

Arizona Public Education Department

Information Technology Study – Final Report

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1.0 Project Overview

1.1 Summary

The charge for this work was to provide the Arizona Office of Economic Recovery (OER) an analysis of the Data Collection and Public Reporting Plan of the State Fiscal Stabilization Fund (SFSF) Phase II application (Appendix 1) related to the ability of the Arizona Department of Education (ADE) to accomplish the activities that had been identified. In addition there was a necessity to review the work plans that are currently contained in the application as to their viability given the current status of the ADE data system(s) and for recommendations to be developed for the next steps that the State will need to accomplish in order to meet all of the federal requirements and guidelines. Finally there was a need to review the existing data systems within the ADE to determine if they are commensurate with current and future customer and state needs.

To prepare the report the author reviewed documents that provided foundation information and contemporary activities for the collection and distribution of educational data; conducted interviews, both via telephone and face-to-face to gather first-hand information on the current status of the data systems and the needs of the customers; worked closely with the staff of the OER in the preparation of presentations and discussions; met with commercial representatives; and, developed and distributed initial findings, draft and interim reports, final report and documents.

Of special note to this report: when the project was initiated, there was a different leadership team in place at the Arizona Department of Education. All of the information that was gathered through the interviews and document review related to the work of the prior administration. With the election of a new Superintendent of Public Instruction and a change in the leadership of the ADE Information Technology (IT) Program, there appears to be a new energy, leadership and management style, and a collaborative, open, and transparent willingness to address historical shortcomings of the services from the IT Program.

1.2 Programs

The ADE IT Program is described on the ADE web site as follows:

Information Technology (IT) maintains an effective information technology resource for the efficiency and effectiveness of Arizona Department of Education (ADE) business operations. Management Information Services maintains internal and external networks for the exchange of information and provides technical assistance to assure that all ADE customers are proficient and self-sufficient. Schools and districts are guided and supported in their use of technology to improve both administration and instruction. Through information technology, systems are created and the most effective methods are employed together, store, and share data. Up-to-the-minute, accurate information is provided for decision making and reporting needs; in detail for the Department of Education, and in summary for educators, the Legislature, federal reporting and the public.

The ADE IT Program provides software, infrastructure, and project management support to the ADE's Programs and Arizona's 222 school districts and 505 charter schools. Much of that support comes in the form of Student Accountability and Information System (SAIS) and support for many

databases and applications used throughout the ADE including content and document management systems as well as legacy transactional systems for programs as diverse as teacher licensure and school nutrition. An organization chart of the ADE IT Program from December, 2010 is found in Appendix 2. As indicated above, a new leadership team has been in place since January 1, 2011. There have already been some modifications in the organizational structure and responsibilities within the IT Program. A revised organization chart, as of February 7, 2011, can be found in Appendix 3.

To provide these services the TI Program has four main units. These include: Development; Data Management / Data Warehouse; / Technology Support / Network Services / Security; and Operations / Support Center.

1.2.1 Development

The Software Development group is responsible for the development, maintenance, and support of software applications within the agency which include, but not limited to, analysis and design, implementation, testing, deployment, troubleshooting, and bug fixing. The group also reviews business requirements and specifications for new application development, enhancements, and application changes. In addition, we also process and monitor system jobs/processes and generate reports.

1.2.2 Data Management /Data Warehouse

The main services provided by the ADE Data Management Team include providing the necessary technology environments and processes related to educational data so that these enterprise-wide data elements have the availability, usability, integrity, and security needed by stakeholders for reporting, analysis, and broad-based decision support/business intelligence, as outlined by the guidelines of the Data Governance Board. Longitudinal views over multiple years are instrumental for managing education improvement, at all levels – legislation, state agency, county, district, school, teacher and student. Integrating the various aspects of education into coherent and consistent schemes covering data from FY 2003 on, Arizona Education Data Warehouse (AEDW) has so far implemented 49 student longitudinal measures. The measures address school membership, attendance, needs and program participation, and AIMS achievement data. AEDW also enables evaluation of the impact and cost of proposed education legislation and budgeting and provide actionable information to all levels, also provides aggregations for mandatory Federal reports.

1.2.3 Technology Support / Network Services / Security

Network Services supports ADE's servers, network, and storage, performing tasks such as new server deployments, hardware, software, and network equipment maintenance and repair, storage allocation, backup and recovery, and system architecture. Some of the services provided by Network Services include email, file storage, Internet access, and web server services. Network Services manages over 200 servers and over 30 network devices. They installed a total of 672 patches on 63 servers in December, 2011. The email system blocked over 1,800,000 unsolicited or malicious messages in January, 2011. Network Services manages 6 domain names (such as azed.gov and ade.az.gov) for ADE, and 226 domain names for K12 schools in Arizona.

1.2.4 Operations / Support Center

ADE IT Operations ensures that business operations are efficient and effective through processes that are aimed at improving the reliability and availability of IT systems and services. This is accomplished by gathering information from our current systems, having the proper people in place to decipher the information and having the proper procedures in place to carry out any tasks that may arise. Operations is responsible for system reliability and availability, data delivery and data quality, system and data analysis, system maintenance, end-user communication, end-user satisfaction of current services, and managing the content of the ADE website.

1.3 Identified Activities

The Arizona OER has identified four major areas of focus for the study of Infrastructure Support, and Data Collection and Reporting. Summarized responses follow each question with additional information in the report. Due to the fact that three of the questions address the State Fiscal Stabilization Fund Phase II Application while the last question is more general in nature and addresses the future collection of data, the report is divided into two sections. The first section is the review of the SFSF Application and the second section is the review of the ADE IT Program and its ability to deliver contemporary services including the collection and reporting of student data.

Section One:

1. Are the data collection and public reporting plan assurances for monitoring and reporting the data accurate and feasible based on the current ADE data systems?
Of the 49 indicators and descriptors identified in the SFSF Phase II Application, 29 or 59% were found to be accurate and feasible. In this list of 29 indicators and descriptors, 8 indicators require some minor modifications or linked web sites.
2. Are the work plans identified in the State Fiscal Stabilization Fund Phase II Application viable to meet the required indicators?
Of the 49 indicators and descriptors identified there were 20 that required a review and revision of the timelines and activities. This will be the time consuming component of the project as it will require a review of current priorities, open communications with internal ADE staff, review of pilot projects, and communications with representatives from higher education and the Arizona Board of Charter Schools.
3. In the work plans that are not viable, what are the recommended next steps to meet all of the federal requirements and guidelines as addressed in the State Fiscal Stabilization Fund Phase II Application?
When the work plans are revised and timelines reestablished and implemented, monitored, and concluded, the work plans that needed corrections should be able to provide the required evidence.

Section Two

1. Are the existing data systems within the Arizona Department of Education commensurate with current and future state needs?
The current system used for the collection of student data, SAIS, is not capable of handling either the amount of data or the complexity of the business rules required by state and federal legislation. The system needs to be revised or replaced to make it commensurate with current and future needs. The state needs to invest in a system

that can be used by the programs in the Arizona Department of Education for assessment, student and school performance reporting, and school finance. In addition, there is a need for a contemporary student longitudinal data system with an expanded capacity and the flexibility to provide individual student data to the appropriate personnel and parents without violating the student’s privacy as well as the capacity to provide aggregated data and reports for decision-making by stakeholders.

1.4 Activities and Purposes

The author, based on initial and continuing dialogue, developed the activities and purposes for this project. These timelines were modified during the process. The final activities and timelines follow.

