and will lead a data stewardship team.

COPPA - Acronym for the Children's Online Privacy Protection Act.

COTS - Acronym for Commercial Off-The-Shelf software.

CPO - Acronym for Chief Privacy Officer.

CRM – See "Consolidated Reference Model".

Cyber Security – A branch of security dealing with digital or information technology.

Data Context – Data context refers to any information that provides additional meaning to data. Data context typically specifies a designation or description of the application environment or discipline in which data is applied or from which it originates. It provides perspective, significance, and connotation to data, and is vital to the discovery, use and comprehension of data.

Data Dictionary - As defined in the IBM Dictionary of Computing, is a "centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format."[

Data Element - A precise and concise phrase or sentence associated with a data element within a data dictionary (or metadata registry) that describes the meaning or semantics of a data element.

Data Governance - Data governance refers to the operating discipline for managing data and information as a key enterprise asset.

Data Management - Data management is the development, execution and supervision of plans, policies, programs and practices that control, protect, deliver and enhance the value of data and information assets.

Data Mining - The process of extracting hidden patterns from data. Data mining identifies trends within data that go beyond simple data analysis. Through the use of sophisticated algorithms, non-statistician users have the opportunity to identify key attributes of processes and target opportunities.

Data Modeling – A structured method for representing and describing the data used in an automated system. Data modeling is often used in combination with two other structured methods, data flow analysis and functional decomposition, to define the high-level structure of business and information systems.

Data Reference Model - The Data Reference Model (DRM) is a flexible and standards-based framework to enable information sharing and reuse across the federal government via the standard description and discovery of common data and the promotion of uniform data management practices. The DRM provides a standard means by which data may be described, categorized, and shared. These are reflected within each of the DRM's three standardization areas of data description, data context, and data sharing.

Data stewardship - The formal accountability for state business responsibilities through ensuring effective definition, coordination, control and use of data assets.

Data Stewardship Teams - One or more temporary or permanent focused groups of business data stewards collaborating on data modeling, data definitions, data quality requirement specification, and data quality improvement, reference and master data management, and meta-data management, typically within an assigned subject area, lead by a coordinating data steward in partnership with a data architect.

Data Warehouse – A central repository for significant parts of the data that an enterprise's various business systems collect specifically designed for reporting. It is a subject-oriented, integrated, time-variant and non-volatile collection of data in support of management's decision making process, specifically providing data for Online Analytical Processing (OLAP) efforts.

DBA - Acronym for database administrator.

DQA - Acronym for Data Quality Assurance, which is a process of examining the data to discover inconsistencies and other anomalies. Data cleansing activities may be performed to improve the data quality.

EDE - Acronym for Electronic Data Exchange.

Enterprise - The State of Colorado Executive Branch Agencies.

ESID - Acronym for the encrypted state ID at the Colorado Dept. of Education.

ETL – Extract, Transform, and Load, which is a process to extract data from one source, transform (or cleanse) it, and load the result into another source.   This is frequently part of populating a Data Warehouse.

Extensible Markup Language - **Extensible Markup Language (XML) describes a class of data objects called XML documents and partially describes the behavior of computer programs which process them. XML is a subset of SGML, the Standard Generalized Markup Language. Among its uses XML is intended to meet the requirements of vendor-neutral data exchange, the processing of Web documents by intelligent clients, and certain metadata applications. XML is fully internationalized and is designed for the quickest possible client-side processing consistent with its primary purpose as an electronic publishing and data interchange format.**

Federal Enterprise Architecture - The Federal Enterprise Architecture (FEA) consists of a set of interrelated "reference models" designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps and opportunities for collaboration within and across agencies. Collectively, the reference models comprise a framework for describing important elements of the FEA in a common and consistent way. Through the use of this common framework and vocabulary, IT portfolios can be better managed and leveraged across the federal government.

FERPA – Acronym for the Family Educational Rights and Privacy Act.

FIPS - Federal Information Processing Standard (FIPS), one of many standards set by the Federal government for exchanging or processing data.

