2012 Annual Report

The Data Governance Commission

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The Data Governance Commission (DGC) is a statutorily created commission established to identify the needs of public educational institutions, provide recommendations and establish guidelines for future technology implementation. In accordance with statutory guidelines, the Commission is a 13-member body that represents various aspects of expertise in the areas of administration, information technology and business. Initially appointed members serve, by lot, two, three or four years; subsequent appointees serve terms of four years.

The DGC was created by Laws 2010, Ch. 334, § 1 to act as a guide in approving technology spending and to act as a resource on a number of other issues ranging from privacy and security to resolution of data conflicts. The DGC is established within the Arizona Department of Education (ADE) which works on behalf of the DGC to support its statutory mandate and to further its goal of responsible technological innovation in the educational community.

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Superintendent of Public Instruction

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Introduction

Pursuant to A.R.S. § 15-249, ADE, in cooperation with the DGC, is required to develop and implement the Arizona Education Learning and Accountability System (AELAS) to compile, collect and maintain data for students attending Arizona public schools and public postsecondary institutions.

To support ADE's efforts, the Educational Learning and Accountability Fund was established to provide funding for a statewide educational technology system. In fiscal year (FY) 2012, the Arizona State Legislature appropriated to the fund $5,000,000 from Basic State Aid and imposed a $6 fee for full-time students attending public post-secondary institutions in Arizona (estimated $6,600,000). The Legislature renewed the FY2013 appropriation for the same amount.

The DGC held its first meeting on August 19, 2011, to provide recommendations and guidance on new state and federal data system requirements to the ADE. In developing the DGC's annual report, special consideration has been given to current data fixes underway, longitudinal goals and future challenges. The following is a summation of findings, recommendations, approvals and actions taken by the Commission.

Membership, Authority and Charges

The Data Governance Commission was created by Laws 2010, Ch. 334, § 1, Arizona Revised Statutes §15-249.01 established the 13- member DGC, outlined its membership and charged it with certain responsibilities. Of the members, seven are appointed by virtue of the position that they hold within Arizona's educational institutions, and the remainder are appointed by the Governor, President of the Senate and Speaker of the House of Representatives. The membership is as follows:

- The chief technology managers, or the managers' designees, of each of the universities under the jurisdiction of the Arizona Board of Regents.
- The chief technology manager, or the manager's designee, of a community college district located in a county with a population of 800,000 persons or more who has expertise in technology and who is appointed by the Governor.
- The chief technology manager, or the manager's designee, of a community college district located in a county with a population of less than 800,000 persons who has expertise in technology and who is appointed by the governor.
- The chief executive officer of the Arizona Early Childhood Development and Health Board or the chief executive officer's designee.
- An officer or employee of a school district located in a county with a population of 800,000 persons or more who has expertise in technology and who is appointed by the Governor.
- An officer or employee of a school district located in a county with a population of less than 800,000 persons who has expertise in technology and who is appointed by the governor.
- An officer or employee of a charter school located in a county with a population of 800,000 persons or more who has expertise in technology and who is appointed by the President of the Senate.
- An officer or employee of a charter school located in a county with a population of less than 800,000 persons who has expertise in technology and who is appointed by the Speaker of the House of Representatives.

- Two representatives of the business community, one of whom is appointed by the President of the Senate and one of whom is appointed by the speaker of the House of Representatives.
- The Superintendent of Public Instruction or the Superintendent's designee.

The DGC's charge is to "identify, examine and evaluate the needs of public institutions who provide instruction to pupils in preschool, kindergarten, grades one through twelve and postsecondary programs in Arizona," and directs it to:

1. Establish guidelines related to the following:
    (a) Managed data access
    (b) Technology
    (c) Privacy and security
    (d) Adequacy of training
    (e) Adequacy of data model implementation
    (f) Prioritization of funding opportunities
    (g) Resolution of data conflicts
2. Provide recommendations on technology spending.
3. Provide analyses and recommendations of the following:
    (a) The control of data confidentiality and data security for stored data and data in transmission
    (b) Access privileges and access management
    (c) Data audit management, including data quality metrics, sanctions and incentives for data quality improvement
    (d) Data standards for stored data and data in transmission, including rules for definition, format, source, provenance, element level and contextual integrity
    (e) Documentation standards for data elements and systems components
    (f) Data archival and retrieval management systems, including change control and change tracking
    (g) Publication of standard and ad hoc reports for state and local level use on student achievement
    (h) Publication of implementation timelines and progress
4. Submit an annual report on or before December 1 regarding the Commission's activities to the Governor, the Speaker of the House of Representatives and the President of the Senate. The Data Governance Commission shall provide copies of this report to the Secretary of State.

Situational Analysis

The DGC is tasked with overseeing the development of AELAS, ensuring that it will meet the needs of Arizona's educational stakeholders and providing a stable, useful, and reliable platform to improve Arizona's education system from preschool through college. While the issues that Arizona faces with capturing and maintaining accurate student data are, at large, the same challenges that were faced last year, the focus has changed. With the stabilization of the SAIS system and the number of errors drastically decreased, ADE IT has shored up many critical areas and turned its attention away from the symptoms and back to the underlining problem—an unsustainable financial, informational and accountability system.

