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Architecture Consortium
(DSAC)

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Building a Consortial-based IT Solution: A Decision Support Architecture for State Education Agencies

- ❖ Learner centered
- ❖ Instructionally focused
- ❖ Performance oriented
- ❖ Data driven
- ❖ Customer friendly
- ❖ Fiscally affordable

Reporting and Analysis

Projections and Accountability

Communication and Distribution

- • Student / Parent
- • Classroom
- • School
- • District
- • State
- • Federal

Monitoring and Evaluation

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Building a Consortial-based IT Solution: a Decision Support Architecture for State Education Agencies

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Abstract

Building comprehensive information technology (IT) solutions that address the needs of the enterprise entail major business process and cultural change as well as significant investments in computer hardware and software. Such efforts characteristically involve an internal team of stakeholders, perhaps supplemented by external IT partner providers, employing and adapting commercially available products. Less typically, businesses will choose to build their own solutions because they find nothing in the marketplace that addresses their unique requirements. Even with an "off-the-shelf" approach, the costs, time and human resource commitments, and technical challenges involved in such work will prove daunting to most organizations. To mitigate these and similar risks, some have turned to consortial development models whereby the demands of design and development and the investment in a technology infrastructure are shared across a broader base of stakeholders, and the work effort benefits from the collective intellectual capital of those so engaged.

While industries from banking and insurance to robotics and computer software have employed consortia for standards setting and the like, competitive pressures and anti-trust regulations often stand in the way of more comprehensive collaboration culminating in actual solution delivery. By contrast, public education has a long history of cooperation in such areas as curriculum development, teacher and staff development, student assessment, and information technology deployment. Though local and State governments bear the responsibilities for program delivery, the U.S. Department of Education has also served as a catalyst for cooperation through its own funding and outreach practices. More recently, federally mandated changes concerning educational program performance measurement and reporting have encouraged state education agencies (SEA's) to come together to devise information systems for decision support.

Through the sponsorship of the Council of State School officers (CCSSO) and with the aid of CELT Corporation, the Decision Support Architecture Consortium (DSAC) is now positioned to provide state-specific as well as more generalized frameworks for performance-based data management, analysis and reporting practices. To this end, the DSAC is gathering a common body of knowledge and best practices to be shared among participating Consortium members. The purpose of this article is to examine the DSAC project design and delivery processes, the various roles and responsibilities of Consortium members and their IT partner providers, and the governance mechanisms and critical success factors associated with the effectiveness of DSAC operations. Though the challenges of "No Child Left Behind" may be unique to public school systems across the United States, the DSAC experience sheds light on how a low-cost, flexible model for collaboration and knowledge sharing may work in other settings. Furthermore, for those readers with an entrepreneurial bent, the story of the Decision Support Architecture

Consortium suggests any number of business opportunities for adapting DSAC findings into projects, products, and services of interest and value to the players in this diverse multi-billion dollar industry.

I.   The Business Context

The Need for Action

When George W. Bush assumed his role as President of the United States, he vowed to make school systems and teachers more accountable for the quality of educational program delivery. This campaign pledge ultimately spawned legislation and administrative practices that have come to be known as "No Child Left Behind Act (NCLB)." At the core of this legislation is the proposition that every school and district in America should be profiled annually based on the ability of demographic sub-groups to make "adequate yearly progress" towards high aggregate goals. The metrics of this new system are based upon the measurement of individual student and teacher "scores" against State standards of excellence. These mandates in turn have necessitated information collection and data analysis capabilities that have not hitherto existed within most school systems. Indeed, prior to NCLB most reporting occurred only at the school or district level with little to no longitudinal tracking of individual performance.

Admittedly, when it has come to data management and decision support within schools, NCLB has acted only as the most recent and significant catalyst for change. Even so, educators have long sought more effective means to identify, address, and communicate student needs across their educational organizations and outward to those they serve - the student and his/her parents. The banking industry's ATM system is now an ever present example of bi-directional, cross-platform, standardized information sharing. More recently, the medical industry has made similar strides towards a national system of patient data exchange and analysis. Now, as reflected in Exhibit 1 below, educators have embraced a similar vision of secure but ubiquitous access to learning process data.

Meeting the NCLB Challenge
Educational Accountability and Reporting System that is:

- Learner centered
- Instructionally focused
- Performance oriented

- Data driven
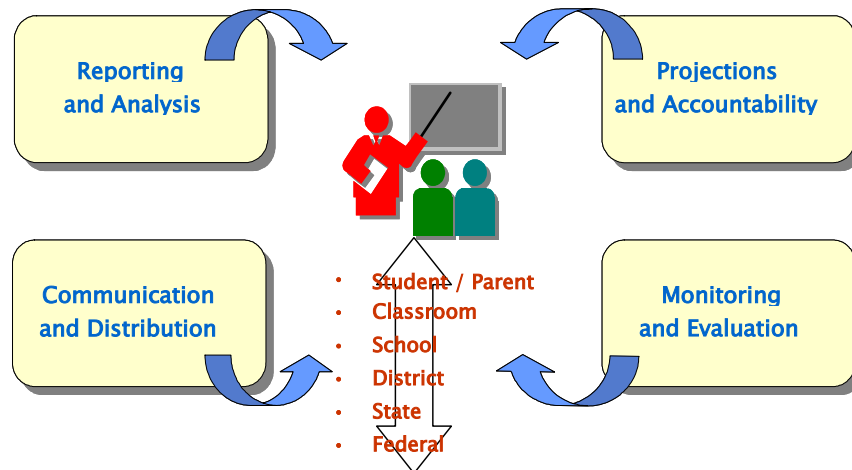- Customer friendly
- Fiscally affordable