Government Data Advisory Board (GDAB) – Advisory Board created by HB 09-1285 for the purpose of advising the State CIO on matters relating to data sharing.

HIPAA - Acronym for the Health Insurance Portability and Accountability Act.

Identity Management - Identity Management (IdM) means the combination of technical systems, rules, and procedures that define the owner-ship, utilization, and safeguarding of personal identity information. The primary goal of the IdM process is to assign attributes to a digital identity and to connect that identity to an individual.

Information Architecture - The compilation of the business requirements of the enterprise, the information, process entities and integration that drive the business, and rules for selecting, building and maintaining that information.

Information Exchange Package Documentation - **An Information Exchange Package Documentation (IEPD), is a specification for a data exchange and defines a particular data exchange. It is a set of artifacts consisting of normative exchange specifications, examples, metadata, and documentation encapsulated by a catalog that describes each artifact. The entire package is archived as a single compressed file.**

Information Subject Area - Topical or functional categories of the business processes that are integral to the operations of the State and that span agencies statewide, such as Financial, Person, Geography, Organization, and Service.

Information Subject Sub-Area - A logical subset of an information subject area containing enough unique information to be addressed separately, such as within the subject area of person could be Customer (client/citizen) or Employee.

K-20 – Education from kindergarten through post-graduate college.

Logical Model - the logical data model diagrams add a level of detail for each subject area below the conceptual data model by depicting the essential data attributes for each entity. The enterprise logical data model identifies the data needed about each instance of a business entity. The essential data attributes included represent common data requirement and standardized definitions for shared data attributes.

Master Data – Data that is, for the most part, static, and changes infrequently.

Metadata – Metadata is data about data. An example is a library catalog because it describes publications.   In this document, it is usually applied to databases.

Metadata registry – A metadata registry/repository is a central location in an organization where metadata definitions are stored and maintained in a controlled method. Included in the registry are approved enterprise data definitions, representations (models, XML structures), and links to physical constructs, values, exceptions, and data steward information.

Metadata – Metadata is "data about data." Metadata includes data associated with either an information system or an information object, for purposes of description, administration, legal and confidentiality requirements, technical functionality and security, use and usage, and preservation. Metadata gives us detail about both what the data means and how it's stated. Metadata is one of the greatest critical success factors to sharing information because it provides business users, developers and data administrators with consistent descriptions of the enterprise's information assets.

National Information Exchange Model - **The National Information Exchange Model (NIEM) is a Federal, State, Local and Tribal interagency initiative providing a foundation for seamless information exchange. NIEM is a framework to bring stakeholders and Communities of Interest together to identify information sharing requirements, develop standards, a common lexicon and an on-line repository of information exchange package documents to support information sharing, provide technical tools to support development, discovery, dissemination and re-use of exchange documents; and provide training, technical assistance and implementation support services for enterprise-wide information exchange.**

OMB – Acronym for the Federal Office of Management and Budget.

Online Analytical Processing - **Online Analytical Processing (OLAP) is a reporting and data design approach intended to quickly answer analytical queries. Data to satisfy OLAP reporting and analysis needs are designed differently than data used for traditional operational use. Although OLAP can be achieved with standard relational databases, multidimensional data models are often used, allowing for complex analytical and ad-hoc queries with a rapid execution time.**

Online Transaction Processing - Online Transaction Processing (OLTP) is a class of systems that facilitate and manage transaction-oriented applications, typically for data entry and retrieval.

P-20 - Education from pre-kindergarten through post-graduate college.

Performance Reference Model – Acronym PRM, is part of the FEA.

Personally Identifiable Information (PII) – PII refers to all information associated with an individual and includes both identifying and non-identifying information. Examples of identifying information which can be used to locate or identify an individual include an individual's name, aliases, Social Security Number, email address, driver's license number, and agency-assigned unique identifier. Non-identifying personal information includes an individual's age, education, finances, criminal history, physical attributes, and gender.

PLC – Acronym for the Prevention Leadership Council.

Repository - An information system used to store and access architectural information, relationships among the information elements, and work products.