With the passage of the AELAS legislation, the Legislature demonstrated its intent that Arizona's educational institutions collaborate in order to produce a data system that will serve the public at all levels from preschool to post-secondary. The DGC is no longer a reactionary body that largely approves ADE IT spending to "stop the bleeding" of core ADE systems. Rather, it now is addressing and fixing the systemic causes of its eventual failure, limited capacity and lack of support.

2012 Highlights

The first half of 2012 was spent shoring up critical systems and implementing new internal policies to bring industry standards to the Information Technology Division (ADE IT). Building this foundation has allowed ADE IT to change the approach of how technology services are delivered. The DGC oversaw the completion of the SAIS reengineering program. This critical effort identified SAIS core functions and processes, mapped, analyzed and documented processes from beginning to end.. ADE IT also completed the Great Plains financial system implementation, consolidating more than 70 systems and removing a number of manual financial processes. ADE IT also completed a pilot dashboard project that allowed data in the Department's data warehouse to be visible to the public. The lessons learned in this pilot have been used in ADE IT's implementation of the next generation of dashboards.

The most significant undertaking in 2012 was the AELAS Business Case. The ADE IT team conducted site visits at the regional educational service centers and a sampling of districts to quantify the types of systems currently used by local education agencies (LEAs) as well as the associated costs. The AELAS Business Case also summarized significant market and technical research of vendor products, web-based product research and peer research on the efforts of other states currently updating their data systems.

These site visits identified essential components needed in the new data system:

- While SAIS has improved, it still requires significant resources and there is a need to eliminate redundant data collection.
- There is strong interest in enabling historical data to follow students immediately and combining data from multiple sources in dashboards and other analytic tools.

The DGC will begin discussions on the findings in the business case in December 2012. Those decisions will drive much of the AELAS work effort for the coming years. ***The Executive Summary distributed to the Commission can be found in Appendix A.***

ADE also conducted a rigorous analysis of the *way* in which SAIS data is used and collected. Through this exercise, ADE has discovered that while the SAIS system itself is the source of customer interface difficulties with the ADE, the *culture* that exists within the ADE related to the collection and sharing of data must also be addressed if ADE is going to create meaningful change.

Other data challenges discovered through this analysis:

Multiple similar data requests. Often, LEAs are asked to report the same data, in a slightly different fashion, multiple times throughout the year. This is an incredibly inefficient way for ADE to function, and the duplication creates considerable frustration on the part of the LEAs. This occurs because the ADE data system lacks a central source of credible and reliable data. Employees either cannot find data that may already exist at the department, or it is not exactly what is needed for a particular report, or the data is deemed unreliable because it was not collected by the author directly.

Stacked data requests/reporting requirements. Equally frustrating is the fact that the problems with data collection outlined above causes ADE to require unreasonably long lead times (months in some cases) to prepare data for federal reporting. As a result, much of the data needed from LEAs for these reports is due on or around the same time, again to different departments within the Agency. This creates duplicative time and labor efforts for both for LEAs and the Department. In addition, other divisions in ADE may also request data during this time, unaware that LEAs are putting together requests for other areas of ADE.

Lack of a formal process for requesting LEA data. ADE currently lacks a solid, reliable system that tracks Department data requests. Because there is no gatekeeper, any division within ADE has the freedom to request data of an LEA at any time. This gives rise to a feeling of randomness and the perception that the ADE is simply collecting data out of curiosity rather than out of necessity. Additionally, ADE does not have a central repository of data from which to draw, as it also does not have a record of where the needed data is located nor a mechanism in place to prevent staff from repeating the request.

The DGC also received a presentation on the ADE IT team site visit to the Chief Information Officer and Chief Technology Officer of the Georgia Department of Education. Georgia was selected because it currently operates a Statewide Longitudinal Data System (SLDS). Georgia developed an accountability system around the same time as Arizona, making it a good case study to determine how Arizona and Georgia differed given a similar start. The team discovered that despite the similar start and state structure, the two states were far apart with respect to data systems. Georgia had highly qualified resources in place for an extended period of time as well as well-defined internal data governance policies. These policies were adopted statewide and permeate every aspect of their data system.

While in Georgia, the team also participated in a SLDS demo. This portion of the visit was timely given that ADE IT received a $4,900,000 US Department of Education Institute of Education Sciences grant for its Arizona K-12 SLDS (AZ-SLDS) Project. These federal grant funds will be used to construct a data warehouse that will effectively support increasing demands for timely, transparent, accessible and actionable data across the K-12 continuum. AZ-SLDS will take the depth of student data collected and provide enhanced actionable data back to stakeholders.