Exhibit 1 ~ The Underlying Vision of the DSAC Effort
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The objective depicted in Exhibit 1, that is: a learning-centered system of information sharing among all concerned stakeholders, reflects the underlying value proposition of an emerging national effort to gain control over and leverage the mountains of data already collected but rarely employed by our school systems. Ultimately public education thought leaders have envisioned a system that networks the student and the teacher with both useful assessment tools and the means to improve performance through access to online learning resources. To that end, school systems across the United States require a flexible and adaptable, IT-enabled solution for data management and decision support.

In response to the gap that exists between this vision and existing capabilities, State education agencies (SEA's) and their umbrella organization the Council of Chief State School Officers (CCSSO) in partnership with the CELT Corporation have launched a massive, consortium-based project to develop a decision support architecture. The ultimate objective of this effort is a solution set that will provide for bi-directional information sharing among students, parents, teachers, school principals, district system superintendents, and State and Federal government agencies. Furthermore, as envisioned by CCSSO and CELT, this standards-based system could also over the long-term enable comparative research on learning systems, assessment mechanisms, socio-economic demographics, and educational needs nationwide. The data management solutions operating in finance and medicine have inspired these educational leaders to speculate on a similarly integrated, Web-accessible platform for all stakeholders in the educational process. See Exhibit 2, below.
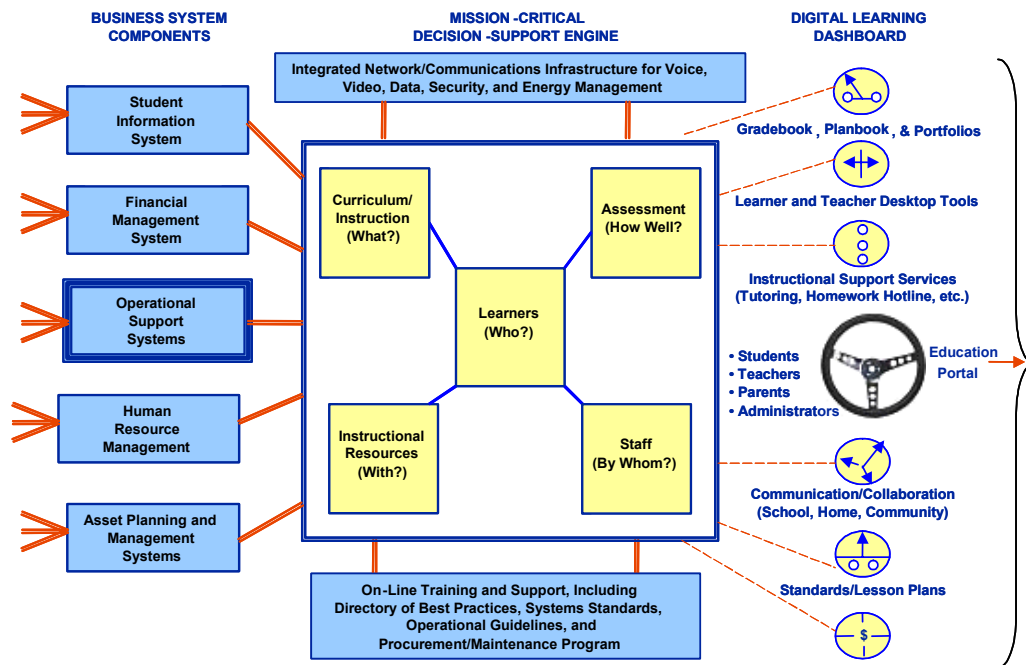
BUSINESS SYSTEM COMPONENTS

- Student Information System
- Financial Management System
- Operational Support Systems
- Human Resource Management
- Asset Planning and Management Systems

MISSION-CRITICAL DECISION-SUPPORT ENGINE

Integrated Network/Communications Infrastructure for Voice, Video, Data, Security, and Energy Management

- Curriculum/Instruction (What?)
- Assessment (How Well?)
- Learners (Who?)
- Instructional Resources (With?)
- Staff (By Whom?)

On-Line Training and Support, Including Directory of Best Practices, Systems Standards, Operational Guidelines, and Procurement/Maintenance Program

DIGITAL LEARNING DASHBOARD

- Gradebook, Planbook, & Portfolios
- Learner and Teacher Desktop Tools
- Instructional Support Services (Tutoring, Homework Hotline, etc.)
- • Students
  • Teachers
  • Parents
  • Administrators
- Education Portal
- Communication/Collaboration (School, Home, Community)
- Standards/Lesson Plans

Exhibit 2 – An Architectural Framework for 21st Century Learning
© CELT Corporation 2004

Those who first framed this view of the future also recognized that no single school system or government organization could achieve such an objective on its own. Instead, they framed a consortial development model and the sorts of foundation deliverables articulated in the charter of the Decision Support Architecture Consortium (DSAC). In crafting this rather unique IT project, the CCSSO engaged a for-profit organization (CELT Corporation) to coordinate the overall effort. With a long history of commitment to improving the learning experience through the innovative use of information technology, and with an equally important network of strong working relationships with SEA leaders, CELT was well positioned for this task. Beyond CELT members, the project delivery team's needs demanded an inclusive partnership and governance structure of national and state educational leaders and a wide range of industry-related IT organizations and practitioners. Finally, thanks to the generous support of the Gates and Broad Foundations, much of the cost associated with the Phase 1 project work (described below) is largely subsidized, lowering yet another barrier to SEA involvement in DSAC Phase 1 activities.