SASID - Acronym for the State Assigned Student ID at the Colorado Dept. of Education.

SCRM – Acronym for the Service Component Reference Model; part of the FEA.

SIDMOD – Acronym for the State Identification Module at the Colorado Dept. of Human Services.

SIMU – Acronym for the Student Identifier Management Unit at the Colorado Dept. of Education.

State Enterprise Data Model - An integrated, subject oriented data model defining the essential data produced and consumed across the state. The purpose of a data model is to 1) facilitate communications as a bridge to understand data between people with different levels and type of experience and help us understand the business area 2) to formally document a single and precise definition of data and data related rules, and 3) to help explain the data context and scope of third-party software. The data model is composed of three layers for communication and best utilization: The subject area model, the conceptual model, and the logical model.

Technical Data Steward - The information systems professional responsible for assuring integrity of the information captured, for proper handling of the information (not the content), and for assuring the information is available when needed. They are the custodians of the data assets and perform technical functions to safeguard and enable effective use of State data assets.

Transaction Data - **Transaction data is data describing an event (the change as a result of a transaction) and is usually described with verbs. Transaction data always has a time dimension, a numerical value and refers to one or more objects (i.e. the reference data). Typical transactions are: financial: orders, invoices, payments; work: plans, activity records; logistics: deliveries, storage records, travel records, etc.**

Unit Records - Records containing data that pertain directly to an individual.

XML – See Extensible Markup Language.

APPENDIX 3 - STATE AGENCY ACRONYMS

Attorney General (DOL)

Colorado Bureau of Investigations (CBI)

Colorado Children and Youth Information Sharing (CCYIS)

Colorado Data Sharing and Utilization Group (CDSUG)

Colorado District Attorneys Council (CDAC)

Colorado Integrated Criminal Justice Information System (CICJIS)

Data Governance Working Group (DGWG)

Department of Agriculture (CDA)

Department of Corrections (DOC)

Department of Education (CDE)

Department of Health Care Policy and Finance (HCPF)

Department of Higher Education (DHE)

Department of Human Services (DHS)

Department of Labor and Employment (CDLE)

Department of Local Affairs (DOLA)

Department of Natural Resources (DNR)

Department of Personnel & Administration (DPA)

Department of Public Health and Environment (CDPHE)

Department of Public Safety (CDPS)

Department of Regulatory Agencies (DORA)

Department of Revenue (DOR)

Department of Transportation (CDOT)

Division of Youth Services (DYS)

Governor's Office of Information Technology (OIT)

Office of Cyber Security (OCS)

Secretary of State (SOS)

Statewide Traffic Records Advisory Council (STRAC)

APPENDIX 4 – EDUCATION SUBCOMMITTEE
Annual Report Narrative

Government Data Advisory Board
Education Data Subcommittee Report
December 1, 2011

Table of Contents

Section 1 - Executive Summary

The Education Data Subcommittee ("Subcommittee") was created through Colorado Revised Statute (CRS) 24-37.5-703.5 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 CRS 24-37.5-703.5, 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.

More information is available on the Subcommittee's OIT website at http://www.colorado.gov/cs/Satellite/OIT-EADG/CBON/1251579897320. Meeting minutes are available at http://www.colorado.gov/cs/Satellite/OIT-EADG/CBON/1251580048753.

Section 2 - Background and Overview

Mission

The Subcommittee was created through CRS 24-37.5-703.5 as a subcommittee of GDAB. Its 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.

Risks and Barriers

The following issues are being considered by the Subcommittee as its work progresses:

- Cultural, control, and change management issues within State and local agencies.
- The availability of adequate financial, time, and human resources to implement an enterprise program and system infrastructure to support the cross-departmental data protocol.
- Meeting compliance standards set by Federal and State statute and regulation.
- Ensuring that Recommended statutory or regulatory changes can be met in a timely manner.
- Addressing privacy and security concerns.
- Possible changes in political/legislative environment.
- Sustainability and implementability – risk of trying to meet RTT objectives with limited SLDS resources.
- Due to current budget restraints, expected data quality at a local level is inconsistent.
- The Subcommittee has a high vacancy rate and is looking to GDAB and OIT it advise and/or assist us in filling the spots for Rep. School District Board of Education, Rep. Information Officers Employed by School Districts, Rep. State Charter School Institute, Rep. Boards of Cooperative Services, and Rep. Statewide Membership Organizations of Education Professionals and Local Boards of Education.