2012 Data Governance Commission Directives

The Data Quality Campaign recommends states adopt Common Education Data Standards (CEDS) and Ed-Fi as that foundational piece. CEDS and Ed-Fi are education data standards, i.e. a set of commonly agreed upon names, definitions and technical specifications for a given selection of data elements. These two standards work in concert with one another and will provide the groundwork for AELAS.

CEDS was developed by the National Center for Education Statistics (NCES) in collaboration with state education agencies (SEA), national organizations and other federal offices to aid in the development of statewide longitudinal data systems. Representatives from across the P-20 field created common standards to support SEAs in improving data quality. Without a common vocabulary, or data standards, the sharing of data is slow, laborious and fraught with errors. The collaboration of representatives from across all levels and sectors of the education system to develop a single, agreed upon standard ensures that adopters of that standard can be confident that their data will be accurately interpreted by recipients, and that they, in turn, will understand data received from others.

Ed-Fi was developed by the Michael and Susan Dell Foundation to improve K -12 student achievement. It uses student information from a variety of educational systems, and then standardizes, integrates and communicates it to educators and other parties through web-based dashboards and reports. School and district administrators can also use this information to access consistent, comparable performance data across districts, schools and states. Administrators can monitor, assess and improve program effectiveness as well as accommodate future technological developments.

In 2012, the Commission directed ADE to implement the following in for systems development and implementation:

- Use CEDS logical data model for ADE internal data use (Master Data Management) with immediate implementation.
- Use Ed-Fi for the ADE internal physical data model.
- Ed-Fi will be the single state Education (K-12) physical data standard for bi-directional data interchanges (Between LEAs and ADE) for all state-mandated data requirements. Complete statewide implementation by beginning of FY2015 school year.
- ADE is to proceed to develop requirements (costs) for a statewide implementation of Ed-Fi Transmission Layer between LEA and SEA (LEA Data Extractors) with intention to complete implementation by school year 2015.
- AELAS will use federated identity management approach for LEA access to ADE data.

Rather than driving technology solutions, ADE IT is transforming into a support unit for the program areas. Business units within the Department are now part of the planning process for new applications and enhancements to existing programs. With that focus in mind, the Commission also approved ADE IT's goals for FY2013:

- Propose options for long-term, cost-effective statewide data system
- Provide LEAs access to full picture view of ADE student data
- Create reliable, integrated technology services
- Provide tools for teachers to grow student success
- Begin to ensure accurate student payments

FY2013 Data Governance Commission Budget Recommendations

Since inception (June 2011), the Arizona State Legislature has allocated a total $13,200,000 towards development of AELAS data system, which includes two allocations of $5,000,000 in General Funding plus $1,600,000 estimated additional funding based on a $6.00 per student fee charged to Arizona's post-secondary public institutions. To date, the Commission has recommended, and the State Board of Education has approved, allocated spending in the amount of $9,504,771, of which $6,732,412 has been spent on the efforts detailed in this report.

	Total Approved	**Total Project Costs Accrued**	**Total Balance**	**Total FY12 Costs**	**Total FY13 Costs YTD**
AELAS 31127	$9,504,771	$6,732,412	$2,772,359	$4,526,809	$2,205,603

In an effort to provide a less technical accounting of AELAS progress, ADE has elected to provide summaries of work efforts in FY 2103, rather than the project-by-project listing compiled in the previous fiscal year. ***For the complete data breakdown, please see Appendix B.*** Budget forecast for FY 2014 and FY2015 for AELAS effort, is estimated to require respectively funding support of $23,800,000 and $11,000,000 from the state General Fund.

Additionally, ADE staff intends to seek direction from the DGC on whether or not to seek modifications to the annual reporting requirements found in Arizona Revised Statutes §15-249.01. The Department receives funding allocations and reports spending on a fiscal year basis. Matching this document to ADE's fiscal year cycle will eliminate any potential confusion caused by reporting expenditures across fiscal years.

*Please note ADE's fiscal year is defined as July 1 through June 30.

Conclusion

The main focus of the DGC and ADE over the past 12 months has been not only to oversee technological improvements, but also *cultural* improvements that will mitigate many systemic issues. In 2012, ADE staff began cataloguing the type of data needed by each division, as well as the associated reporting deadlines. The Commission has also taken an important step in approving the CEDS for internal agency use. These efforts mean that ADE will move toward standardizing its data collection processes and storing the data it collects in a uniform manner. Ultimately, this will result in ADE collecting one data element, one time, from each LEA and storing it in a uniform manner for multiple uses within the Department.

ADE will be introducing the position of Data Officer in 2013, responsible for organizing ADE's data needs into a manageable number of requests to LEAs with a coherent process. The Data Officer will also be accountable to LEAs on the Department's adherence to that process and will serve as the data request traffic cop, working on behalf of the LEA and ADE equally to facilitate success. Through this process, LEAs should start to see a marked improvement in the quality of interaction with ADE with regard to data requests in the coming year.