The DSAC Framework and Deliverables

As originally conceived, the Decision Support Architecture Consortium's mission embraced goals and objectives that balanced the needs of SEA's to respond swiftly and effectively to No Child Left Behind (NCLB) against other State learning management priorities. From the outset, it was clear to the project team that striking this balance was

critical to building a critical mass of State participation and support. Thus in framing their approach to the assignment, the DSAC delivery team sought to address these complementary concerns through the following series of commitments to stakeholders:

- the Decision Support Architecture Consortium Project (DSAC), under the general sponsorship of the CCSSO, will deliver a collaborative, standards based, cost effective approach to defining and creating SEA student data systems.

- beyond satisfying NCLB mandates, DSAC solutions define frameworks and platforms for the more effective use of system-wide data to improve student instruction and assessment, and program resource utilization.

- the DSAC provides a customized assessment and plan to address the particular vision and needs of the State under study.

- DSAC solutions are built around a vertical reporting model that at least in part address Federal, State, district, and local school information management needs.

- DSAC solutions embrace best practices in keeping with the unique SEA and LEA requirements of individual State organizations and encourage information sharing and collaboration among all stakeholders in the process.

In summary, Phase 1 of the project creates an actionable blue print for each State based on that State's own educational priorities, complemented by a tool set of component design, specification, and procurement documents that serve to direct State planning and investment strategies. For its part, the Consortium stands ready to assist individual member SEA's in moving from Phase 1 to Phases 2 (planning and implementation) and 3 (delivery management). See exhibit 3 below.
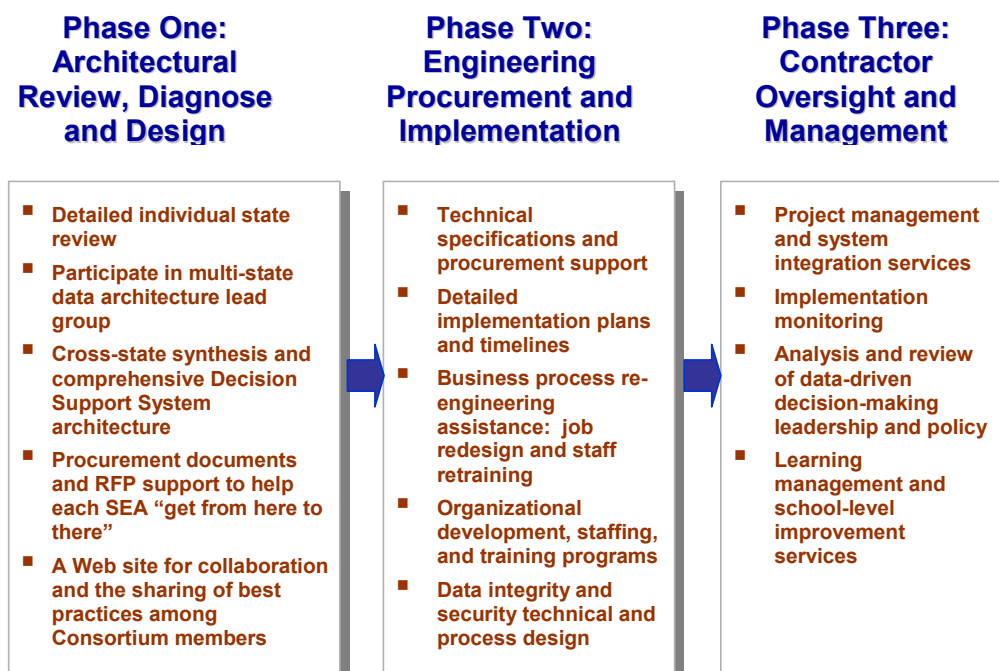
Phase One: Architectural Review, Diagnose and Design	Phase Two: Engineering Procurement and Implementation	Phase Three: Contractor Oversight and Management
■ Detailed individual state review ■ Participate in multi-state data architecture lead group ■ Cross-state synthesis and comprehensive Decision Support System architecture ■ Procurement documents and RFP support to help each SEA "get from here to there" ■ A Web site for collaboration and the sharing of best practices among Consortium members	■ Technical specifications and procurement support ■ Detailed implementation plans and timelines ■ Business process re-engineering assistance: job redesign and staff retraining ■ Organizational development, staffing, and training programs ■ Data integrity and security technical and process design	■ Project management and system integration services ■ Implementation monitoring ■ Analysis and review of data-driven decision-making leadership and policy ■ Learning management and school-level improvement services

Exhibit 3 – The Organization of DSAC Project Deliverables
© CELT Corporation 2004

In joining the DSAC, no State is obligate to participate beyond Phase 1, but the artifacts generated during the Phase 1 work and any follow-up knowledge sharing will be available to Consortium members even if they choose to proceed alone in terms of subsequent work. The positioning of the DSAC offering in this manner was critical to its success. No State wished to be constrained in its choices. At the same time, all Consortium members saw the advantages of leveraging DSAC assets in addressing their own issues and priorities.