Activity	Purpose
<ul style="list-style-type: none"> • Review previously prepared information and web-based references 	<ul style="list-style-type: none"> • Gather initial evidence of the IT program’s activities • Become familiar with the activities and operation of the division
<ul style="list-style-type: none"> • Collect descriptive data 	
<ul style="list-style-type: none"> a. ADE IT Organization Charts 	<ul style="list-style-type: none"> • Determine supervision and communication lines • Determine program and work units
<ul style="list-style-type: none"> b. SFSF Phase II Application 	<ul style="list-style-type: none"> • Identify the ability of the state to meet the assurances identified in the application
<ul style="list-style-type: none"> c. Arizona Race to the Top Phase 2 Application Narrative 	<ul style="list-style-type: none"> • Understand the total response from the state to this federal funding initiative
<ul style="list-style-type: none"> d. Arizona HB 2273 	<ul style="list-style-type: none"> • Identify information required for the oversight governance for information technology
<ul style="list-style-type: none"> e. Interviews with ADE IT staff 	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and skill sets directly from ADE IT staff
<ul style="list-style-type: none"> f. Interviews with K-12 educational representatives 	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and suggestions directly from educational representatives
<ul style="list-style-type: none"> g. Interviews with state officials 	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and suggestions directly from state officials
<ul style="list-style-type: none"> h. Interviews with charter school representatives 	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and suggestions directly from charter school representatives
<ul style="list-style-type: none"> i. Interviews with educational advocates 	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and suggestions directly from educational advocates
<ul style="list-style-type: none"> j. Interviews with foundation representatives 	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and suggestions directly from foundation representatives

k. Interviews with post secondary representatives	<ul style="list-style-type: none"> • Capture first-hand comments, ideas, and suggestions directly from post secondary representatives
<ul style="list-style-type: none"> • Deliver interim reports to Arizona OER 	<ul style="list-style-type: none"> • Provide opportunity to review observations and formatting
<ul style="list-style-type: none"> • Deliver final reports to Arizona OER 	<ul style="list-style-type: none"> • Required component of the project

1.5 Deliverables

The project will include the following deliverables to the Office of Economic Recovery. These deliverables will include a final report that addresses the following questions. Questions 1-3 will be addressed in Section One and Question 4 will be addresses in Section Two.

1. Final Report to include the following:

Section One: State Fiscal Stabilization Fund Phase II Application

Initial, Draft, and a Final Report that address the following three questions:

1. Are the data collection and public reporting plan assurances for monitoring and reporting the data accurate and feasible based on the current ADE data systems?
 1. List of feasible plan assurances
 2. List of plan assurances that are not feasible with rationale
2. Are the work plans identified in the State Fiscal Stabilization Fund Phase II Application viable to meet the required indicators?
 1. List of viable work plans that are completed
 2. List of work plans that are not completed or not viable with rationale
3. In the work plans that are not viable, what are the recommended next steps to meet all of the federal requirements and guidelines as addressed in the State Fiscal Stabilization Fund Phase II Application?
 1. Recommendations to address the work plans that are not viable

Section Two: Review of the Arizona Department of Education’s Information Technology Program and its ability to deliver contemporary services

Initial, Draft, and Final Reports that address the following question:

1. Are the existing data systems within the Arizona Department of Education commensurate with current and future state needs?
 1. Considerations for improvement of the existing data systems

2. Data Notebook to include the documents or references to the documents used in completing the report.

1.6 Consultant Information

1.6.1 Vita

Following is the vita for Clifford J. Ehlinger. A full resume can be located in Appendix 4. Clifford J. Ehlinger began his educational career as a seventh grade social studies teacher in Villa Park, Illinois, after graduating from Elmhurst College in Elmhurst, Illinois in 1966. During his five-year experience as a middle school teacher, he organized and coordinated a school-wide television center, revised the student government program, and coached both boys and girls athletic teams. During this time period he received his master's degree in Instructional Technology from Northern Illinois University. In 1971 he left the classroom to complete his doctoral program at Northern Illinois University graduating with his Doctor of Education degree in Instructional Technology in June of 1973.

After graduating, Dr. Ehlinger took a position of Director of Media with the Grant Wood Area Education Agency in Cedar Rapids, Iowa. This responsibility allowed him to continue to pursue his passion for integrating media and technology into the classroom. He published articles and served as a media reviewer for major educational journals. He presented on media center administration, video selection, personnel issues, and emerging technologies at numerous meetings of state and national professional organizations and received national and state awards for his work in the areas of media and technology. He served on the boards of various local, state, and national organizations and has been the Chair of the National Media Market, Chair of the Educational Film Library Association, and the President of the National Association of Media and Technology Centers.

Since his retirement in June, 2007, Dr. Ehlinger has served as an educational consultant to a private firm and various educational organizations. In July, 2007, he was contracted to provide interim administrative functions for the Cedar Rapids Science Station. In June, 2008, he was contracted by his former employer, Grant Wood AEA, to coordinate the building clean up and rebuilding of their main facility as a result of the flood in Cedar Rapids. In September, 2008, he was hired to provide a Technology Program Review for the Missouri Valley Community School District. In October, 2008, WestEd contracted with him for a capacity study of the Information Technology Department of the Colorado Department of Education (CDE). In October, 2010, WestEd contracted with him for a study of the Information Technology Division of the New Mexico Public Education Department. In November, 2010, WestEd contacted him to work with the Arizona Office of Economic Recovery for an analysis of the Data Collection Plan of the State Fiscal Stabilization Fund Phase II Application.

1.6.2 Contact Information

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2.0 Section One: State Fiscal Stabilization Fund (SFSF) Phase II Application

2.1 Overview

The SFSF Phase II Application required the determination that there was evidence to support the conclusions for each indicator and descriptor. Many of the indicators had evidence that was readily identified. Other indicators may have had web links that were no longer connected and work plans with timelines that had passed. The complete list of the indicators and descriptors can be found in the SFSF Phase II Application in Appendix 1. A listing of each indicator with information on the evidence found, the work plan and notes can be found in Appendix 5.

The work plans that have been developed cannot be completed in isolation by the personnel in the ADE. The development of partnerships and collaborations with the Charter Schools Association, post secondary institutions, and other programs within the ADE will be required to fully extend the collection and distribution of student data into a complete student longitudinal data system that will provide complete, accurate information to all stakeholders.

Following is the report on the evidence that is identified to address the indicators and descriptors. While the author attempted to identify evidence that would meet the requirement of the indicators and descriptors, it is the responsibility of the knowledgeable staff of the ADE to verify that the evidence supports the specific indicator or descriptor. These individuals are best suited to verify and validate the evidence.

2.2 List of feasible plan assurances: Deliverable 1.1

2.2.1 Assurances

Evidence for the following plan indicators and descriptors was readily available. There is a need to have knowledgeable ADE personnel review each indicator and descriptor to verify and validate to insure comfort that the indicator or descriptor is addressed. A number of the assurances (identified in bold typeface) need minor adjustment or additional information.

Assurance (a): Achieving Equity in Teacher Distribution

Indicator (a)(1) Indicator (a)(2)

Assurance (b): Improving Collection and Use of Data

Indicator (b)(1.1) Indicator (b)(1.2)

Indicator (b)(1.3) Indicator (b)(1.5)

Indicator (b)(1.6)

Assurance (c): Standards and Assessments

Indicator (c)(1) Indicator (c)(2)

Indicator (c)(3) **Indicator (c)(4)**

Indicator (c)(5) **Indicator (c)(6)**

Indicator (c)(7) Indicator (c)(8)

Indicator (c)(9) **Indicator (c)(10)**

Indicator (c)(11) **Indicator (c)(12)**

Assurance (d): Supporting Struggling Schools

Indicator (d)(1) Indicator (d)(2)

Descriptor (d)(1)	Indicator (d)(3)
Indicator (d)(5)	Indicator (d)(7)
Indicator (d)(8)	Indicator (d)(9)
Indicator (d)(10)	

2.2.2 Considerations

The following indicators have minimal adjustments or additional information required to provide the appropriate evidence for inclusion as feasible assurances. The author has identified the indicator and the suggested remedy to improve the indicator for acceptance. As always, a knowledgeable ADE staff member should review the evidence to insure compliance with the indicator or descriptor.