Section 3 – Accomplishments

The Subcommittee has divided their goals and objectives into three categories and is working to identify proactive ways to be involved and to provide input and Recommendations in an impactful way:

- Identity Management – CUPID/SLDS/Link
- Alignment of Initiatives – ICAP (Individual Career and Academic Plan)/eTranscripts/School Readiness/Educator Effectiveness/Unified Improvement Plans/College in Colorado/Drop Out Indicators/SchoolView/Early Childhood
- Remediation Data – Use Case/Alignment of SASID (State Assigned Student Identifier) and EDID (Educator Identifier)

The Subcommittee created a Recommendation to the Colorado Department of Education (CDE) and the Colorado Department of Higher Education (CDHE) that the records of all high school students held by CDE in the State Longitudinal Data System and other pertinent CDE systems be shared in bulk with all Colorado institutions of higher education for the purposes of increasing and facilitating admission (Appendix C).

The Subcommittee is researching ICAP providers in terms of data sharing within K-12 and Higher Ed. We are looking for ways to use SLDS data to inform student readiness and identify successful, effective strategies to support student achievement.

Presentations were provided about the Networking Infrastructure in Colorado-

- Broadband mapping status

- BTOP grant status

- Local Technology Planning Teams

- Distance education

The Subcommittee reviewed and provided feedback on draft privacy policies presented by the Privacy Subcommittee.

The Subcommittee continues to be informed about SLDS, CUPID, and other projects and provides feedback as needed to CDE, OIT, and GDAB.

Section 4 – Summary

The Subcommittee continues to make progress gathering and sharing the knowledge required to accomplish its Mission and Vision. Clear goals and tasks have been identified and steps are ongoing to facilitate their implementation. The Subcommittee anticipates working with new staff at OIT to ensure our work is closely aligned and effective.

The Subcommittee looks forward to continue working with GDAB, OIT, and our stakeholders to improve educational outcomes through the effective use of data.

Section 5 – Appendices

Appendix A - Stakeholders

The following stakeholders have been identified as having a key interest in the program:

Government Data Advisory Board and its Sponsors and Stakeholders

Colorado Department of Education

Colorado Department of Higher Education

State Board of Education

Colorado Commission on Higher Education

Colorado State Agencies

These stakeholders have a vested interest in, and will be impacted by, the work done by the Subcommittee. The impact areas include policy, technology, financial, and business processes.

Appendix B - Education Data Subcommittee Members

Daniel E. Domagala, Rep. Department of Education

Ronald M. Ozga, Rep. Department of Human Services

Beth Bean, Rep. Department of Higher Education

Vacant, Rep. School District Board of Education

Ed Freeman, Rep. Employee of School District with Expertise in Data Sharing and IT

Jeremy E. Felker, Littleton, Rep. Education Data Advisory Committee (Pending Reappointment)

Vacant, Rep. Information Officers Employed by School Districts

Jody L. Ernst, Golden, Rep. State Charter Schools

Vacant, Rep. State Charter School Institute

Vacant, Rep. Boards of Cooperative Services

Julie Ouska, Denver, Rep. Information Officers Employed within State System of Community and Technical Colleges

Patrick J. Burns, Fort Collins, Rep. Governing Boards of State Institutions of Higher Education

Emily Bustos Mootz, Denver, Rep. Early Childhood Councils

Pamela R. Buckley, Golden, Rep. Institutions of Higher Education or Nongovernmental Organizations

Jeffery W. McDonald, Evergreen, Rep. Nonprofit Advocacy Groups that work in Children's Issues (Pending Reappointment)

Vacant, Rep. Statewide Membership Organizations of Education Professionals and Local Boards of Education