II. The Process

Building Membership in the Consortium

In June 2003 at a meeting of CCSSO members in Indianapolis, Council leaders announced the Decision Support Architecture Consortium initiative and their partnership with CELT. From that point going forward, a kick-off team began the cultivation process to win the support of SEA leaders. As it turns out, this was not an easy task. While a Chief Education Office (CEO) may head each organization, the underlying structure of the SEA's varied markedly. In some instances the CEO could commit his/her State to the DSAC process directly but in most instances such decisions were deferred to the SEA's Chief Academic Officer (curriculum) and Chief Information Office (technology) and their respective senior-level staffs. As a result, winning the States over to the Consortium became more of a team-based solution selling process.

To break the ice, a senior executive from CCSSO, CELT or another partner (e.g. a cooperating SEA/CEO) would call on the CEO and explain in detail the goals and the objectives of the Consortium. If all went well, this conversation would open the door for more extensive phone conferences between Phase 1 delivery team personnel and their education program delivery and technology counterparts within the State education agency organization. The purpose of these second-tier conversations was to demonstrate that the DSAC team was focused on State needs and priorities, that the team was respectful of the boundaries between State IT roles and those of the project staff, and that the DSAC was about broadening the State's options concerning decision support. In short, these conversations were about partnering for mutual benefit and as such were critical to winning SEA support.

Finally, the sales process took into account the relative positioning of member State organizations. Some SEA's were already well ahead of their colleagues in addressing the requirements of the NCLB. Others had requests for proposals (RFP's) ready to go out to vendors for data warehousing and decision support solutions. Still others found themselves at the other extreme, totally unprepared for the challenges posed by the U.S. Department of Education's mandates. Similarly, some State legislatures had allocated funding for NCLB-related activities while others had not. Thus in approaching individual States, the DSAC team sought to establish where particular SEA's stood in terms of both preparedness and funding. While the Consortium remained even-handed and equitable in its dealings with each State, the team did work to adapt its offerings to meet the diverse capabilities of potential members. In the final analysis, it was this flexibility that facilitated SEA acceptance of the DSAC's approach.

As indicated previously, generous grants from the Gates and Broad Foundations reduced the cost of participation in DSAC to a nominal amount. Indeed, the CCSSO employed a sliding scale, requiring some SEA's to pay next to nothing for the services of Phase 1 up to $25,000. Even at the high end, these fees represented only a fraction of the true cost of delivering Phase 1 to the membership. In return the project team insisted on an investment of time and effort on the part of all participants. Each SEA would need to engage in the data gathering and assessment process. As discussed in detail below, this set of activities involved document gathering, interviews, and the review of preliminary research findings by the CEO and his/her team. Subsequently, each member organization of the Consortium would share what it learned from Phase 1, 2 and 3 efforts through the Consortium's Web-based knowledge management platform. During 2004, the DSAC Phase 1 team anticipates data gathering activities involving no less than thirty SEA's. Evidence to date suggests that even though the States have been through similar information gathering exercises like the Performance-Based Data Management Initiative (PBDMI), they find great value in the diagnostic tools that the DSAC team has offered. The jury is still out as to whether the States will participate in the creation of a broad knowledgebase of experience going forward.

Solution Delivery: Process and Tools

In December 2003, the DSAC team began to pilot the data gathering process with two State organizations, Georgia and Wyoming. From the outset it became clear that rigorous tools were required to ensure the consistent gather of quality data. Ironically, to create those tools, the project team concluded that they must create a decision support architectural framework of their own – at least as a "straw person" to the process. As they learned from their field work, they have modified and strengthened the initial model to more accurately reflect the realities in the SEA's. To begin, the team posited that and SEA decision support systems must support the following business processes:

- set learning standards

- administer statewide assessments

- certify educators

- distribute money (formula funding, grants & aid)

- manage accountability systems

- monitor Federal Programs

- collect and report data (students, staff, curriculum, program, facilities, finance, other resources)

And that they would require the following IT underpinnings:

- enterprise directory and administrator security services

- student ID management and record collection

- educator certification management

- staff record collection and "highly qualified determination" (of teachers)

- state curriculum information management (learning standards, courses)