Indicator (c)(3)	This indicator has an error in the web link. The corrected web link (from Larry Lindain in the ADE IT Program is https://www.azed.gov/ess/AltAssessment/AIMSA/forms/EligibilityDeterminationForm.pdf When reviewed, the author identified a document that was produced in August, 2009 with a comment “Coming Soon”. This link needs to be verified and correct information provided.
Indicator (c)(4)	This indicator needs to have a more descriptive definition to locate the corresponding web site. When reviewed, the author was directed to a web site http://www.azed.gov/standards/ that listed 21 documents. A clarifying path to the appropriate document is needed.
Indicator (c)(6)	This indicator needs to have a more descriptive definition to locate the corresponding web site. When reviewed, the author was directed to a web site http://www.azed.gov/standards/aims/technicallegal that did not identify the location for the data. A clarifying path to the appropriate document is needed.
Indicator (c)(10)	This indicator is not complete. In the indicator it was requested that not only the percentage of the graduation rate be identified, but also the numerator and denominator for the data. This information needs to be identified and placed on a web site that can be accessed.
Indicator (c)(11)	This indicator is not addressed. The state has indicated that it will develop but not implement the means to collect and publically report the data (i.e., the state will not collect and publically report the data). If there is a statutory reason for not collecting and reporting the data, please identify the statute.
Indicator (c)(12)	This indicator is not addressed. The state has indicated that it will develop but not implement the means to collect and publically report the data (i.e., the state will not collect and publically report the data). If there is a statutory reason for not collecting and reporting the data, please identify the statute.
Indicator (d)(9)	This indicator needs to have a more descriptive definition to locate the corresponding web site. When reviewed, the author was directed to a web site http://www.ade.state.az.us/researchpolicy/AIMSResults/ that did not include “AIMS Gains for Charters” link. A clarifying path to the appropriate document is needed.
Indicator (d)(10)	This indicator needs to have a more descriptive definition to locate the corresponding web site. When reviewed, the author was directed to a web site http://www.ade.state.az.us/researchpolicy/AIMSResults/ that did not include

the “AIMS Gains for Charters” link. A clarifying path to the appropriate document is needed.

2.3 List of plan assurances that are not feasible with rationale: Deliverable 1.2

2.3.1 Assurances

The following indicators and descriptors need to have work plans either developed or revised and then implemented. Once they are implemented and there is evidence addressing the indicators and descriptors, a knowledgeable ADE staff member should review the evidence to insure that it is correctly answering the indicator or descriptor.

Assurance (a): Achieving Equity in Teacher Distribution

Descriptor (a)(1)	Need to revise and implement new work plan.
Indicator (a)(3)	Need to revise and implement new work plan
Indicator (a)(4)	Need to revise and implement new work plan
Indicator (a)(5)	Need to revise and implement new work plan
Descriptor (a)(2)	Need to revise and implement new work plan
Indicator (a)(6)	Need to revise and implement new work plan
Indicator (a)(7)	Need to revise and implement new work plan

Assurance (b): Improving Collection and Use of Data

Indicator (b)(1.4)	The data is collected, but not easily accessible
Indicator (b)(1.7)	The data is collected, but not easily accessible
Indicator (b)(1.8)	Need to revise and implement new work plan
Indicator (b)(1.9)	Need to revise and implement new work plan
Indicator (b)(1.10)	Need to revise and implement new work plan
Indicator (b)(1.11)	Need to revise and implement new work plan
Indicator (b)(1.12)	Need to revise and implement new work plan
Indicator (b)(2)	Need to revise and implement new work plan
Indicator (b)(3)	Need to revise and implement new work plan

Assurance (c): Standards and Assessments

No indicators listed

Assurance (d): Supporting Struggling Schools

Indicator (d)(4)	Need to revise and implement new work plan
Indicator (d)(6)	Need to revise and implement new work plan
Indicator (d)(11)	Need to revise and implement new work plan
Indicator (d)(12)	Need to revise and implement new work plan

2.3.2 Considerations

The completion of obtaining evidence for each indicator and descriptor is acknowledged through a work plan that is located in the SFSF Phase II Application. In the segment 2.5.1 Work Plans, the page location of the work plan and the specific indicators or descriptors that are included in the work plan are identified. These work plans need to be revised to indicate a new timeline and activities.

2.4 List of viable work plans that are completed: Deliverable 2.1

2.4.1 Work Plans

The work plans that are identified to address the indicators and descriptors will be complete when the work plans are developed or revised and then implemented. All the work is capable of being completed with appropriate resources and priority setting.

2.5 List of work plans that are not completed or not viable with rationale: Deliverable 2.2

2.5.1 Work Plans

Following is a list of the work plans (WP) and their specific location in the SFSF Phase II Application. Each work plan has listed the indicators and descriptors that are to be addressed. Since these work plans may be outdated or no longer feasible, the author has made some considerations to address the work plans. These considerations can be found in 2.5.2.

WP 1 (Page 54): Work plan to address Descriptor (a)(1); Indicators (a)(3), (a)(4), and (a)(5)

WP 2 (Page 55): Work plan to address Descriptor (a)(2); Indicators (a)(6), and (a)(7)

WP 3 (no page): Develop plan to address Indicator (b)(1.4)

WP 4 (no page): Develop plan to address Indicator (b)(1.7)

WP 5 (Page 61): Work plan to address Indicators (b)(1.8), (b)(1.9), and (b)(1.10)

WP 6 (Page 62): Work plan to address Indicators (b)(1.11) and (b)(1.12)

WP 7 (Page 63): Work plan to address Indicator (b)(2)

WP 8 (Page 64): Work plan to address Indicator (b)(3)

WP 9 (Page 56): Work plan to address Indicator (d)(4)

WP 10 (Page 57): Work plan to address Indicator (d)(6)

WP 11 (Page 58): Work plan to address Indicators (d)(11) and (d)(12)

2.5.2 Considerations

In this segment, each WP (work plan) will be addressed with the needed changes. The author is not able to place timelines or deadlines on the work plans as the priorities and work assignment is the responsibility of the appropriate ADE staff and partners. The author will make suggestions as to next steps that could be utilized.

WP 1 (Page 54) The teacher survey has been developed, distributed, and returned. There is a need to analyze the survey responses and prepare the data for dissemination and reporting. Missing information may require a second survey to capture the data.

WP 2 (Page 55) The principal survey has been developed, distributed, and returned. There is a need to analyze the survey responses and prepare the data for dissemination and reporting. Missing information may require a second survey to capture the data.

WP 3 (no page) Larry Lindain in an email to the author (Appendix 7), submitted information that was to provide evidence for this higher education transfer indicator, but the author could not identify the appropriate evidence.

- WP 4 (no page) The data for this indicator is available through Dr. Robert Franciosi. In an email dated January 20, 2011 (Appendix 8). Dr. Franciosi indicated that the data is available, but currently requires the local school personnel to match student identification numbers for those who were in attendance that day and those who took the test. Larry Lindain provided the author with an email (Appendix 7) with information that was to provide evidence for this indicator, but the author could not identify the appropriate evidence.
- WP 5 (Page 61) These work plans were based on receiving student longitudinal data system (SLDS) grant funding. This grant was not funded. There is a need to reset the timelines so these indicators can be addressed in a timely manner. Utilization of information obtained through the pilot project should be of benefit to Indicators (b)(1.8) and (b)(1.9), and (b)(1.10).
- WP 6 (Page 62) These work plans were based on receiving SLDS grant funding. This grant was not funded. There is a need to reset the timelines so these indicators can be addressed in a timely manner. Additional work on Indicators (b)(1.11) and (b)(1.12) needs to be developed in partnership with post secondary institutions.
- WP 7 (Page 63) This work plan will require resetting the timelines and implementing the statistical component of the Colorado Growth Model. Discussions need to be held to determine if the Colorado Growth Model is still the model to be employed.
- WP 8 (Page 64) This work plan will require resetting the timelines and implementing the statistical component of the Colorado Growth Model. Discussions need to be held to determine if the Colorado Growth Model is still the model to be employed.
- WP 9 (Page 56) This work plan needs to be reviewed with the appropriate ADE staff to determine the data to be collected and the timelines to be established.
- WP 10 (Page 57) This work plan needs to be reviewed with the appropriate ADE staff to determine the data to be collected and the timelines to be established.
- WP 11 (Page 58) This work plan needs to be reviewed with the appropriate representatives from the Arizona Board for Charter Schools to determine the data to be collected and the timelines to be established.

