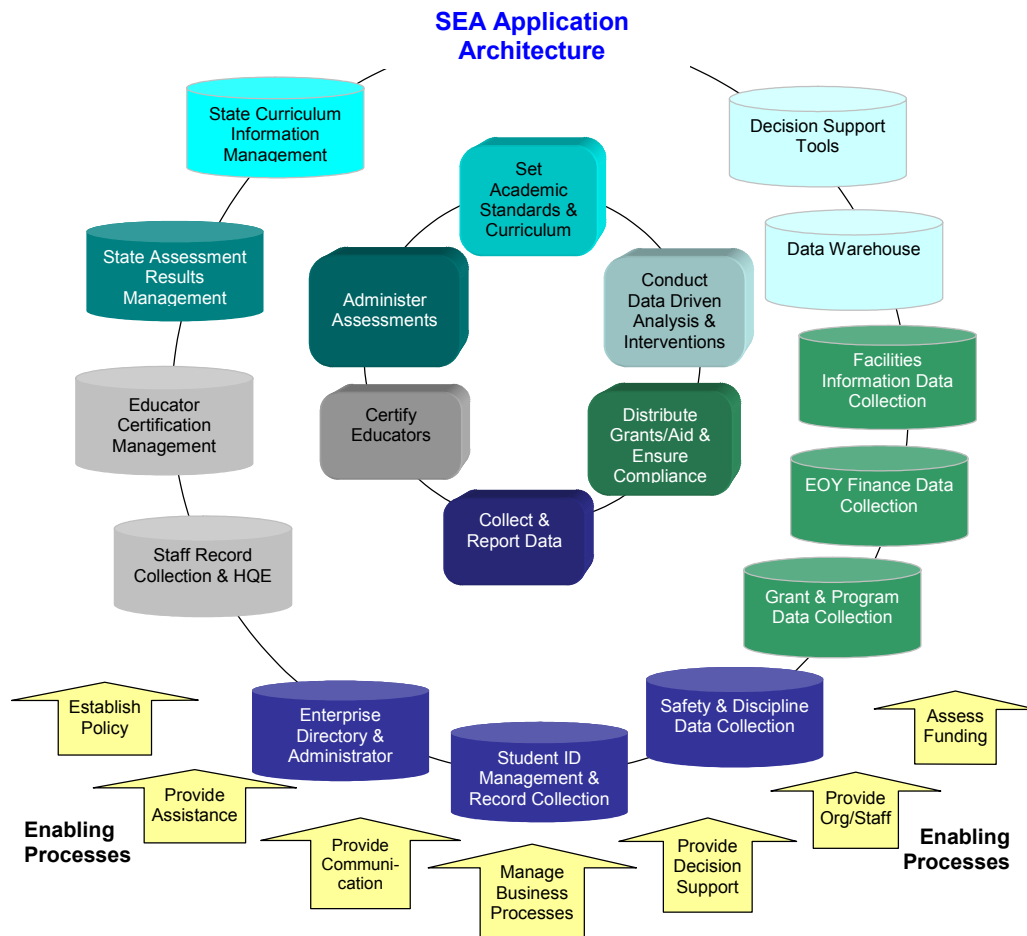




The Need for Quality Decision Support Architecture in K-12 Education



CCSSO/CELT Decision Support Architecture Consortium (DSAC)



February 16, 2004

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By Eliot Levinson, Ph.D.

I. The Current State of Data Accuracy in Schools

- *Duval County, Florida lost \$2.3 million when 440 students changed schools because of their schools' failure to make NCLB-defined adequate yearly progress.*
- *The State of Georgia submitted inaccurate instructional improvement data from Gwinnett County to the U.S. Department of Education. The result? Their state's annual plan was not approved.*
- *As a result of NCLB and AYP, school districts, state departments of education, and the federal government are spending millions and millions of dollars on the deployment of complex reporting and data management systems that meet the needs of districts, states, and USDOE. However, only a small amount is being allocated for the design of a decision support system that focuses concurrently on the needs of students, teachers, and parents.*

The anecdotes above indicate the **cost** of having bad student data or data that you can't apply to instruction as well as data systems that are not properly architected. Without accurate, timely, and easy-to-use data, it will be impossible to implement the No Child Left Behind Act.

Data-driven decision-making is easier said than done. Most school systems suffer from a myriad of organizational and technical problems, which block them from getting and using data to illuminate teaching and learning decisions as well as demonstrate the capacity to monitor student achievement in real time. Some common problems are:

- **No time** – to get the data needed to support instructional decisions at the school, grade, classroom and student level
- **Old and incompatible administrative computing systems** – e.g. finance, food, personnel and facilities all bought or built at different times for different purposes.
- **Isolated data between functional groups** – curriculum, special education, human resources, accountability and facilities often do not get the data they need to make decisions, and cannot easily share data with other groups.
- **The press of other business for administrators** – Most school personnel lack the special expertise to make appropriate use of data.