- state assessment results management

- grant and program data collection

- end-of-year finance data collection

- safety and discipline information data collection

- facilities information data collection

- data warehousing

- data analysis and decision support tools

As the reader will note, the aforementioned business processes and enabling technologies pose a formidable list of objectives for the DSAC. Fortunately, any number of national organizations have addressed or are working on key components of this stack. Beyond the rich findings of the U.S. Department of Education's PBDMI work, the Student Interoperability Framework (SIF), the National Center for Education Statistics (NCES), and the National Education Computer Conference (NECC) have made significant contributions in this area. (See the Bibliography for links to their research sites). Drawing on these efforts, the DSAC Phase 1 Project Team composed a hypothetical framework of their own to assist in data gathering:
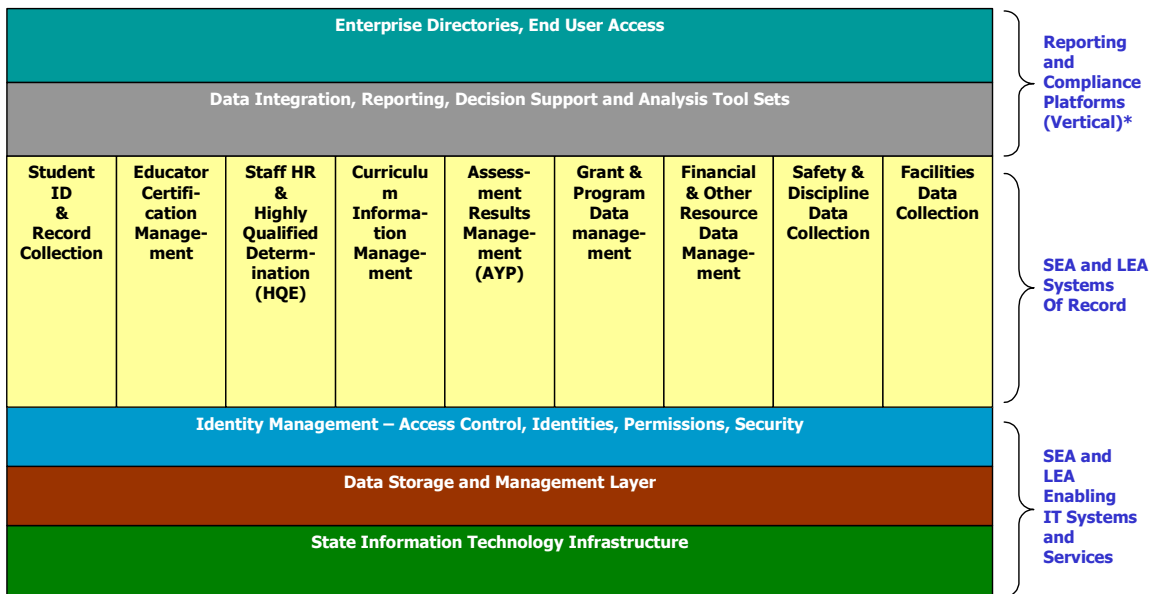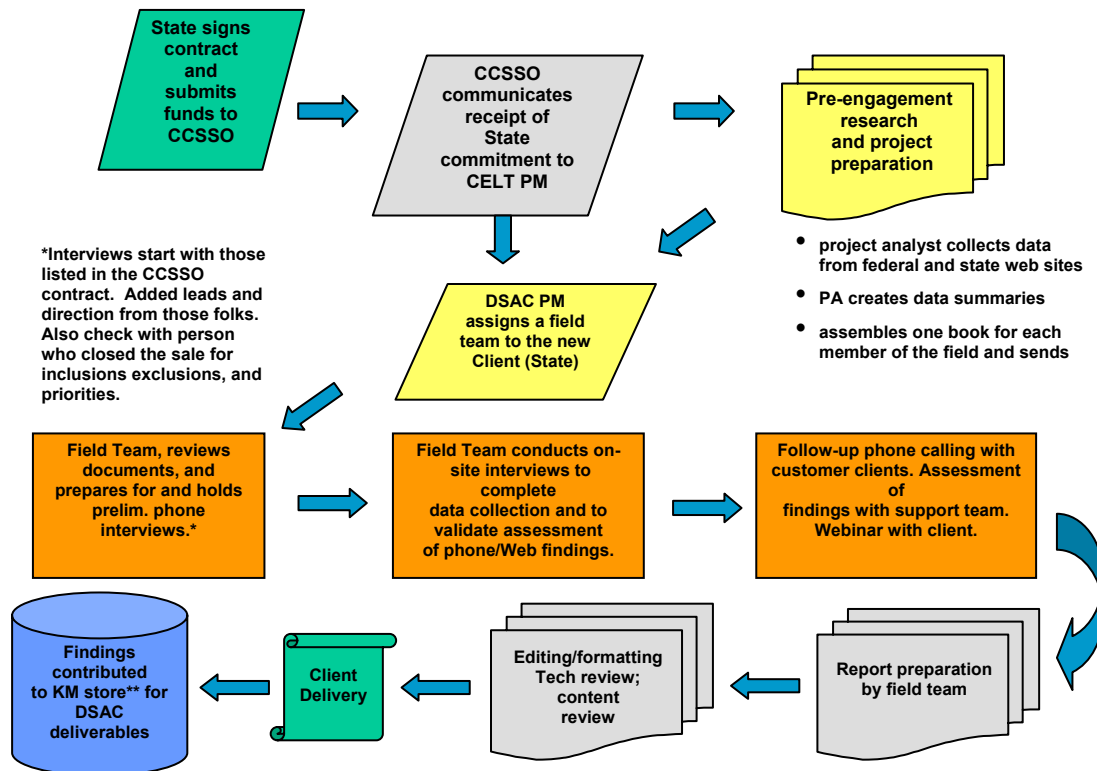
Enterprise Directories, End User Access									**Reporting and Compliance Platforms (Vertical)***
Data Integration, Reporting, Decision Support and Analysis Tool Sets									
Student ID & Record Collection	**Educator Certification Manage-ment**	**Staff HR & Highly Qualified Determ-ination (HQE)**	**Curriculum Informa-tion Manage-ment**	**Assess-ment Results Manage-ment (AYP)**	**Grant & Program Data manage-ment**	**Financial & Other Resource Data Manage-ment**	**Safety & Discipline Data Collection**	**Facilities Data Collection**	**SEA and LEA Systems Of Record**
Identity Management – Access Control, Identities, Permissions, Security									**SEA and LEA Enabling IT Systems and Services**
Data Storage and Management Layer									
State Information Technology Infrastructure									