2.6 Recommendations to address the work plans that are not viable: Deliverable 3

2.6.1 Work Plans

All work plans when modified need to be reviewed to insure that they can be completed in a timely manner and would address the indicators and descriptors to insure that they are feasible.

3.0 Section Two: Review of ADE IT Program

3.1 Overview

3.1.1 General Statement

The second part of the project was to review the existing data systems within the ADE to determine if they are commensurate with current and future customer and state needs. The ADE IT Program provides a variety of support for the ADE as well as maintenance of over eighty different data bases. The Student Accountability and Information System (SAIS) is the data base that is maintained to be used primarily for school funding and school and student performance reporting. SAIS was originally designed for student accounting for the disbursement of funds and has expanded over the years to collect data on a variety of metrics based on changes in the state and federal education legislation.

The report focuses on the staffing of the IT Program and the SAIS data base. To capture data for this report the author reviewed documents, interviewed IT Program staff members, interviewed representatives from other governmental agencies, post secondary institutions, foundations, charter schools, K-12 public schools, and senior staff of the ADE. Following is a summary of the external interviews, document review, program operations, and IT Program staff interviews. Finally, the last section is a list of considerations offered for improvement of the IT Program

The considerations are offered to the new leadership at the ADE and the ADE IT Program. Since this project began there have been changes in the leadership at both the Arizona Department of Education and the Information Technology Program. The comments found in this report are based on individuals' past experiences of the work and products from the IT Program prior to January 1, 2011. It is the intent of this report not to place blame or judgment of past leadership teams, but to offer these considerations in good faith for improvement to SAIS and for future developments.

3.1.2 Instrument

The instruments that were used can be found in Appendices 9, 10 and 11. The questions were asked verbally and the responses taken down in note form by the author. The questions were designed to capture information on the problems or concerns identified with the collection of student data, potential improvements in the program, what characteristics would be identified in an ideal Student Longitudinal Data System (SLDS), benefits of a SLDS linking k-12 schools and institutions of higher education, and past problems trying to move data between K-12 schools and higher education.

3.2 Interviews

3.2.1 Interviews with K-12 Educational Representatives

3.2.1.1 Summary

The comments of the personnel with knowledge of the operation of the public schools are of particular importance for the IT Program and specifically for the SAIS. The information that is gathered from these individuals provides a unique viewpoint and observations that are critical to the data that is collected. The author interviewed personnel from four diverse school districts, one educational service agency, and two educational associations.

The institutions that were visited and the individuals who were interviewed were:

Deer Valley Unified School District
Jim Migliorino, Associate Superintendent

Dysart Unified School District
Scott Thompson, Executive Director, Business Services

Heber-Overgaard Unified School District
Ken Van Winkle, Superintendent (via teleconference)

Safford Unified School District
Mark Tregaskes, Superintendent (via teleconference)

Maricopa County Educational Service Agency
Kristine Morris, Chief Deputy Superintendent
Mia McNulty
Lori Renfro
Laurie King
Marc Kuffner

Arizona Association of School Business Officials
Chuck Essigs, Director of Government Relations

Arizona School Administrators
Debra Duvall, Executive Director

3.2.1.2 Interview Comments

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 12. The summarized comments provide interesting diversity that one would expect from various districts and educational representatives with different enrollments and different needs from the state. Even with this diversity there were some consistent comments regarding SAIS. There seemed to be common concerns regarding the SAIS system. These included too much down time, minimal communications and training, lack of leadership at the ADE, timely delivery of data, and the lack of trust in the system.

In response to the question on the characteristics of an ideal system, the districts indicated that a simple, easy to use system with the ability to add and edit data online, to access reports when needed, and better communications and training would be expected. In addition there were several comments on the need to investigate one system that schools could use to aggregate data to the state. In the area of training and support, several of the interviewees indicated that they would like to see the **STARS** support team be re-established to provide training and information to the school personnel.

3.2.2 Interviews with Charter School Representatives

3.2.2.1 Summary

Due the unique nature of educational legislation in the State of Arizona for the significant number of charter schools, the author interviewed individuals with both governmental oversight of the charter schools and administrative support services.

The organizations that were visited and the individuals who were interviewed were:

Arizona Charter Schools Association
Rebecca Gau, Vice President, Research and School Quality
Eileen B. Sigmund, Chief Executive Officer
Arizona State Board for Charter Schools
Deanna Rowe, Executive Director

3.2.2.2 Interview Comments

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 13. A major concern that was expressed by the charter school representatives was the need for accurate student data on a real time basis and the inability of the system to process the data for funding of the charter schools in a timely manner. There were also concerns raised that the ability to look at student data, even demographic data, is sometimes not available.

When asked what an ideal system would include, respondents indicated that the system should provide timely, accurate data, be easy to use, and be readily available for decision making purposes. The number of charter districts in the state is 378 and these charter holders operate a total of 505 schools in the state. This is a sizeable number of institutions that need accurate data for their continued operation.

3.2.3 Interviews with Post Secondary Representatives

3.2.3.1 Summary

There are two major groups of higher education institutions in the state. The three public universities, Northern Arizona University, Arizona State University, and the University of Arizona, are all under the authority of the Arizona Board of Regents. In addition there are ten community colleges, with each having their own boards of directors. Individuals from the K-12 schools as well as those from the institutions of higher education all understand the importance of the need for a streamlined process to move student data between the K-12 environment and the institutions of higher education. The development of the Governor's P-20 Council is an indication of the importance of making sure that not only is a student longitudinal data system developed and maintained, but also that work supporting the concepts for the Great Teachers Great Leaders, Supporting Struggling Schools, and Standards and Assessments initiatives is maintained for the total education of Arizona students.

Individuals from both community colleges and the university setting were interviewed. These included the following:

Maricopa Community College

Kim Granio, Director Financial Service and Controller, Business Services

Gaye Murphy, Associate Vice Chancellor, Business Services

Andrea Buehman, Executive Director of Academic Affairs & Partnerships (via teleconference)

Elizabeth Hunt Larson, Director of Research, Planning, and Development (via teleconference)

Northern Arizona University

Christy Farley, Vice President of Government Affairs and Business Partnerships
Arizona State University
Angel Jannasch-Pennell, Assistant Vice President, University Technology Office
Samuel DiGangi, Associate Vice President, University Technology Office
Yavapai College
James Horton, President (via teleconference)
Arizona Board of Regents
Dan Anderson, Assistant Vice President for Institutional Analysis (via teleconference)

3.2.3.2 Interview Comments

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 14. There was a wide variance of needs expressed from this group. Due to the size, mission, and direction of the individual institutions, the respondents had differing views of the concerns and utilization of data from a student longitudinal data base. Obviously, these institutions are not funded in the same manner as the K-12 schools or the charter schools, so they do not have the reliance on the SAIS system for determining their funding. There appeared to be significant lack of communications between these institutions and the ADE and K-12 schools, a lack of understanding as to how the data is collected, and what data would be the most beneficial. Almost all respondents indicated that if data could be shared more readily between K-12 and higher education, the student would benefit. While the community colleges use their own placement tests for entering freshman, the individuals from the community colleges indicated that the information gained through these placement tests would be valuable information for the improvement of high school curriculum and instruction. There was agreement from all respondents that the better access to student data would provide a more comprehensive educational support for the student. With data flowing both ways, the institutions of higher education would be better able to support the educational and social needs of the students and the high schools would be better able to expand educational offerings and modify instructional methods to provide a smoother transition into higher education.