With legislation, guidance from the DGC, the right people in place and a system built on a foundation of data standards, the chief challenge confronting the multi-year AELAS project remains sustained financial support. ADE and the Commission's goals, as identified in the AELAS Business Case, of ***improving data quality for schools, implementing industry best practices and establishing new core competencies,*** maintains its ultimate mission to improve student performance and outcomes. This rests solely upon the proposition of financial support and educational investment.

Addendum

Appendix A, AELAS Business Case

Arizona Education Learning and Accountability System (AELAS)
Business Case Abstract
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Introduction

Arizona's current education system is starving for information and resources. Parents, teachers, and policymakers routinely ask questions the Arizona department of education (ADE) can't answer due to a lack of easily accessible, readily available data. Arizona's schools also face a shortage of resources in the slowly recovering economy. Despite these challenges, there is one very decisive action the state can take to make millions of additional dollars available to local schools without raising taxes or increasing formula costs. By undertaking the design and implementation of a comprehensive education data system, Arizona can redirect millions of current dollars spent on redundant and inefficient systems into the classroom. This new statewide data system, mandated by A.R.S. § 15-249, is known as the Arizona Education Learning and Accountability System (AELAS). By making the process of running a school system more efficient, AELAS will allow schools to shift monies currently being expended on software systems into the classroom. Additionally, it is being designed to collect student-level data for our State's pre-kindergarten to post-secondary educational programs to better serve all educational stakeholders in the state.

AELAS is at a critical point. All Arizona students deserve an education system that will help prepare them for future careers and leadership roles, and a number of recently enacted reforms require reliable data to succeed. The AELAS project is in alignment with ADE's vision of providing unparalleled support to Arizona educators and education agencies, achieving transparency, and providing evidence-based strategies for improvement. It also aligns with the four pillars Arizona's education reform plan—*data usage*, *standards and assessments, great teachers and leaders,* and *support of struggling schools*—with a data-centric approach. Finally, it provides the data needed to fully implement recently enacted legislative reforms such as comprehensive teacher and principal evaluation. None of these can be achieved unless AELAS becomes a reality.

The Business Case proposes a strategic plan and road map for the Arizona Department of Education, in consultation with the Arizona Data Governance Commission, to design, build and deploy a learning and accountability system. The Case outlines the research approach, findings, recommendations and financial justification to enable Arizona to fulfill the AELAS mission.

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Research Approach

To understand where Arizona needs to go, we first must determine where we are. Researchers investigated the movement toward education data systems from a national, state, local and legislative perspective. Immediately, it was discovered that Arizona is not alone in this mission. Most State Education Agencies (SEAs) are pursuing a version of a learning and accountability system; however, no single SEA has all the answers, nor has any SEA deployed a comprehensive statewide learning and accountability system to date.

The first step was to define the components of a system: one that supports responsibility based on evidence, facilitates professional learning opportunities and provides actionable feedback to the educator. First, the system defines the context of accountability. Second, the system must be built upon aligned components—objectives, assessments, instruction, resources and rewards or sanctions. Third, the technical aspects of the system must meet high independent standards. Fourth, the system must provide the catalyst for positive change.

Next, the researchers conducted a statewide study of the culture, processes, and technology at the Local Education Agencies (LEAs) and ADE. Research objectives covered LEA software application type, usage, cost, and data, as well as the LEAs' achievements and shortcomings that prevent districts and charter schools from meeting their primary mission—preparing students for college and career success.

LEAs actively contributed to the study through participatory action research, providing specific feedback on the requirements of a learning and accountability system through a variety of research methodologies such as survey, site visits, phone interviews, and focus group sessions. Researchers were co-learners in this process, gathering qualitative and quantitative data about the software applications in the education market. These applications, also known as Commercial Off-The-Shelf (COTS) solutions, were divided into three categories to understand the data collected and reported in each system type:

1. Teaching and learning (e.g., assessment and content management systems)
2. Administrative (e.g., student information system)
3. Back office (e.g., finance and human resource systems)

A convenience and purposive sampling of 187 LEAs was conducted, which is representative of approximately 30 percent of all school districts and charter schools. The LEAs surveyed provide education services to 56 percent of all students statewide. A wide range of LEA size, geographic location, and type (e.g., Accommodation Districts and Joint Technical Education Districts) were represented in the study.

Without exception, researchers heard the ADE has lost credibility and confidence based on past performance (pre-2011), but respondents noted and appreciated recent

improvements. This prompted an internal audit of ADE culture, processes and technologies. Research objectives covered legislation, application portfolio, infrastructure, process workflows, and budget allocations.

All ADE program areas, (School Finance, Exceptional Student Services, etc.) were included in the study. Researchers conducted root cause, performance and data error analyses, plus mapped all program workflow processes to understand dependencies and impacts to other program areas and LEAs. Researchers sought evidence of best business practices through documentation, and assessed program area resource and budget allocations.

Lastly, a half dozen of Arizona statutes and federal grant programs were identified as potential drivers for AELAS. Researchers aligned statutes to objectives, benefits, business change, and information technology (IT) enablers, using the Benefits Dependency Network model to interpret drivers for organizational change. All the data collected was processed and analyzed to expose systemic issues across the state at cultural, process, and technology levels.