Exhibit 4 – The DSAC Framework*
© CELT Corporation 2004

* Note: Vertical bi-directional reporting embraces federal, state, district, school and classroom requirements. DSAC will help the State CEO's and their management/technical teams to assess their current readiness in relation to the framework cited above and to provide them with tools and support to move towards the envisioned standards. The focus throughout will be from two complementary perspectives: business process improvements for instructional delivery and management for line staff, and the associated enabling data management and IT infrastructures.

This model brings together the various process and infrastructure components cited above within a single, digestible image. In keeping with Consortium commitments, the model encompasses both the need for NCLB compliance (i.e. the upward flow of data to the Feds) with the downward flow of data to LEA's, teachers, students, and parents. This structure resonates with Consortium members who must balance the requirements of these very different communities of potential decision support system users. For the DSAC team, this framework was merely the starting point in the development of two data gathering tools – one that focused on SEA decision support policies and processes and the other that collected information on the State's associated enabling IT infrastructure.

The policy and process tool (a.k.a. the Architecture for Decision Support Template) decomposes an SEA's decision support needs into six core business processes, seven related enabling processes, and twelve information technology infrastructure components. All of these pieces correspond to elements of the aforementioned architecture framework. The tool then poses a series of questions designed to position the SEA along the various axes of the framework, grading each feature as "planned," "under development," or "implement."   In so doing the project team can identify the gaps in business policies and processes that separate the State organization from the Consortium's modeled, comprehensive decision support solution. Similarly the technology enablement questionnaire (a.k.a. DSAC Technical Framework Tool) requires that the research team rate the availability of all key State IT infrastructure components for a decision support solution in terms of their appropriateness, completeness and adaptability, ranging from "outmoded," to "aging," to "mature," to "leading edge." Here the tool explores the particular capabilities and band-name products associated with each State system of record and infrastructure hardware/software element.

With an initial framework and the primary data gathering tools in hand, the project teams fanned out to the States. Each field team included a business process and a technology specialist working in tandem.   Given the scope and complexities of the undertaking, the data collection process was highly iterative. Because some portion of relevant project data had already been collected by PBDMI and other processes, the field teams began with a thorough review of those public domain information sources. (See the Bibliography below). They next conducted phone interviews with the CEO and his/her direct reports, building relationships, gathering high-level data, and identifying the next tier to interviewees. Another set of phone interviews ensued with subject matter experts, including State curriculum and technology officers, district superintendents, school board members, and teachers as appropriate. Finally, the field team would schedule a two-day on-site visit to validate the information gathering to date and to fill in any gaps in the narrative. The steps in the research process are summarized in exhibit 5 below.

*Interviews start with those listed in the CCSSO contract. Added leads and direction from those folks. Also check with person who closed the sale for inclusions exclusions, and priorities.

State signs contract and submits funds to CCSSO

CCSSO communicates receipt of State commitment to CELT PM

Pre-engagement research and project preparation

- project analyst collects data from federal and state web sites
- PA creates data summaries
- assembles one book for each member of the field and sends

DSAC PM assigns a field team to the new Client (State)

Field Team, reviews documents, and prepares for and holds prelim. phone interviews.*

Field Team conducts on-site interviews to complete data collection and to validate assessment of phone/Web findings.

Follow-up phone calling with customer clients. Assessment of findings with support team. Webinar with client.

Findings contributed to KM store** for DSAC deliverables

Client Delivery

Editing/formatting Tech review; content review

Report preparation by field team

**KM store = Generalizable frameworks, specifications, RFP components, best practices, etc., for DSAC members.

Exhibit 5 – Process Workflow for Individual SEA Data Gathering
© CELT Corporation 2004

With the phone and site work behind them, each field team would sit down to prepare a draft report along the following lines:

I. Executive Summary and Overview

II. Current Environment: (organized per the DSAC architecture framework)

III. Recommendations: (organized per the DSAC architecture framework)

IV. Implementation Process (to include customized action scenarios)

V. Appendices

- **DSAC Knowledge Store URL's** (sharable Consortium knowledge)

- **Published Materials** (collected and consolidated by the field team)

The extended project team reviews each draft authored by a field team for completeness and quality before it goes to the particular SEA's leadership for preliminary review. The handoff of the draft document includes either a face-to-face or a Web-based meeting to ensure that the SEA leadership is comfortable with the findings before they are made official. This step is particularly important in a consortial setting where large and small

political considerations may determine the longevity of member participation, and where assessments without the proper context can lead to misunderstandings that could damage the collegial framework of consortium interactions. Furthermore, DSAC findings if properly packaged will assist SEA's in their quests for State and Federal funding to implement the report's recommendations.