3.2.4 Interviews with Arizona Foundations Representatives

3.2.4.1 Summary

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 15. From the four groups that the author met with it was readily evident that education is important for many individuals in the state as indicated by the significant educational support by foundations and the business community. As indicated by the individuals who were interviewed, the need for a good education system is paramount for the maintenance of a strong business community and economic growth.

Individuals from the four groups who were interviewed included the following:

Helios Educational Foundation
Paul Luna, President and CEO
Expect More Arizona
Nicole Magnuson, Executive Director

Intel Corporation

Cathleen Barton, US/SW Region Education Manager

Rodel Foundation

Carol Peck, Executive Director

3.2.4.2 Interview Comments

The respondents indicated that without an educated work force, Arizona business would be at a disadvantage when competing with other states. The respondents were knowledgeable about the student data needs and were in agreement that the plan for a better student longitudinal data system needs to happen. They understand that the current system is old and is not providing the information needed by the stakeholders. When asked about the greatest concerns with the data programs they commented on the challenges that the state is facing financially and they look for greater collaboration and the development of a common vision to move the data system forward. When asked about the characteristics of an ideal system the comments included the need to look for a state-wide formative assessment program and the ideal system should be able to provide the stakeholders with the information needed to provide better knowledge of the status of education in the state.

3.2.5 Interviews with Educational Advocates

3.2.5.1 Summary

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 16. The educational advocates represent a group of organizations that provide initiatives and support to the schools. While not associated with large corporations or foundations, they provide a meaningful way to support and influence the K-12 educational system. The three groups that the author met with, all with different missions, understand the need for greater information that could be ascertained from a comprehensive student data base system.

Individuals from the three organizations that the author met with include the following:

Stand for Children

Katy Cavanagh, Arizona Executive Director

Teach for America

Quanna Cameron, Senior Managing Director of Program

Greater Phoenix Leadership

Jim Zaharis, Vice President / Education

3.2.5.2 Interview Comments

The respondents indicated a strong need for a data system to be developed as there is information from a well designed system that would be useful for their organizations to further their missions. They believed, as most groups did, that the data needs to be timely, accurate, easy to interpret, and developed collaboratively. The ideal system would include extensive training, feedback loops, contemporary communication avenues, and be able to provide information on teacher and principal performance. As stakeholders, outside of the K-12 environment, they understand the need for

network security and student privacy, but believe that the aggregated data that would be available would greatly enhance their own knowledge and information bases.

3.2.6 Interviews with State Officials

3.2.6.1 Summary

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 17. These individuals represent the internal customers and stakeholders of the information gathered and distributed by the IT Program. The information that is available through the SAIS system is used by the ADE School Finance Program for disbursement of funds for both K-12 schools and charter schools and the Research and Development Program at the ADE for establishing the annual yearly progress (AYP) status of schools and school districts. Both of these programs require timely, accurate information from the SAIS program. The other Arizona stakeholders the author met with require data and information for planning, reporting, and oversight.

Individuals from state government with whom the author met include the following:

Arizona State Board of Education

Vince Yanez, Executive Director

Arizona Senate

Rich Crandall, Senator

Arizona House of Representatives

Dawn Wallace, Policy Advisor to the Majority

Arizona Office of Strategic Planning and Budgeting

Lyle Friesen, Budget Analyst

Arizona Attorney General Office

Margaret Dugan (via teleconference)

Arizona Governor's Office

Deb Raeder, Executive Director, Governor's P-20 Coordinating Council

Karla Phillips, Education Policy Advisor

Arizona Department of Education

Robert Francioso, Deputy Associate Superintendent, Research and Evaluation

Mark Masterson, Chief Information Officer

Yousef Awwad, Director of School Finance

3.2.6.2 Interview Comments

The respondents indicated that the SAIS program was designed for one thing, a funding system, and then it has been asked to do many other functions and is now "broke". Respondents also stated that the business rules have become too complex, even though the rules are written to reflect the changes in the legislation. There was general agreement that the SAIS program has been patched over and over and is too piecemeal with too many layers of programming code and it should be re-written with the basic parts that still work salvaged and the rest redone. When asked what the components of an ideal system would be, many of the responses were similar to what had been mentioned before by other groups. Namely, timely, accurate information; accessible to all users; reports that are easy to

open and readily available; student information protected, but accessible to appropriate parties; link teachers and students; and, easily updateable.

3.3 Review of Documentation

The following documents were major documents that were reviewed to provide background information for the report. Copies of these documents are found in the Appendix 18.

3.3.1 Review of House Bill 2733

House Bill 2733 (Appendix 18.1) provides for the establishment, under the Arizona Department of Education of a Data Governance Commission with specific responsibilities in the area of data and technology. This document provides baseline information on the past attempts by the state legislature to move the implementation of a student data base system forward.

3.3.2 2006-07 Report from the Arizona Auditor General

On August 17, 2006, the Office of the Arizona Auditor General (Appendix 18.2) submitted a performance audit of the Arizona Department of Education Information Technology function to the Arizona Legislature. In this report the Auditor General identified five findings that needed to be addressed. These five were:

- ADE needs to better manage security of its information and technology systems and operations
- ADE can further enhance SAIS reliability
- ADE needs to improve IT project management and operation oversight
- ADE needs to insure that its information technology meets its business needs
- ADE not in full compliance with student-level data collection notification and disposal requirements

The relevance of this performance audit to this report is validation that the problems that were expressed during the interviews have been identified in the past. While it can be assumed that these concerns were addressed, the problems either have resurfaced or other concerns have become observable to the users and stakeholders. Either way the perception is that the IT Program, in general, and the SAIS system, in particular, has been problematic for a number of years.

3.3.3 Review of Race to the Top Narrative

Section (C) Data Systems to Support Instruction in The Race to The Top application submitted by the state in June, 2010 (Appendix 18.3), provides a synopsis of what is expected for a state-wide student longitudinal data system. The narrative identifies the key components including implementation of the data system, processes to address the twelve core elements of the America Competes Act, plans for accessing and using state data, two goals to address the ability to enhance data quality, access and utility, and using data to improve instruction. This narrative certainly can serve as a blueprint for the continued development of the student longitudinal data system

3.3.4 Colorado Growth Model

While there was no mention of the Colorado Growth Model (CGM) in the Race to The Top narrative, the Colorado Growth Model was identified as the model to be contemplated throughout

the State Fiscal Stabilization Fund Phase II Application. The intent, as identified in the SFSF, was to modify the CGM to align with the specific needs of the Arizona schools in reporting student progress. From the Colorado Department of Education web site:

“The Colorado Growth Model provides a common understanding of how individual students and groups of students progress from year to year toward state standards based on where each individual student begins. The model focuses attention on maximizing student progress over time and reveals where, and among which students, the strongest growth is happening and where it is not.

The Colorado Growth Model shines a spotlight on the state’s most effective schools and districts—those that produce the highest sustained rates of growth in student progress. These schools and districts may or may not be districts or schools with the highest test scores every year.

Colorado developed the model to answer three essential questions about student, school and district performance.

- What is the growth rate of a student, a school and a district?
- What should be the growth rate for a student to reach a desired level of achievement within a period of time?
- What are the highest sustained growth rates that exist today and under what conditions could they improve?

To answer these questions, the Colorado Growth Model uses a common measure to describe how much growth each student makes and how much growth is needed to reach state standards. In doing so, it provides a complete history of all students’ individual-level test scores from the Colorado Student Assessment Program (CSAP). The model depicts academic growth in a user-friendly and interactive display that relates normative information about student progress toward the criteria of reaching different state proficiency levels.”

There has been discussion in the ADE about what indicator to use to report on student and progress. There needs to be decisions made to identify the one model that will be used to illustrate these performance growths.

