

**U.S. Department of Education**

Washington, D.C. 20202-5335



**APPLICATION FOR GRANTS  
UNDER THE**

**Statewide, Longitudinal Data Systems**

**CFDA # 84.372A**

**PR/Award # R372A120026**

**Grants.gov Tracking#: GRANT11026332**

OMB No. , Expiration Date:

Closing Date: Dec 15, 2011

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This application was generated using the PDF functionality. The PDF functionality automatically numbers the pages in this application. Some pages/sections of this application may contain 2 sets of page numbers, one set created by the applicant and the other set created by e-Application's PDF functionality. Page numbers created by the e-Application PDF functionality will be preceded by the letter e (for example, e1, e2, e3, etc.).

**Application for Federal Assistance SF-424**

|  |  |  |
|--|--|--|
| * 1. Type of Submission:<br><input type="checkbox"/> Preapplication<br><input checked="" type="checkbox"/> Application<br><input type="checkbox"/> Changed/Corrected Application | * 2. Type of Application:<br><input checked="" type="checkbox"/> New<br><input type="checkbox"/> Continuation<br><input type="checkbox"/> Revision | * If Revision, select appropriate letter(s):<br><input type="text"/><br>* Other (Specify):<br><input type="text"/> |
|--|--|--|

|  |  |
|--|--|
| * 3. Date Received:<br><input type="text" value="12/15/2011"/> | 4. Applicant Identifier:<br><input type="text"/> |
|--|--|

|  |   |
|--|---|
| 5a. Federal Entity Identifier:<br><input type="text"/> | 5b. Federal Award Identifier:<br><input type="text"/> |
|--|---|

**State Use Only:**

|   |   |
|---|---|
| 6. Date Received by State: <input type="text"/> | 7. State Application Identifier: <input type="text"/> |
|---|---|

**8. APPLICANT INFORMATION:**

\* a. Legal Name:

|  |   |
|--|---|
| * b. Employer/Taxpayer Identification Number (EIN/TIN):<br><input type="text" value="86-6004791"/> | * c. Organizational DUNS:<br><input type="text" value="8047460970000"/> |
|--|---|

**d. Address:**

\* Street1:   
Street2:   
\* City:   
County/Parish:   
\* State:   
Province:   
\* Country:   
\* Zip / Postal Code:

**e. Organizational Unit:**

|   |  |
|---|--|
| Department Name:<br><input type="text" value="Information Technology"/> | Division Name:<br><input type="text"/> |
|---|--|

**f. Name and contact information of person to be contacted on matters involving this application:**

Prefix:  \* First Name:   
Middle Name:   
\* Last Name:   
Suffix:

Title:

Organizational Affiliation:

|   |                                  |
|---|----------------------------------|
| * Telephone Number: <input type="text" value="602-542-3542"/> | Fax Number: <input type="text"/> |
|---|----------------------------------|

\* Email:

**Application for Federal Assistance SF-424**

**\* 9. Type of Applicant 1: Select Applicant Type:**

A: State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

\* Other (specify):

**\* 10. Name of Federal Agency:**

U.S. Department of Education

**11. Catalog of Federal Domestic Assistance Number:**

84.372

CFDA Title:

Statewide Data Systems

**\* 12. Funding Opportunity Number:**

ED-GRANTS-092011-001

\* Title:

Institute of Education Sciences (IES): Statewide, Longitudinal Data Systems Program CFDA Number 84.372A

**13. Competition Identification Number:**

84-372A2012

Title:

**14. Areas Affected by Project (Cities, Counties, States, etc.):**

Add Attachment

**\* 15. Descriptive Title of Applicant's Project:**

Arizona K-12 SLDS Project

Attach supporting documents as specified in agency instructions.

Add Attachments

**Application for Federal Assistance SF-424**

**16. Congressional Districts Of:**

\* a. Applicant

b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

**17. Proposed Project:**

\* a. Start Date:

\* b. End Date:

**18. Estimated Funding (\$):**

|                     |   |
|---------------------|---|
| * a. Federal        | <input type="text" value="1,948,933.00"/> |
| * b. Applicant      | <input type="text" value="0.00"/>         |
| * c. State          | <input type="text" value="0.00"/>         |
| * d. Local          | <input type="text" value="0.00"/>         |
| * e. Other          | <input type="text" value="0.00"/>         |
| * f. Program Income | <input type="text" value="0.00"/>         |
| * g. TOTAL          | <input type="text" value="1,948,933.00"/> |

**\* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- a. This application was made available to the State under the Executive Order 12372 Process for review on .
- b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- c. Program is not covered by E.O. 12372.

**\* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

Yes  No

If "Yes", provide explanation and attach

**21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

\*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix:  \* First Name:   
Middle Name:   
\* Last Name:   
Suffix:

\* Title:

\* Telephone Number:  Fax Number:

\* Email:

\* Signature of Authorized Representative:  \* Date Signed:

## ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

**NOTE:** Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

|  |  |
|--|--|
| * SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL<br><br>Peter Laing | * TITLE<br><br>Deputy Superintendent of Public Instruction |
| * APPLICANT ORGANIZATION<br><br>Arizona Department of Education  | * DATE SUBMITTED<br><br>12/15/2011                         |

Standard Form 424B (Rev. 7-97) Back

## CERTIFICATION REGARDING LOBBYING

### Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

### Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

#### \* APPLICANT'S ORGANIZATION

Arizona Department of Education

#### \* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Prefix:  \* First Name: Elliott Middle Name:

\* Last Name: Hibbs Suffix:

\* Title: Deputy Superintendent of Public Instruction

\* SIGNATURE: Peter Laing

\* DATE: 12/15/2011

SUPPLEMENTAL INFORMATION  
REQUIRED FOR  
DEPARTMENT OF EDUCATION GRANTS

**1. Project Director:**

Prefix:  \* First Name:  Middle Name:  \* Last Name:  Suffix:

Address:

\* Street1:   
 Street2:   
 \* City:   
 County:   
 \* State:   
 \* Zip Code:   
 \* Country:

\* Phone Number (give area code) Fax Number (give area code)

Email Address:

**2. Applicant Experience:**

Novice Applicant  Yes  No  Not applicable to this program

**3. Human Subjects Research**

Are any research activities involving human subjects planned at any time during the proposed project Period?