Stacie Demchak, Colorado Department of Education, Non-voting Membe

Appendix C – Bulk Data Sharing Recommendation

The Honorable Lt. Governor Joseph A. Garcia, and

The Honorable Commissioner of Education Robert Hammonds

Dear Sirs:

I am corresponding on behalf of the members of the Education Data Subcommittee of the Government Data Advisory Board, constituted under the authority of House Bill 09-1285. Specifically, we proffer for your review and approval the following stratagem that we believe will increase matriculation into higher education for Colorado high school students. Viz., we, unanimously Recommend that records of all high school students held by CDE in the State Longitudinal Data System and other pertinent CDE systems be shared in bulk with all Colorado institutions of higher education for the purposes of increasing and facilitating admission into those institutions. It is our considered opinion that this will

- Increase the number of Colorado students admitted to, enrolled in, and graduating from institutions of higher education in Colorado;
- Facilitate students' applications for admissions to institutions of higher education in Colorado via 'bulk' transfer of information;
- Reduce the administrative burden on institutions of higher education in Colorado of processing applications for admission, thereby reducing the costs to students of applying to institutions of higher education in Colorado;
- Increase the accuracy of student records in institutions of higher education in Colorado; and
- Allow better tracking of such students into, among, and through institutions of higher education in Colorado.

It is axiomatic that data are becoming statewide in scope with the implementation of the State Longitudinal Data System. We believe that this evolution allows a view of student records for business purposes that is statewide in scope.

We solicit your approval of and support of this proposal as an allowable business use of students' educational records for the reasons stated above. Pending your approval of this proposal, we would then begin addressing the details of privacy and security, followed by a joint implementation plan that we would submit for your approval.

We should be happy to be contacted for additional information.

The Education Data Subcommittee

Submitted by Patrick J. Burns, Chair

Colorado State University

University Libraries
Fort Collins, Colorado 80523-1019
(970) 491-1838
FAX: (970) 491-1195
http://lib.colostate.edu

November 2, 2011

Letter of Transmittal

The Honorable Commissioner of Education Robert Hammond
Colorado Department of Education
201 East Colfax Avenue, Room 500
Denver, CO 80203

Dear Commissioner Hammond:

I am corresponding at the direction of the Education Data Subcommittee to transmit the attached
recommendation to you for your attention and reaction. After extensive discussion transpiring over
several months, the Subcommittee unanimously endorsed the attached proposal at its last meeting held on
Friday, October 28, 2011.

We are very supportive of this initiative, and would like to see it through. Please let us know next steps to
move this along.

Please do not hesitate to inquire concerning this suggested initiative should you have any questions or
need additional information. I and the Subcommittee would be more than happy to engage further with
you on this exciting and important initiative.

Sincerely,

Dr. Patrick J. Burns
Chair, Education Data Subcommittee
V. P. for Information Technology, Dean of Libraries,
& Professor of Mechanical Engineering
Colorado State University
Fort Collins, CO 80523

CC: The Education Data Subcommittee

Colorado
State
University

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November 2, 2011

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The Honorable Lt. Governor Joseph A. Garcia
130 State Capitol
Denver, CO 80203

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Sincerely,

Dr. Patrick J. Burns
Chair, Education Data Subcommittee
V. P. for Information Technology, Dean of Libraries,
& Professor of Mechanical Engineering
Colorado State University
Fort Collins, CO 80523

CC: The Education Data Subcommittee

APPENDIX 5 – EARLY CHILDHOOD UNIVERSAL APPLICATION

Executive Summary

The Early Childhood Universal Application Subcommittee ("Subcommittee") was created through
Colorado House Bill 10-1028 as a subcommittee of the Government Data Advisory Board ("GDAB").
Its primary mission is to recommend to State Chief Information Officer ("State CIO") and the GDAB
protocols and procedures for creating and implementing a universal application to be used by all
state agencies and school districts for applications for programs related to early childhood care and
education, including but not limited to:

- Medicaid
- Children's Basic Health Plan
- Head Start Program
- Colorado Preschool Program
- Free or Reduced-cost Lunch program
- Colorado Child Care Assistance program
- Child and Adult Care Food program
- Colorado Works program
- Special Supplemental Food Program for Women, Infants, and Children
- Food Stamp program
- Early childhood council programs
- Low-income energy assistance program
- Affordable housing programs

In addition, upon request by the State CIO, to advise the State CIO on other issues pertaining to
applications for programs related to early childhood care and education.