3.3.5 Data Quality Campaign 10 Essential Elements of a State Longitudinal Data System

The non-profit Data Quality Campaign (DQC) has established a well received list of ten elements that should be included in all state student longitudinal data systems entitled, “Data Quality Campaign 10 Essential Elements of a State Longitudinal Data System” (Appendix 18.4). These elements were used as models in developing the SFSF twelve core elements. In addition to the ten essential elements, the Data Quality Campaign distributes a document entitled, “10 State Actions to Ensure Effective Data Use”(Appendix 18.5). This is a complimentary document that provides direction for states wishing to develop the state-wide student data base system.

Also brought to the attention of the author was an article published by the National Center for Higher Education Management Systems and the States Higher Education Executive Officers. Entitled, “The Ideal State Postsecondary Data System 15 Essential Characteristics and Required Functionality” (Appendix 18.6). This article promotes fifteen elements, similar to the ten elements

from DQC, but designed for higher education. Both the National Center for Higher Education Management Systems and the States Higher Education Executive Officers have significant information on the implementation of student data bases for higher education.

3.3.6 Additional Documents

In addition to the previously mentioned documents, the authored reviewed the following:

- Lumina Foundation Focus, Spring 2010 (Appendix 18.7)
- Overview of ASSIST (The Arizona State System for Information on Student Transfer), Draft 09-08-09 (Appendix 18.8)
- SAIS Redevelopment Project 2010: Strategy and Business Plan, October 25, 2010 (Appendix 18.9)
- RFP Development to Assess the Arizona Systems for Statewide Education Data Collection, Submitted by Gartner Consulting, July 9, 2010 (never acted upon) (Appendix 18.10)
- Arizona's Education Reform Plan, Office of Governor Janice K. Brewer, January 18, 2011 (Appendix 18.11)

4.0 Review of Program Operations

4.1 Leadership

The staff of the IT Division is skilled and intelligent, they know what to do to complete their assignments, and they are motivated and loyal to the management. However, during the interviews it became apparent that they are also very self directed. While on the surface this may appear to be a positive component in a work force, it is often a detriment to the work to be accomplished. Since they are so focused on getting their own work completed, they may not be working on the program priorities. The lack of a common mission or vision that is understood by all staff is part of the problem with staff being self directed. Not knowing what the program's expectations are and not having work aligned to the goals allows staff the luxury of working on their own initiatives to produce the work that they believe is needed. The role of a leader is to provide the vision and develop common goals that all staff can "buy into". Without this alignment the work becomes misdirected, communications are not focused, and priorities are not understood while individual agendas are produced.

4.2 Communications

Communication is an important component within any organization. The communication avenues include internal communications within the division, between the division personnel and senior management, with other programs of the ADE, with local school personnel, and with policy makers.

A major communications fault is the lack of communications with the local school personnel. During the interviews many individuals expressed a lack of communications with IT personnel except when they call in for assistance. The communications topics that were indicated the most were assistance with inputting the data, error correction, and training assistance. They were complimentary of the assistance they receive through the SAIS help desk, but felt that, in general, they are not treated as customers. A better approach would be to look upon the local school personnel as a partner in getting the data inputted correctly into the system through better training and communicating with them in the collection of the data. Additional training opportunities should be investigated and will be identified later in the report.

There were a number of comments from IT staff about the lack of communications within the program. Some staff feels isolated in that they know what is expected of them with their individual work assignments, but they are not aware of the bigger picture. This is another symptom of the former management style that existed in the division. Some staff seemed to be okay with not being informed, but others want to take a more active role in assisting by being informed of the vision, strategic initiatives, and progress toward these initiatives.

There were comments that indicated that the IT Program was unresponsive to ideas and to the work requests of other program supervisors. Some of this concern may have been the result of the past leadership style within the program as most of the information was funneled through one individual. Again, meaningful dialogue with the program personnel within the ADE would provide a better understanding of the role of IT as related to the collection and distribution of the data. A more

collaborative environment and a sharing of ideas, goals, and project status among the ADE program supervisors would be of great benefit to the IT Program and its mission.

4.3 Hardware and Software

The IT Program is responsible for the infrastructure of the technology for the ADE. A major component of that service is to insure that the technology that is available to the bureaus is in proper working condition. This includes the maintenance of the computer network, e-mail, and access to the Internet, printers, and computers. The actual network hardware is housed at a central location within the capitol complex. Some of the network hardware and software that is utilized by the IT Program is of an older generation and is no longer supported. This concern needs to be rectified. During the interviews with the IT staff, they indicated that most of their desktop equipment is adequate to meet the daily requirements of the positions.

In addition, there were numerous comments made by the IT program staff that replacement and expansion of the network storage and backup needed to be considered. Also two comments were made for an additional work environment that could be established for the developers. This environment would allow developmental work to proceed without impacting the inputting of data or the production of the system.

5.0 Review of IT Staffing

5.1 Staff Interviews

5.1.1 Summary

The staff of the IT Program represents a dedicated group of employees. They work diligently to collect, analyze, and report data for required and requested projects and to insure that the infrastructure to support the ADE is operating well.

Professional development and staff training activities are sacrificed as there is not enough time to complete the work assignment and take on the increased work load for training. Most new knowledge acquisition is accomplished on off hours by the individual. The staff members do not have the time scheduled to be trained in the new software, communications, and team building.

In December, 2010 the author interviewed twelve staff members. Most of the interviews were face-to-face, but one interview was completed over the telephone due to scheduling conflicts. The interviews with the staff provide a unique viewpoint of the operations and culture that exist within the program. The individuals who were interviewed were candid in their responses. Their enthusiasm and support for the IT Program and the ADE were evident.

5.1.2 Instrument

The instrument that was used can be found in Appendix 19. The questions were asked verbally and the responses taken down in note form by the author. The questions were designed to capture information on the program challenges, supervision and direction, staffing, hardware and software to complete the assignments, improvements that could be made to the system, and the critical features of an ideal system.

5.1.3 Interview Comments

In order to maintain anonymity of the responses the author aggregated the responses and then prepared a summary of the comments. The responses can be found in Appendix 20. The results of these interviews indicate staff members who are skilled technically and are aware of the pressures that exist in the ADE and the IT Program. They also understand the challenges that are facing the IT Program as they hear the concerns from the customers and are willing to address these challenges.

A majority of the staff recognizes the need for additional training, stronger leadership, enhanced customer service, and better communications. They also recognize that they are mostly self directed in their work and they know what needs to be done. However, this may lend itself to a lack of teamwork, communications, and miss direction toward the program priorities. The staff felt that the current hardware that they use is sufficient to complete their assignments, but there were some comments made about the need for network storage and backup. When asked for the characteristics of an ideal system the most submitted response was for a “sandbox” for development work, increased availability for the system, minimal downtime, schools could upload, edit and pull reports online, instant verification and integrity checks, and a centralized system.

5.2 Current Organization Model

5.2.1 Summary

The author has been informed that since the new leadership team has been in place, beginning January 3, 2011, that there have been changes in the organizational structure. The organizational model that was had been used in the IT Program was a typical business hierarchy with the CIO at the top of the organization chart and four managers reporting to him (Appendix 2). The managers were responsible for the operations of the four units. With minimal strategic discussions and priority setting, it was difficult for the managers to work as a team. Added to this autonomy is the fact that there is limited time and the staff are proficient at their unique positions and “know what to do”, which resulted in much self-directed work. This also may link to the fact that there was minimal team work, cross training, or work between staff members.

Without strategic leadership, the management team in the IT Program had a limited vision as to the direction for their individual departments as there was a lack of leadership to move the program forward. At the staff level, there appeared to be minimal recognition of the global view of the strategic initiatives other than the most pressing, short range tactical goals. The communications, both vertical and horizontal, seemed to be based on the work at hand. This lack of connection and interaction within the IT Program and the inability to deliver a workable student data system required some bureaus to develop their own data systems and procedures to get their work accomplished.