Current State of Education

Despite the overwhelming apparent desire, Arizona's current environment is not conducive to data sharing. The state has a system of local control over the delivery of education policies adopted by the Legislature and the State Board of Education (SBE) to ensure the education provided meets the needs of local communities. While this flexibility works well in many respects, from a data perspective, it has led to thousands of software applications statewide that stand independent, disparate, and disconnected. The problem also exists at ADE, which has approximately 150 applications and utilities, in large part on non-supported technologies dating to the early 1990s. One of the most valuable assets, data, is recognized to drive transformative change in education; however, often times data is inaccurate and, at best, mismanaged. There are no real value-added incentives, for LEAs in conjunction with ADE to cooperate, coordinate, and work together on common initiatives across Arizona.

Local Education Agency Findings

The study found LEAs spend $281M annually on software licenses and implementation at the onset of a software rollout if all LEAs deployed the maximum number of systems. When the figures are divided by LEA size as outlined in Chart 1 below, very small- to medium-sized LEAs account for 46 percent of the total spend but only serve 18 percent of the student population. On average, very small to small LEAs procure three to four software systems; whereas, large to very large LEAs procure 9–10 software systems—mostly separate, independent applications, resulting in isolated data.

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Chart 1—LEA Size Categories, Student Counts, and Average Software Systems and Costs per User

LEA Sizes	Size Ranges	LEA Counts	Student Counts	Average Number of Systems	Average License Cost per User
Very Small	<=199	245	24,115	3-4	$57.28
Small	200 – 599	197	72,378	3-4	$18.07
Medium	600 – 1,999	88	93,304	5-6	$12.87
Medium Large	2,000 – 7,999	58	243,388	5-6	$8.17
Large	8,000 – 19,999	20	246,833	9-10	$9.51
Very Large	>=20,000	11	397,045	9-10	$5.33
Totals		619	1,077,063		

Source: Arizona Auditor General for LEA size categories and U.S. Department of Education EDFacts for LEA and Student counts.

As illustrated above, very small LEAs pay seven to ten times more than very large LEAs for software licenses per user. Closer examination of the most prolific COTS application, the Student Information System (SIS), revealed implementing a statewide solution with pricing similar to a very large LEA would enable LEAs to recover $11.6M, thereby freeing up money that could be used to hire more teachers, purchase additional software or curriculum materials, or provide better technology in classrooms. This figure only highlights the financial reinvestment for one application that tracks student data (e.g., attendance, demographic, and grades).

In addition to software, infrastructure costs such as servers (both physical and virtual), network switches, and cabling are estimated at $47M at the time of hardware purchase, amortized over time. There are also costs for desktop computers, laptops and tablets. Larger LEAs replace servers on a three- to five-year cycle, while smaller LEAs must extend the normal life an additional three to four years, often times leaving them with unsupported hardware and limited capability. This case does not address infrastructure cost savings because the greatest and most immediate impact is recognized with software licenses; however, future consideration should be given to infrastructure costs.

Arizona Department of Education Findings

An internal audit shows inadequate resources and planning have led to immature business practices in data management, resulting in no 'single source of truth.' The collection of approximately 150 applications and utilities was pieced together over time for legislative compliance. This leads to excessive reliance on manual labor, resulting in ADE expending 568,000 man hours annually, which is time that should be spent providing services to support schools. These issues extend through ADE and impact LEAs' data management as well, costing them $12.5M annually for positions to determine data accuracy.

ADE program areas such as School Finance and Exceptional Student Services are at their operational limit because this pattern of data-induced inefficiency repeats across the organization, forcing the department to be in a persistent reactive mode. For example, the academic year 2011–2012 A-F school letter grades were delayed, initially reported inaccurately, then recalculated and resubmitted. This impacts the credibility of the ADE, the reputation of schools, and the perception of Arizona education. Most disappointingly, as this example illustrates, the expertise, dedication, and quality work of the ADE is overshadowed by the shortcomings and failures of data management.

Even though ADE has exhibited successful stabilization and optimization efforts in recent years, a complete overhaul of data management, business practices, and application replacement is mandatory to avoid the highly-probable failure that will eventually result, impacting the distribution of $5.7 billion in annual school funding to LEAs in some way.