II. Defining Accountability System Requirements

Architecting data systems is a complex and costly task, requiring that the following system elements function both individually and in concert:

- **Technology Infrastructure:** Networks, servers and telecommunications provide the foundation for applications. Age and capacity of infrastructure are essential to well-running applications.
- **Software Applications and Tools:** A state should first determine the appropriate applications for managing NCLB requirements, student information, finance, and HR. These applications have to be defined, and the interoperability of these applications has to be specified. Most educational applications are limited in their ability to supply the ad hoc reports that educators need to manage accountability.
- **Decision Support and Data Management:** School personnel need systems that will store data from existing systems and enable the data to meet the individual needs of decision makers.
 - **Data warehousing systems** store data elements so that they can be used to report on different trends over time.
 - **Decision support systems** generate reports that come from multiple systems and address empirical questions such as: Do students who master specific standards in grade 8 do better in geometry than those who do not?

Data warehousing and decision support are central when using data-driven decision-making to address accountability.

- **Leadership Training and Development:** Installing decision support systems and using them are two different things. We have to get beyond the 90:10 rule (that 90% of the users access only 10% of the functions). The federal government requires 25% of the block grant EETT technology money to be spent on professional development, and that is a useful guideline.
- **Business Process Re-engineering:** When new systems are implemented, business processes must change so that the school system can take full advantage of the new system. For example, when a data warehouse captures and stores all demographic information needed for applications such as student information, transportation and special education, processes should be changed so that each department need not enter the data for each student.

All of the above system components are necessary and mutually interdependent in defining and implementing accountability systems.

III. The Solution: Creating State-Wide Decision Support and Accountability Systems

State departments of education are the ideal “middle” group to sponsor statewide data management initiatives and national decision support systems architecture:

- The wide variety of data systems in a given state usually do not “talk” compatibly with each other.
- All school districts within the state should share common standards and data requirements.
- The state department is the group to best support the small school district in accountability management, as they cannot do it themselves.
- Most school districts do not have the human or capital resources to address accountability system issues.
- Vast majority of school district leadership is looking for guidance and cost-saving strategies from their SEA in order to meet NCLB data requirements.

Step 1. Statewide Assessment

To become effective and efficient in the implementation of NCLB, a state should assess its current capacity to collect and provide useful data. This will require an assessment of all system components, e.g., infrastructure, decision support, applications etc., outlined in section 2. This assessment should include both a plan for selection and implementation of systems and an overall budget and implementation plan.

States need to share common interests in identifying RFP requirements and implementing accountability systems to meet federal requirements. Higher commonality for systems requirements, procurement mechanisms and collaboration will save states considerable money, create a strong national presence with vendors, and streamline the procurement process.

This assessment and intra-state requirement sharing needs to be done by a third party, knowledgeable in this arena, with an ability to understand the particular needs of each state and a national perspective on technology and policy.

Step 2. Collaborative Procurement

With the knowledgeable third party, each state should receive customized support for its procurement process, as well as a detailed implementation workplan to help it begin moving toward its recommended Decision Support architecture. Understanding that changing infrastructure alone cannot assure successful implementation, states should also receive a statement of requirements for “business process reengineering” that address the process and personnel changes that will help create a successful operational environment.

Step 3. Implementation

Within the context of common accountability objectives, each state will have its own constellation of systems, priorities, as well as its own organizational culture. It will be beneficial to collaborate with other states and to seek expert implementation support from vendor-neutral technology experts.

To address the NCLB issues that Duval and Gwinnett County are currently contending with, states will have to assess their current situation, procure necessary systems, and implement them in a way that creates educational effectiveness within the context of their state. This may require assistance in any or all of the following areas: project management, implementation and integration services, leadership development, and related services in areas of learning management, school improvement planning, etc.

The CCSSO/CELT Decision Support Architecture Consortium

CCSSO (Council of Chief State School Officers) has identified CELT Corporation, its partner in the Decision Support Architecture Consortium project, as the best qualified organization to design and implement the technology infrastructure and business process changes required to address data management issues in districts and states. In its role as "IT Architect and Systems Integrator," CELT staff have an in-depth understanding of the culture and challenges of K-12 education and know how the appropriate applications of technology can enhance the learning process.

The Results

Through the leadership of CCSSO and its affiliation with all the major education and technical organizations in the decision support systems arena, the challenges set forth in this white paper will be addressed. As a result of their advocacy and service to the Chief State School Officers and their staff, for the first time the education industry will be able nationally to research, architect, procure, and implement a highly accessible, secure, and reliable decision support systems architecture that will rival similar systems in use today by the banking (ATM), healthcare, and travel industries.

About the author:

Dr. Eliot Levinson is the CEO of the BLE Group, which he founded in 1998. Levinson is known nationally for his work in technology planning and management for school districts. He co-authors "*Tech from the Top*," a monthly column that appears in *Converge Magazine*. Dr. Levinson has experience in education and technology as a teacher in California and Pennsylvania, a middle school principal in Massachusetts, and an assistant to the chancellor of schools in New York City. He has held research positions in educational change at the RAND Corporation and MIT's Sloan School of Management. Dr. Levinson holds master's degrees in Education and Anthropology and a Ph.D. in Organizational Studies from Stanford University. He works as a strategic technology advisor to large school systems and consults with several firms in the education technology market.