5.3 Staffing Needs

5.3.1 Summary

In an attempt to determine what positions would be the most beneficial to the division, staff members were asked to identify positions that should be increased if funding were available. Of particular need at the present time would be to employ an addition person for support and additional developers. However, in light of the current financial situation within Arizona state government, a close review of individual job responsibilities and a review of the current needs may lead to a realignment of some responsibilities to address those needs.

Other scenarios for staffing needs could include maintaining some contract staff for specific services, and to utilize technology to enhance the services for which the staff are responsible. One example would be having computers pre-loaded with the correct software by either the vendor selling the computer or through a third party. Another example would be the additional use of web-based, help desk support using better FAQs or flash technology to assist in alleviating routine questions and technical support. Activities such as this relieve the IT staff from routine, mechanical activities and would allow them to focus on customer service and greater problem solving activities.

The ability of outside contractors to focus on specific activities and the utilization of skills that are currently not available within the existing staff, makes continuing to contract with outside consultants a viable option. However, in order to continue to meet the requirements of a changing environment, the IT Program should be constantly reviewing and investigating potential innovative employment concepts to meet the increasing challenges that will impact their services.

6.0 Considerations

6.1 Summary

The five major recommendations identified in this section are designed to assist the staff of the ADE IT Program in building capacity and improving services through recognizing the needs of both internal and external customers, improvement of the systems used to collect and distribute student data and educational information, enhancing communications, and, initiating contemporary training and professional development opportunities. These recommendations are made based on the information that was reviewed by the author, the interviews and discussions conducted, and the author's past experiences. Each recommendation should be considered and then the Superintendent of Public Instruction should determine the feasibility of the recommendation. The Superintendent should investigate other potential areas of improvement that may exist at the present time or that will surface once modifications are in place.

6.2 Considerations

6.2.1 Consideration 1: SAIS

6.2.1.1 Consideration 1: SAIS

The IT program, with the assistance of other programs in ADE, need to either rebuild SAIS, design an RFP to purchase a replacement for SAIS, or provide a combination of revision and purchase modules for SAIS.

6.2.1.2 Rationale

Based on the input from individuals interviewed and review of the documents, the major concern of the IT Program is their inability to support and implement a contemporary student data base through SAIS. The comments from the interviews ranged from "throw the system out" to "SAIS was never designed to do what it is being asked to do". There was no one interviewed who felt that the current SAIS program was meeting the needs of the state or the schools. Both internal and external customers believe that the system is no longer viable.

The comments indicated that the trouble with SAIS was in three major areas: inaccurate information; system downtime; and, communications. The inaccurate data concern was expressed by the users of the system at the local schools. They indicated that data that they had put in during the school year and was accepted at the time, but was returned later as inaccurate. They seemed to understand the concept of integrity checking of the data, but were frustrated that the data once in the system would come back, with errors, months later. This was just one example of the frustration identified by the customer regarding the input of the data.

As frustrating as inaccurate information, was the amount of time the system was down, especially at critical times of the year or month. Current leadership in the ADE IT Program is addressing this issue, but for the past number of years, this has been a problem and has certainly sustained a negative perception of the ability of SAIS to deliver quality data. The need to have a system that will address the complexities of the Arizona educational legislation, meet the funding requirements of charter schools, and provide quality demographic and performance data with the ability to reference significant inter-relations of the data is important. Paramount to the data is the assurance that the

appropriate student information be kept private and that the data can be reported to parents, professionals, researchers, and stakeholders in a meaningful manner.

The comments on communications seemed to reside two areas: process information and program information. System information is that information that should be sent out by the IT Program regarding the SAIS activities. Those interviewed indicated that there is seldom any warning when the system goes down and that they do not always know how long it will be down or when they can begin utilizing the system again. They indicate that there is minimal communication to the user and the user has to seek out information on their own. Program information is considered by the user as broader information that would allow them to do a better job of using the system. They indicate that there is little information as to the goals for the SAIS system and they are never asked for their input on the potential modifications that do affect their work. The lack of communications tied to the problems with the system perpetuates a negative perception of the IT Program.

When requested to provide input as to the characteristics in an ideal student data base system, those interviewed indicated that the system needs to be accurate, timely, able to input, edit, and report online, include a graphical interface, be available 24/7, easy to use, and have adequate training for the end user. There were also comments that an ideal system would either easily interface with the schools' systems, or the state would be able provide or be able to assist schools in purchasing a common school level system that would integrate with the state system.

6.2.2 Consideration 2: State Longitudinal Data System (SLDS)

6.2.2.1 Consideration 2: State Longitudinal Data System (SLDS)

The ADE IT Program needs to provide leadership for the development and implementation of a statewide student longitudinal data system (SLDS) that is based on a K-20 platform and meets the information needs of the stakeholders.

6.2.2.2 Rationale

The State Fiscal Stabilization Funding Phase II Application and contemporary models for student data base systems all use as a foundation including the concept of a student longitudinal data system (SLDS). An SLDS is a data system that collects and maintains detailed, high quality, student- and staff-level data that is linked across entities and over time, providing a complete academic and performance history for each student; and makes these data accessible through reporting and analysis tools. A SLDS is different from a student information system (SIS) or a student management system (SMS), both which are normally found at the school level. These terms are used interchangeably and are two of many acronyms and terms for a data system by which schools keep track of student demographics (address, birth date, gender, ethnicity, etc.), enrollment, and schedule information. It would be important that any SLDS used at the state level be able to upload data from individual school and district SIS automatically.

The development and implementation of the SLDS will take considerable time and will require the collaboration with other partners including the charter schools, higher education, and state agencies. The SLDS will be composed of a variety of modules that will require collaborative efforts with other groups. The initial component will be the data collection from K-12 public school and charter schools, and Joint Technological Education Districts (JTED). These entities provide the initial foundation demographic and performance data on students and information on teachers need to be

able to link students to teachers. Much of this information will be uploaded from SIS data in the schools and used by the SAIS program to generate funding information.

The second level of the SLDS will be the partnership with post secondary institutions. Using the student identifier, these institutions will upload from their data bases other information about the student and post secondary performance indicators. This will be maintained along with the historical information on the student in the SLDS. Electronic sharing of information including transcripts will be incorporated into the SLDS. Finally, with the assistance of the business community, the student will be tracked for a given number of years after ending his education through the use of the student identifier and employment data.

The development and implementation of the SLDS will require compromise and collaboration among the parties. The information gained from this system would have many uses and applications. Both the educational institutions and the business community would be able to use the data and information for decision making purposes. Along the way, the individual student's progress could be reviewed by parents, teachers, and administrators, while aggregated data would be available for stakeholders. A network of data systems that would be used to create the SLDS would be beneficial to the state.

6.2.3 Consideration 3: Communications

6.2.3.1 Consideration 3: Communications

The IT Division should establish a variety of internal and external communication techniques. This model would include methodologies for the delivery of both one-way and two-way messaging of written, verbal, face-to-face and electronic information.

6.2.3.2 Rationale

Communications is one of the major components of a contemporary organization. The establishment of excellent communication avenues with both internal staff and external customers is paramount to maintain quality customer relationships that should lead to program support. The responsibility for the development and enhancement of these communication avenues needs to be centered with one staff member within the program. That staff member, along with other ADE bureaus, should address both current and future communication concepts to institute an improved flow of information from the IT Program.

The recommendation for a central individual for communication is suggested as this allows one staff member to accept additional training in communication and provides a central location of the development of written and electronic messages. In addition, when the communications is centralized there is a more consistent "voice" to the communications.

Regularly scheduled communication exchanges between the supervisor and the individual staff member for the purpose of project review, questions, "big picture" discussions, and learning opportunities should be considered. These are not performance reviews, but an opportunity for dialogue about program and work unit activities.