Recommendation Hierarchy

The study yielded 13 recommendations from which a three-level hierarchy was formed to show an order of prioritization to achieve transformative change. The range of issues identified earlier is addressed by implementing the recommendations as illustrated below:

(1) Improve data quality and replace ADE applications
(2) Implement and apply industry best practices and enabling frameworks
(3) Develop and enable core competencies

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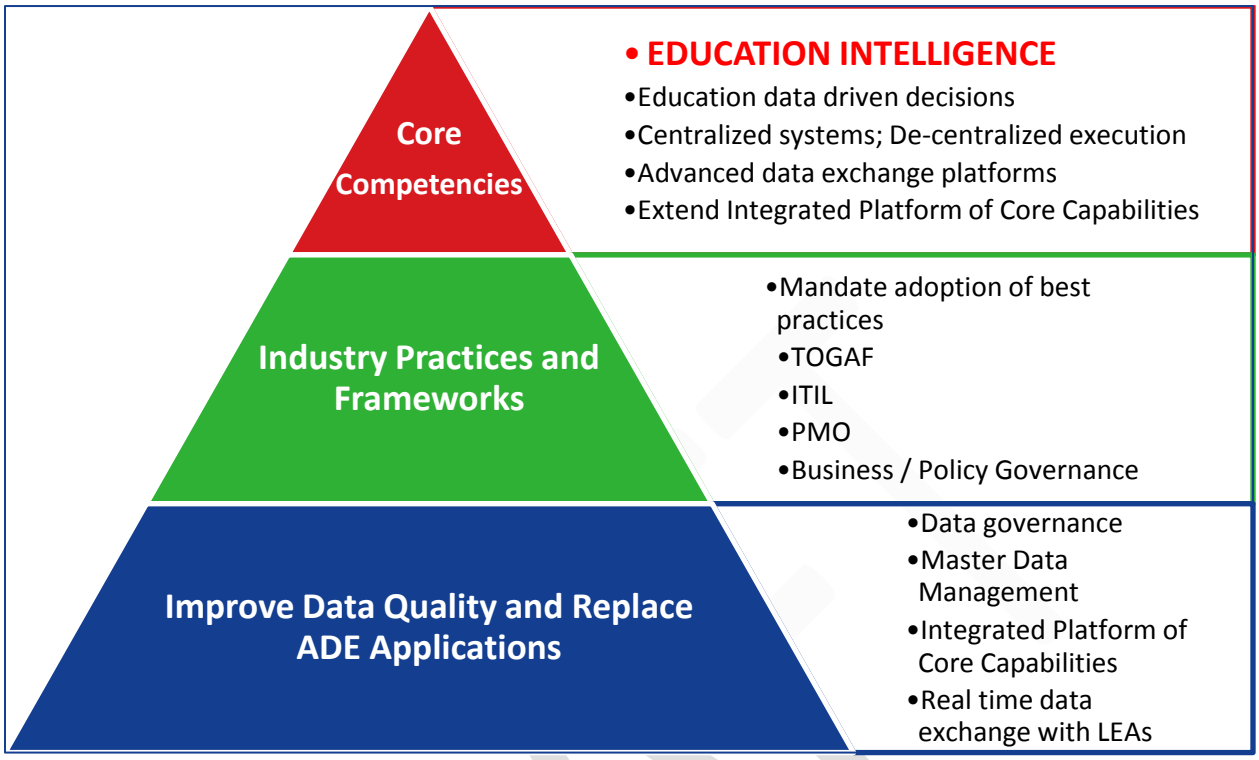
Figure 1—Recommendation Hierarchy



This Business Case reflects and details the new business model for how to conduct a state-led, cooperative education program. The above recommendations align with tangible benefits that will result in cultural, process, and technology changes across the ADE and LEAs. All recommendations lay the foundation and lead to Education Intelligence – integrated data and analytics transformed into actionable information delivered 'real-time' to education stakeholders that can contribute to the improved student success.

A key aspect that often occurs in the IT domain is the tendency to overemphasize technology and tools rather than the importance of culture and processes in making sustainable change. It is crucial to address and focus on how culture and processes will change the current 'as is' to the 'to be' state and, more importantly, to have a strategy for these rather than a reactionary observation of what happened. This is precisely how the value proposition will produce substantial reinvestment opportunity to the state of Arizona.

Culture

A change in culture begins with the first recommendation of mandating an internal ADE data governance structure under a state data officer. Second, implementing a master data management policy using the Common Education Data Standards (CEDS), as established by the National Center for Education Statistics, will unify data across the state. Third, ADE will utilize industry best practices and frameworks which will lead to enhanced ADE performance, changing the perception of ADE that internal and external stakeholders

currently have. Last, deploying centralized systems at reduced statewide pricing can change the isolated behavior across the Arizona landscape by enticing LEAs to work collaboratively by sharing resources, ideas, and innovations for education-data-driven decisions.

Processes

Adopting and applying formalized frameworks such as the Information Technology Infrastructure Library (ITIL), The Open Group Architecture Framework (TOGAF), and Project Management Organization (PMO) will enable the ADE to reap the benefits of best practices from mature industries that have dealt with data-related issues and their associated processes. New and advanced file interchange platforms will make it easier for the ADE and LEAs to exchange immediate, actionable data to influence and inform decisions at the state, district, school, class and student levels.