Process Deliverables

In the end, each State Educational Agency will receive its own confidential assessment and recommendation set. This document will help the SEA choose a particular course of action as they plot Phase 2 and 3 activities. The SEA may choose to share these outcomes with others or keep them close as they plot Phase 2 and 3 activities. Each Consortium member may also choose to proceed alone in developing a response to the DSAC team gap analysis, involve CELT and its partners in solution implementation and deployment, or turn to other parties for assistance. In the vast majority of cases State organizations will rely on public RFP processes to identify hardware, software, and services providers for follow-up work. Whatever their chosen path, Consortium members will have a rich body of generalized knowledge to inform next steps. These deliverables include:

- architectural frameworks that define appropriate policy, process, and information technology components.

- process best practices for decision support system design, development, implementation, and ongoing support.

- technical specifications for the IT elements of the solution set.

- based upon the frameworks and specifications, draft RFP components for the adaptation and adoption within State-specific procurement processes.

- a library and directory of other information sources of relevance to SEA/LEA decision support system development.

- other knowledge artifacts of interest/use to Consortium members.

As the field teams release individualized State reports, they will update their own practices and models based upon their hands-on experiences with the SEA's.   With a critical mass of State studies in hand (somewhere between five and ten), the team should have a well-tested set of tools in hand as well as the material from which to fashion the more generalizable artifacts sited above.

Where each SEA will receive its own individual, hard-copy report, the aforementioned deliverables will come to them through a Consortium Web site. This site will offer featured articles on current field work in participating States, threaded discussions built around subjects of concern to DSAC members, e-mail and other group communication capabilities, links to other Web resources, and so forth. At the discretion of the membership, some outcomes will be shared more widely on CCSSO and CELT public Web sites or will be linked to those of sister organizations, such as the SIF Web site.

As states launch their more tailored decision support system solution sets, the DSAC Web site will hopefully serve as one of the venues whereby these developments are shared with other SEA's and LEA's.

Separate from these electronic modes of collaboration, the DSAC will play a role in the regular national and regional meetings of the CCSSO. The Consortium will also forge more formal partnerships with SIF and other like-purposed organizations. The governance models for this sort of cross-organizational collaboration are well established within the industry. For the time being, the focus of the DSAC remains on Phase 1 data collection, analysis and reporting. As the Consortium's knowledge repository grows and as States move from the planning to the deployment of their solution sets, the organic nature of DSAC processes and outcomes will take the group in directions as dictated by its active membership.

III. Project and Outcome Governance

The Decision Support Architecture Consortium is a work in progress. Yet, even at this stage in its evolution, it is clear to those involved that the effort's ongoing success is dependent upon a number of key factors. These are described below for the reader's consideration. Hopefully, this consortial approach checklist will assist others faced with resolving similarly complex business process and IT-enablement challenges in their own industries. What is clear even at this juncture is that the Consortium's approach has proven flexible, responsive, and affordable to the SEA's and their respective information technology organizations. In meeting the needs spawned by NCLB, the DSAC has demonstrated the value of a consortial approach to problem solving.

IV. Generalizable Lessons Learned

Leadership

- A consortial approach needs a leadership person or organization to initially catalyze and organize the effort.

- Leadership is also required to address initial priority setting, methods, and funding.

- An authoritative, yet neutral/objective party is best positioned to charter the launch.

- A charter is essential in clearly defining the purpose of the Consortium, the roles and responsibilities of Consortium members, and in attracting/growing membership.

- While leadership allows for the focus of resources and economies of scale in Consortium rollout and management, the overall offering must clearly align with the concerns and interests of the individual member organizations.

- As a corollary of the previous point, the leadership needs to understand and articulate the Consortium's value proposition to the membership in ways that are meaningful. In the case of the DSAC, this means keeping the needs and priorities of the SEA's at the forefront of Consortium planning, operations, and delivery.

- Last but not least, the leadership needs to control costs so as to present a strong economic argument for members to join rather than going it alone.

Membership

- Recognize that each member of a consortium comes to the proposition within his/her own baggage; do not design a one-size-fits-all approach.

- Similarly members will face different barriers that they must overcome to join. In the case of the DSAC, this range of issues was mitigated by graduated pricing and by a methodology that recognizes the relative positioning of SEA's in terms of their current decision support capabilities.

- Growing Consortium membership means having the right people in the conversation (i.e. personal networking) and the solution selling of the benefits of joining. Here again a one-size-fits-all approach will not do. The "sell" must be tailored to its audience.

- Be respectful of the local domains of responsibility and expertise represented by prospective members. Do not trespass in their domains. Make it clear that you seek partnerships and mutually beneficial outcomes in realizing the goals of the Consortium.

Partnership

- Build trust at all levels within the organization through continuous, timely, and open communication. Electronic media like Web site and collaborative work environments (e.g. Lotus Domino and Microsoft SharePoint) can enable such practices.

- Engage others; be inclusive. If other organizations offer complementary or similar benefits look to collaborate or merge with those entities. At the very least, differentiate your consortium from these others lest they become your rivals for resources, mindshare, and members.

- Involve external experts and marketplace thought leaders.

- As quickly as possible, employ Consortium members to recruit others and to contribute to the content and products that constitute your offerings desired outcomes.

