

Enterprise Data Architecture and Data Management Process

Research, Plan, and Upgrade Your SEA's
Data Management System

Data Management System Initiative

Description/Background

The purpose of this initiative is to develop an enterprise data and applications architecture and an accompanying data management/governance process for statewide planning.

Need/Rationale

The majority of states need to improve the quality and availability of their data to meet the needs for informed decision making. In many state education agencies, ownership of key data elements is often unclear, the responsibilities of data owners are not well understood, data are often stored in multiple locations with no identified single source for the “correct data”, data quality is questionable and data availability to the right people is often not possible. This creates a critical need to improve data and application architecture and data management/governance processes in order to:

1. Meet the state’s strategic plan goals/objectives;
2. Provide accurate, timely, critical, and easy-to-use information that is essential to a process of informed decision making.

Although each state may have a variety of business and student oriented applications and services and may have made significant strides in integrating and expanding access to some data, what is needed now is a comprehensive plan to unify all applications and data. Major improvement in applications, data integration, and access to data is needed to improve the quality and timeliness of data; enhance staff effectiveness; and minimize costs.

Impact/Outcomes

- Clearly identified data managers.
- Data management process and policies that places responsibility for data quality and data management in the line-of-business.
- Collaborative process for planning and decision-making for data and applications.
- Data and application standards defined and approved.
- Data architecture, with identified data managers and business processes.
- Data dictionary to document the data owners, data calculations, descriptions, and modes of access for the district’s data.
- Data query and analysis tools for easy access to data.
- A set of high-priority reports to meet the most immediate reporting needs.
- A roadmap for the future to be used to build next-generation systems and infrastructure.

Major Activities

- Establish a data management/governance process. Deliverables include:
 - o Definitions of key terms related to managing data.
 - o Data management vision and strategy (i.e. strategies for when data is centralized vs. when it is decentralized).
 - o Data governance process (to include data policy committee of state management, data managers working group made up of the caretakers of the data, data management roles and responsibilities including job descriptions for data managers, business analysts and data stewards).
 - o Data policies, to address data ownership, data quality, data collection, data storage, data publication / dissemination and the role of an enterprise data architecture.
 - o Metadata management tool selection, acquisition, implementation and training for internal staff (to start data dictionary).
 - o Inventory of systems of record identifying ownership of data, data managers/stewards, as well as applications and tools used to read and manage the current data files.
 - o Facilitated meetings of the data management committee to start this process.
 - o Assist in the selection and procurement of new query, reporting, and analysis software. Develop bid specifications for data warehouse query, reporting, and analysis software.
 - o Augment staff in developing the high priority reports identified by a Data Management Committee and required by state DOE and NCLB.
- Establish a logical design of the data and application architecture to be used to guide all future database development efforts as the physical designs are done. This includes the following deliverables:
 - o A clearly defined process for establishing standards and determining which standards are declining, emerging or considered core standards upon which current systems are built.
 - o Recommended standards for the Applications and Data Infrastructure in the areas of:
 - Large-scale DBMS
 - Medium to small scale DBMS
 - Individual and group DBMS
 - Specialized DBMS
 - ETL Tools
 - Application Server
 - Enterprise Application Integration
 - Data Warehouse Model
 - Document Management
 - o A high-level data map built upon the NCES data standard handbook identifying the data domains, data sections and corresponding data managers.
 - o A map of data elements to state processes, to be used to identify which business process creates and updates each data element.
 - o A high-level, future-state application model, showing major application systems, their interfaces and information flows as well as the support infrastructure components for communication and interfacing.

About ECS

The Education Commission of the States (ECS) is an interstate compact created in 1965 to improve public education by facilitating the exchange of information, ideas and experiences among state policymakers and education leaders. As a nonprofit, nonpartisan organization involving key leaders from all levels of the education system, ECS creates unique opportunities to build partnerships, share information and promote the development of policy based on available research and strategies. ECS is supported financially by a combination of state fees and contracts, sponsorships, and grants from foundations, corporations and the federal government.

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As part of ECS' efforts to continuously improve and provide contemporary research and policy services to its constituents, the organization has expanded its activities to include the impact of information technology on contemporary teaching, learning, and educational management. ECS has partnered with the Center for Educational Leadership and Technology in order to expand its research, planning, policy, programs, services, and delivery models in this area.

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