Technology

Technology serves both those who use technology to conduct their work as well as the recipients of those work products. This Business Case recommends replacing the entire infrastructure and implementing more up-to-date architecture and platforms. This complete rebuild will introduce an integrated platform to support efficient agency operations. This goal does not rely on 'leading-edge' technology, but rather on the application of rigorous discipline and integration of the cultural and processes described above. The proposed new platform will lead to configurable program area services and the architecture to support new uniform data exchange requirements.

Financial Investment

A state investment in AELAS at this time is critical to maintaining momentum in education reform. Opportunity for systemic change; albeit ambitious, is attainable and sustainable. The financial investment requested is based on the execution of the recommendations outlined in this business case and illustrated in the recommendation hierarchy.

Local Education Agencies

At the center of AELAS are the educators and students that will benefit from the overhaul of education. It is important to note that very small and small LEAs currently pay more for less. They are estimated to spend $25M for software licenses and implementation on the four systems that they can typically afford to implement. By adopting the AELAS systems instead, they could implement an additional five systems to better support teaching and learning, and reinvest nearly half their current expenditures directly into the classroom.

LEAs will have the ability to configure and use systems in ways that work best for their local needs. No longer will LEAs be required to manage the vendor relationships; the ADE will be poised to manage the service level agreements with the range of education vendors, based on industry best practices and state-adopted data management standards.

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Based on ADE-hosted focus groups, a full range of LEA representation identified the systems most needed, which would be supported as a centralized, opt-in model. The cost of implementing these centralized systems was calculated at economies of scale pricing over a five-year period and equals $87.8M. See Chart 2 below for the rollout of the nine systems across all LEAs, and breakdown between software license and implementation costs. The approach proposed is that LEAs will eventually discontinue their contract with vendors and convert to the ADE opt-in model, reallocating the cost for software and implementation through ADE, paying the state pricing point, which is lower than their current pricing.

Chart 2—Centralized, Opt-In Model Software License and Implementation Costs ($Millions)

Fiscal Year	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**	**TOTAL**
Number of Systems	5	7	7	9	9	9
Number of LEAs	20	110	314	555	619	619
Software License Costs	1.1	4.0	7.8	13.7	20.7	$47.3
Implementation Costs	3.8	7.1	9.3	9.6	10.7	$40.5
Total LEA Investment Costs	**$4.9**	**$11.1**	**$17.1**	**$23.3**	**$31.4**	**$87.8**

Overall, LEAs of all sizes will realize the benefits of cost reinvestment, improved services and support, and integrated, centralized systems that will support data-driven decision-making all the way down to the individual student level. LEAs can choose to reinvest monies saved on software licenses and implementation in ways that best support their local needs. The total annual LEA cost reinvestment is estimated to be between $30 and $60M annually depending on the number of LEAs that opt-in.

The success of the centralized systems approach is based on several factors including increased investment in local needs, superior services and support from ADE, and offerings of advanced integration and analytics across multiple systems and data sources. A jointly owned, cooperative formation of LEAs is recommended to provide ADE requirements, feedback, and guidance. ADE will work with this group to ensure continuous improvement in services.

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The basis of the recommendation hierarchy begins at ADE with improving data quality and replacing applications with an integrated platform to serve the ADE program areas and subsequently the LEAs. Concurrently, ADE will employ industry best practices and frameworks. The ADE has the potential to realize a cost recovery of 568,000 man-hours expended on data management and corrections annually, which would be free to provide service to LEAs. LEAs will also experience a cost recovery or reinvestment of 500,000 hours expended on data management and corrections or $12.5M annually due to better data quality at ADE.

A financial investment is required to accomplish these recommendations. See Chart 3 below for the rollout of the recommendations over a five-year period. The recommendation to improve data quality and replace ADE applications with an integrated platform equals

$66.5M and is divided between software licenses and implementation. The recommendation to implement industry best practices and frameworks equals $4.4M. The fiscal year 2014 financial investment request equals $23.2M.

Chart 3—ADE Financial Investment Request ($Millions)

Fiscal Year	FY14	FY15	FY16	FY17	FY18	TOTAL
Recommendation 2: Industry Practices and Frameworks						
Implementation Costs	3.2	0.3	0.3	0.3	0.3	$4.4
Recommendation 1: Improve Data Quality and Replace Applications						
Software Costs	3.2	0.3	0.3	0.3	0.3	$4.4
Implementation Costs	16.7	10.8	18.1	6.3	9.0	$60.9
Total ADE Investment Costs	**$23.1**	**$11.4**	**$18.7**	**$6.9**	**$9.6**	**$69.7**

This financial investment analysis demonstrates that within a short three-year time frame of AELAS implementation, the investment requested under this proposal is recovered in accumulated benefits to the state and LEAs, and that the cumulative benefits outpace the ongoing investment needed to support and maintain all of AELAS. The cumulative benefit calculation includes 2 components: (a) the reinvestment costs from ADE and, (b) the reinvestment costs for the LEAs from the implementation of AELAS systems. In other words, after three years, the investment has fully paid for itself and continues to deliver benefits to both the ADE and LEAs. See Chart 4 for the cumulative financial investment and benefit of AELAS as implemented per the recommendations in this Business Case. It is important to note the LEA investment is a reallocation of current funds, which is less than their current expenditures on data systems. This approach minimizes risk, improves the ability of the organization to adapt to change, and will provide the on-going measurement of success and confidence in ADEs execution and LEA adoption.