- Look for commercial partners as financial sponsors and for logistical support. This is a two-edged sword. On the one hand, external IT partner providers have much to offer the discussion. On the other hand, they have a vested interest in swaying the outcome towards their products and service offerings. Keep the balance and yield benefits; fail to do so and your members will view you as the vendor's pawn.

Continuous Improvement through Collaboration

- Do not reinvent the wheel. When data gathering, go to published or other available sources before conducting surveys, interviews, and other direct data gathering.

- Leverage collective findings but allowing for individualized priorities and initiatives to come through when servicing individual members

- Model the results anticipated to build effective tools for data collection and analysis but move quickly to modify these tools as you learn more about the business processes and technological capabilities of your members.

- Pilot your tool sets and processes but then give special consideration to those brave souls who have served as your initial guinea pigs.

- Be iterative in your data collection, analysis, review and consultation processes.

- Share and leverage knowledge for mutual advantage.

Glossary of Key Abbreviations

AYP	adequate yearly process
CCSSO	Council of Chief State School Officers – the sponsoring agency for the DSAC Project
CAO	(State) chief academic or curricular officer
CEO	(State) chief education officer
CIO	(State) chief information/technology officer
CELT Corporation	The CCSSO's partner charged with the delivery and support of a decision support architecture for consortia member
DSAC	Decision Support Architecture Consortium – the desired outcome of the Consortium's effort is an architecture, a set of specifications, and a series of SEA/LEA implementation plans for the rollout of the Consortium's architecture, standards, and best practices
HQD	Highly qualified determination (of faculty and staff)
LEA	Local education agency
NCLB	"No Child Left Behind," refers to federally-mandated, state-based reporting of student performance data
PBDMI	Performance-based Data Management Initiative
SEA	state education agency
SIF	school interoperability framework

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Internet-based Sources of Information:

Document	URL
USDOE Information	http://www.ed.state.{state name} http://www.measuredprogress.org/"state"profile/ http://www.ed.state.us/integratedprograms/NCLB/reading_first_grant.pdf http://www.ed.state.us/ReportsandStatistics/AttendanceAndEnrollment.htm
Adequate Yearly Progress (AYP)	http://www.ed.state.us/integratedprograms/NCLB/AYP&SINI.htm
Financial Information	http://www.ed.state.us/ReportsandStatistics/FinancialReports.htm http://www.ed.state.us/ReportsandStatistics/StaffingAndSalary.htm
Assessment Letters	http://www.ed.gov/admins/lead/account/finalassess{state name}.html http://www.ed.gov/admins/lead/account/finalassess/[state name}.html
NCLB Decision Letter	http://www.ed.gov/admins/lead/account/letters/{state name}.doc
State Plan	http://www.doe.k12.ga.us/_documents/support/plan/esea_plan.pdf http://www.ed.gov/admins/lead/account/stateplans03/gacsa.pdf
State Status	http://www.ecs.org/NCLBsurvey
Quality Counts 2004	http://www.edweek.org/sreports/qc04/state.cfm?slug={state name} http://www.edweek.org/context/states/stateinfo.cfm?stateabbrv={state name}
State Profile and Report Card	http://www.ed.state.nh.us/NAEP/purpose.htm http://www.edweek.org/sreports/qc04/state_data.cfm?slug={state name} http://nces.ed.gov/nationsreportcard/states/profile.asp
PBDMI Documents	http://evalsoft07.evalsoft.com/pbdmi/asp/{state name}

About the Author

For over twenty years, Dr. Richard M. Kesner has served as a business and information technology strategist. Prior to joining CELT he served as Director of Enterprise Data and Content Management Services for Northeastern University where he was responsible for strategy and planning, executive support systems, data warehousing, Web portal experiences, and enterprise knowledge management. He also served as Chief Information Officer at Babson College, coordinating all aspects of the college's use of information technologies, including computer and media services, voice/data communications, library services and resources, museums, and archives.   He has also served as an IT advisory, architect, and planner to many educational and other not-for-profit organizations world-wide.

Dr. Kesner is an international speaker and the author of numerous articles and nine books, including his most recent publication from Auerbach (2003), ***The Hands-On Project Office: Guaranteeing ROI and on Time Delivery Office***. Richard holds CLU and ChFC certifications from The American College, a M.A. and Ph.D. from Stanford University, and an A.B. and M.B. from Oberlin College. He also completed post-doctoral training in finance and strategic planning at the Wharton School, University of Pennsylvania.

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About CELT Corporation

Founded in 1991, CELT Corporation (CELT) is a highly respected, nationally recognized Information Technology Architect and Learning Systems Integrator for K-12 education. For nearly fourteen years, CELT Corporation has provided professional services and solutions to help learning organizations address their core mission — improving student achievement. Throughout its existence, CELT's primary role has been to assist educators, government leaders, and vendors in linking 21st century reform with information-age technology tools that support teaching, learning, and management. As an information technology architect, CELT develops and implements technology solutions from an instructional, technical, and management perspective.   Throughout, CELT's vision for using technology to improve teaching, learning and educational management has remained steady. CELT is currently developing new products and services that harness technology in order to meet the new requirements and challenges of the No Child Left Behind legislation.   For more information, see www.celtcorp.com.