Vision

All families will easily and efficiently access and receive the benefits and services for which they are
eligible.

Status

The Subcommittee continued its research and evaluation throughout 2011. Several demonstrations
of existing products used both in Colorado and in other states provided us with valuable

information about available technology. The Subcommittee gathered information about the status of similar projects in other states, including challenges and benefits, and continues to utilize the research provided by a policy analyst.

Based on this research and evaluation, the Subcommittee is currently drafting recommendations for a universal application process and will be presenting these recommendations to GDAB and OIT early in 2012.

APPENDIX 6 – PRIVACY SUBCOMMITTEE ANNUAL REPORT - NARRATIVE

The purpose of the subcommittee is to make Recommendations to the Government Data Advisory Board (GDAB) on policies and procedures relating to privacy and confidentiality of data in information sharing.   It was determined that multiple work efforts across the state on privacy and confidentiality of data in information sharing environments were under way. In an effort to streamline these efforts, the Privacy Subcommittee was formed. Strong privacy and confidentiality polices and compliance are key enablers of information sharing. These efforts are anticipated to take 6 – 12 months.

The initial meeting of the Subcommittee was held on September 28, 2010.   At that meeting, the purpose of the subcommittee was discussed along with a list of proposed deliverables. The subcommittee agreed to meet every month until its work is completed.

It was anticipated that by September 2011, all documents, policies, and procedure generated by the subcommittee will be available for final review by the Office of the Attorney General. The Privacy Subcommittee completed its work in September 2011 with the submission of the following documents to the Government Data Advisory Board:

Data Privacy Policy

Data Sharing Agreement

Data Privacy Checklist

Entity Data Privacy Checklist

Data Use Agreement

The subcommittee does not plan to meet any longer unless there is additional requirements from the Government Data Advisory Board.

Subcommittee Members

Erika Bol	Privacy Officer	Department of Health Care Policy and Financing
Lauren Plunkett	Director of Business Architecture	Governor's Office of Information Technology
Kerry Cataldo	Researcher	Department of Public Safety, Division of Criminal Justice, Office of Research Statistics
Susan Clark	Senior Project Manger/Privacy Officer	Colorado Regional Health Information Organization

Cynthia Coffman	Deputy Attorney General	Department of Law
Chris Edmundson	Information Security Officer	Department of Education
Jose Esquibel	Director, Interagency Prevention Systems	Department of Public Health and Environment
Troy Evatt	Data Manager	Department of Human Services, Division of Behavorar Health
Kat Foo	HIPAA Privacy and Security Officer	Department of Human Services
Liza Fox-Wylie	Policy Director	Colorado Regional Health Information Organization (CORHIO)
Mary Griffin	Program Administrator for Foster Care	Colorado Department of Human Services
Linda Kanan	Director	Department of Public Safety, School Safety Resource Center
Anna Lopez	Planning and Grants Specialist	Department of Public Safety, Office of Adult and Juvenile Justice Assistance
Fernando Martinez		San Luis Valley Community Health Center
Ron Ozga	Agency IT Director for CDHS/HCPF/CBMS	Governor's Office of Information Technology
Kim Poast	Deputy Director	Department of Higher Education
Stephanie Rondenell	Executive Director	Center for Network Development
Travis Schack	State Chief Information Security Officer	Governor's Office of Information Technology
Meg Williams	Manager	Department of Public Safety, Office of Adult and Juvenile Justice Assistance
Robert Daniel	Oracle BD	Oracle
Paul Laurent	Legal & Compliance Architect	Oracle

| Jason Taule | CISO and Chief Privacy Officer for Healthcare | General Dynamics Information Technology |