Chart 4—AELAS Cumulative Financial Investment and Benefit ($Millions)

Fiscal Year	FY14	FY15	FY16	FY17	FY18	TOTAL
Cumulative LEA Investment	4.9	16.0	33.1	56.4	87.8	$87.8
Cumulative ADE Investment	23.1	34.5	53.1	60.1	69.7	$69.7
Total Cumulative Investment	28.0	50.5	86.2	116.5	157.5	$157.5
Total Cumulative Benefit		$45.0	133.9	222.8	334.0	$334.0
Net Benefit	**$(28.0)**	**$(5.5)**	**$47.7**	**$106.3**	**$176.5**	**$176.5**

Effective measures are critical to ensure the benefits being sought are achieved and will report against the value proposition that justifies the investment. In the past year, the ADE has begun to employ the discipline of industry best practices and frameworks required to improve data quality. The ADE will continue to identify the necessary metrics to measure and monitor benefits, in anticipation of further justifying and providing auditability of success for the financial investment.

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Conclusion

The time is now to unite Arizonans on the common mission of AELAS. The stakes are too high to allow 'business as usual' to continue. It is not enough to acknowledge the issues and allow them to go unchecked. The AELAS—an integrated learning and accountability data system—is the opportunity for transformative change from cultural, process, and technology perspectives across all Arizona education agencies.

Since 2011, The Arizona Department of Education has been building the early foundations for transformative change by initiating cultural, process, and technology improvements through past and current projects such as the Student Accountability Information System (SAIS) Stabilization; Student, Teacher, and Course Connection (STC); and Instructional Improvement System (IIS) to name a few. See chart 5 for the project names and descriptions highlighting the improvements and benefits.

Chart 5—AELAS Projects and Descriptions

ADE Project	Description
SAIS Stabilization	Replaced obsolete hardware without interruptions and enabled system availability 99.75% increasing process efficiencies for LEAs and beginning to restore the credibility of ADE
Student, Teacher, Course Connection	Ensure accurate linkage of student performance data to specific classroom teachers, schools and districts
Instructional Improvement System	Integrated software systems that will provide portals for students, teachers, parents, school and district administrators to access data and resources to inform decision-making related to instruction, assessment, and career and college goals – provide instructional support for the implementation of the Arizona Common Core Standards

With this investment, the ADE will complete the foundation for AELAS by completely rebuilding its entire application portfolio and infrastructure; all LEAs will receive a complete family of advanced software systems that will integrate data across the state, provide new classroom education delivery capabilities and, finally, lead the state toward data-driven decision making that relies on accurate and timely information. More importantly, these recommendations and investment will position the State of Arizona to truly prepare students for future careers and leadership roles.

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Appendix B

AELAS Programs Projects Summary (accrued)						
Project Name	**Project-phase**	**Approved**	**Project Costs Accrued**	**Balance**	**FY12 Costs**	**FY13 Costs YTD**
AELAS Business Case	**120106-21**	$826,720	$771,330	$55,390	$353,304	$418,026
ALM-TFS	**120106-20**	$235,975	$245,274	($9,299)	$232,149	$13,125
AZ-SLDS	**120106-08**	$417,600	$357,635	$59,965	$357,635	$0
Enterprise Architecture	**120106-19**	$500,000	$475,390	$24,610	$243,351	$232,039
Great Plains	**120106-02**	$685,920	$585,999	$99,921	$585,999	$0
Identity Management System	**120106-03**	$835,000	$942,537	($107,537)	$612,924	$329,613
ITIL	**120106-05**	$110,830	$133,309	($22,479)	$113,504	$19,805
Program Support Office	**120106-18**	$1,027,000	$925,336	$101,664	$640,264	$285,072
SAIS Assessment	**120106-01**	$1,497,726	$1,260,503	$237,223	$1,260,503	$0
SAIS Enterprise	**120106-22**	$600,000	$291,618	$308,382	$127,176	$164,442
Special Projects	**130106-02**	$2,100,000	$553,903	$1,546,097	$0	$553,903
SAIS Payments	**130106-03**	$650,000	$173,019	$476,982	$0	$173,019
CRM	**130106-04**	$18,000	$16,560	$1,440	$0	$16,560
Instructional Improvement	**130106-10**	$550,000	$97,592	$452,408	$0	$97,592
SAIS Optimization	**120106-04**	$16,575	$16,575	$0	$16,575	$0
		Total Approved	**Total Project Costs Accrued**	**Total Balance**	**Total FY12 Costs**	**Total FY13 Costs YTD**
AELAS 31127 (ED LEARNING AND ACCOUNT EXPEND '13)		$9,504,771	$6,732,412	$2,772,359	$4,526,809	$2,205,603