The use of traditional methods of communication should be explored, as well as electronic forms of communication, enhancement of internal web-based information, and threaded discussions. The use of face-to-face programs meeting times should be standardized so that all employees are provided similar opportunities for discussion and dialogue. Time at these meeting should be devoted to direct exchanges with the CIO and, possibly, other members of the program. Staff members need to have opportunities to be better informed of the strategic direction, project projections and timeline, critical information, normal daily information with the program, and provide input to these areas.

Another communication effort that needs to be addressed is the communications with the local school personnel. The local school personnel indicated a need for more assistance in inputting the data, awareness of new requirements, and an easier interface with the system. Some of their concerns cannot be addressed solely with increased communications; however, the rationale and progress reporting on how their concerns are being addressed could be communicated. In addition, the establishment of regional annual meetings should be considered with the opportunity to share ideas, concerns, and give direct input into the program. Finally, on-site visits would greatly enhance a positive attitude and provide much needed visibility between the local school personnel and the program. This would not have to be done on an annual basis, but a rotation schedule should be contemplated to insure that these visits take place.

6.2.4 Consideration 4: Training and Professional Development

6.2.4.1 Consideration 4: Training and Professional Development

The ADE IT Program needs to develop and implement training and professional development activities for staff members to support the integration software applications and to provide training on collaboration, communications, and team building.

6.2.4.2 Rationale

In a professional atmosphere such as technology, staff need to have additional training to take full advantage of new software programs and enhancements in emerging technologies. If staff are not provided the opportunity to learn, then skill sets deteriorate and motivation lags, and unnecessary time is spent with antiquated software and processes.

While the staff seems to be comfortable in performing their daily tasks, a minimal implementation of project management and problem solving skills would be encouraged. Basic project management knowledge would be helpful in reducing stress caused by timeline pressures, project conflicts, and potentially could improve program performance. The skill sets of staff members will need to be reviewed and monitored whenever new technologies are introduced into the program and new data collections and reporting responsibilities are added. Team building activities, sharing opportunities, and group dynamic, problem solving scenarios will all aid in building a better team environment.

The training that is provided should be result oriented and tied directly to the work that is to be accomplished. This training can be accomplished through both traditional training techniques such as group study, presentations, and classes as well as through more current methods such as on-line learning, electronic virtual classrooms, and electronic distance mentoring.

Another training area that needs to be addressed is cross training. The IT Program should proceed with a program to provide some cross training opportunities for certain staff members. Cross training does not have to include the entire staff at this time. A review of the critical functions of the program would reveal those activities and functions that are crucial, especially if they are functions that are performed by only one individual. These functions, if not performed appropriately, could cause unnecessary delays and consequences impacting the performance of many aspects of the ADE. The ability to have two or more people understand what is needed to be done in critical situations provides a backup system to insure that these actions are completed with integrity.

6.2.5 Consideration: Partnerships

6.2.5.1 Consideration 5: Partnerships

The ADE IT Program should establish collaborative relationships with a variety of institutions and associations to create a synergetic arena in which to develop a contemporary student longitudinal data system.

6.2.5.2 Rationale

During the interview visits the author noted a significant agreement among the parties that the concept of a student data system was not only well received, but many felt that it was the right time to establish this type of system. So strong were the comments about a system for student data that it appeared to be a “common will” that such a system is developed and implemented. Comments from diverse groups such as business partnerships to university technology personnel, all indicated a willingness to meet and continue the discussions. The advent of a new leadership team at the ADE and the ADE IT Program has re-ignited the desire to move the development of a comprehensive SLDS forward.

Since the bulk of the student data and the foundation of the SLDS will begin with the K-12 schools and the ADE, it should be the responsibility of the ADE to initiate the dialogue. The legislation which created the Data Governance Task Force is the logical starting place for this discussion. Care must be taken to include representatives from all aspects of the educational and business communities and to make sure that diversity based on size, type of learning environment (public, charter, online, JTED, college, and university), and location be considered. This coordinating group should provide the collaboration for the design, funding, and implementation of the SLDS.

Two other groups need to be considered. The first is a policy setting group that would provide a link to the legislature and would provide the policy direction for the SLDS. This group again needs to be composed of all stakeholders in the SLDS. The second collection of individual groups would consist of the users of the system. There would be a variety of user groups representing the actual personnel who work directly with the SLDS either inputting, managing, extracting, or using the data. There would be groups for the K-12 initiative, community colleges, universities, businesses, the legislature, parents, and other stakeholders.

The time is right for the development of the SLDS. The appropriate resources need to be expended to being this process and the current leadership at all levels need to come together to initiate the process and commit to seeing that it is accomplished.

6.2.6 Additional Considerations

6.2.6.1 Leadership

While the leadership in the IT Program in the recent past years has been recognized nationally as knowledgeable and visionary, there appears to have been a lack of alignment within the program. The management style of the prior leadership perhaps was independent and controlled. During the interviews many individuals commented on the lack of collaboration and the difficulty in working with other institutions. Also, there appears to have been a lack of alignment of purpose and mission in the program. However, with the change in leadership comes a new opportunity to illustrate a new management style. Since leadership challenges exist within almost all technology related program, a different management styles is needed to take the division forward over the next few years. In light of the need to correct the problems in the current SAIS program, create a SLDS package and develop the necessary collaborations, these challenges are made even greater. The leadership to move the IT Program forward, during these financially difficult times and with the pressures exerted from the legislature requires a person who is capable of not only striving for cooperation and providing a vision, but who must be able to build collaborative partnerships. The leader must be competent in team building, with a participatory management style, and able to work with others in the state to build synergy for the collection and distribution of the data, all the while motivating the staff.

6.2.6.2 Hardware and Software

There are two considerations that are being made regarding the hardware used in the IT Program. The first, and the author understands that this work is already underway, is the installation of a development environment that would allow for the developers to create and modify modules and for staff to run integrity checks for the SAIS program without bringing the program down. The second consideration would be a review of all the equipment and network software to determine which items are no longer being supported. Once this is determined, depending on the scope of these items, a timeline needs to be developed to initiate replacement of these items. This timeline may have to be waived should equipment that is mission critical to the program be out of support at the present time and may need to be replaced or modified immediately. Additional resources may have to be provided to insure continued operation of the critical operations of the program.

6.2.6.3 Legislation

The educational legislation in Arizona is perceptive and imaginative. It provides significant choice for parents of school age children and opens up opportunities for a variety of educational experiences. The ability to choose from a variety of learning sites including a traditional public school education or the unique experience in a charter schools or to take classes online is visionary. However, with this choice and flexibility comes significant complexity for those in the ADE who have the responsibility for collecting accurate student attendance data to determine what percentage of the child's time was spent in what learning environment and then how to reimburse the appropriate institution. A review of the current education legislation could be considered to seek ways to simplify the funding for these educational experiences. School business managers are astute at determining school finances and reimbursement scenarios and they might be called upon to assist in simplifying the process. The business rules that the ADE IT Program need to filter the data through should be simplified to expedite the payments to charter schools and to more accurately determine the funding support for the public schools.

6.2.6.4 Customer Responsiveness

The ADE IT Program should initiate a comprehensive plan to reassess its relationship to the individuals and programs that draw on both the data that is collected by the program and the data held by the customer. When referring to a customer in the public sector, the emphasis shifts more to their needs rather than the needs of the service entity. Customer service evokes a model that utilizes significant communications, services viewed from the point-of-view of the customer, gathering information on their needs, pilot projects with considerable feedback from the customer, and a philosophy that the customers' viewpoints must be considered and addressed.

Also of importance to both the internal and external customers is the development of processes that would allow the internal customer to more readily utilize the data that is imported from the SAIS program. There are too many instances of the individual bureaus having to rework or massage the data to utilize the data to meet their needs. Ongoing discussions and pilot projects with each individual ADE Program to determine how the data can be delivered to them in a more meaningful manner would greatly enhance the service to the internal customer. These individuals are knowledgeable of their data needs and their input would be of value to the project to obtain the best solution to their needs.