Yes  No

Are ALL the research activities proposed designated to be exempt from the regulations?

Yes Provide Exemption(s) #:

No Provide Assurance #, if available:

**Please attach an explanation Narrative:**

## Abstract

The abstract narrative must not exceed one page and should use language that will be understood by a range of audiences. For all projects, include the project title (if applicable), goals, expected outcomes and contributions for research, policy, practice, etc. Include population to be served, as appropriate. For research applications, also include the following:

- Theoretical and conceptual background of the study (i.e., prior research that this investigation builds upon and that provides a compelling rationale for this study)
- Research issues, hypotheses and questions being addressed
- Study design including a brief description of the sample including sample size, methods, principals dependent, independent, and control variables, and the approach to data analysis.

[Note: For a non-electronic submission, include the name and address of your organization and the name, phone number and e-mail address of the contact person for this project.]

---

## You may now Close the Form

**You have attached 1 file to this page, no more files may be added. To add a different file, you must first delete the existing file.**

\* Attachment:

## 5. Project Abstract

### Project Title

**Arizona K-12 Statewide Longitudinal Data System (SLDS) Project**  
CFDA #84-372A2012

### Priority Addressed by the Project

Priority 1: to design, develop, and implement a statewide, longitudinal kindergarten through grade 12 (K-12) data system.

### Participating Agencies

- a. Arizona Department of Education (ADE)
- b. Arizona State University (ASU)
- c. Maricopa County Education Service Agency (MCESA) and other county education agencies.
- d. Local Educational Agencies (LEAs)

### Project Description

ADE has used previous federal grant funding through the SLDS program to construct a data warehouse where many of the required data elements for a statewide longitudinal data system are currently in place. However, the current systems cannot effectively support increasing demands for timely, transparent, accessible, and actionable data across the K-12 continuum. Despite the depth of student data collected, Arizona is only able to provide a limited amount of actionable data back to stakeholders. Through this project, Arizona will be able to make significant progress toward meeting several key elements identified as requiring action, based on a needs assessment of the current state of the SLDS as aligned to the 16 capacity requirements defined in the RFA, as well as the recent 2011 *Data Quality Campaign* survey.

### Expected Deliverables

ADE's SLDS proposal is focused on deliverables that will increase:

- a. Identity management and access security (**Privacy Protection and Data Accessibility, Enterprise-wide Architecture, Secure Access to Useful Data for Key Stakeholder Groups**);
- b. Provide user-friendly, multi-layered data visualizations (**Data Use Deliverables**);
- c. Complete the data collection required to realize Arizona's vision for a comprehensive longitudinal framework (**Need and Uses, Data Quality, Interoperability, Enterprise-wide Architecture, Partnerships with Research Community**); and,
- d. Embark on a training program that will enable stakeholders to effectively access information (**Training on Use of Data Tools and Products, Professional Development on Data Use Evaluation of Data Products, Training, and Professional Development Sustainability**).

## Project Narrative File(s)

---

\* Mandatory Project Narrative File Filename:

---

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File



## Grant Application

# Arizona's K-12 Statewide Longitudinal Data System (SLDS)

CFDA Number 84.372

Submitted to:

National Center for Education Statistics

Institute of Education Sciences

U.S. Department of Education

December 14, 2011

## 6. Project Narrative

### 6. a. Need for Project

Arizona's Priority 1, K-12 Statewide Longitudinal Data System (SLDS) grant will provide the Arizona Department of Education (ADE) with the means necessary implement mission-critical, needed tools that, coupled with a developed training and support framework to support effective implementation, will serve to advance the ongoing education reform efforts of all Arizona's educational stakeholders (led by major initiatives by State Superintendent of Public Instruction John Huppenthal and Governor Jan Brewer). The goal is to ensure that all Arizona students graduate high school and are career ready. Arizona's education reform plan, *Arizona Ready*, has established specific, measurable goals that hold students, teachers, administrators, and schools to higher expectations with the intention and expectation to:

- Increase the percentage of third graders meeting state reading standards to 94% in 2020 from 73% in 2010;
- Raise the graduation rate to 93% in 2020 from 75% in 2010;
- Increase the percentage of eighth graders achieving at or above basic on the National Assessment of Educational Progress (NAEP) to 85% in 2020 from 67% in math and 68% in reading in 2010; and,
- Double the number of students receiving baccalaureate degrees to 36,000 per year.

A robust, fully-developed identity and access management system along with web-based dashboards will provide ADE the capability to collect, measure, and evaluate critical data to realize strategic objectives of reform efforts. All stakeholders will be provided with controlled access to resources that comply with FERPA requirements that will provide visualization and analysis of meaningful, actionable, accurate, and timely data analytics. These data will serve to support ongoing state accountability and monitoring efforts through providing significantly enhanced capacity to conduct ongoing analysis of data to drive instructional, programmatic and policy decisions as well as help the state and schools identify best practices. Program effectiveness evaluations can then be evaluated, providing a strong foundation for future education research efforts.

The *2011 Data Quality Campaign (DQC)* state survey results analysis has identified key areas still for ADE to address. This project has been designed to address each of the following areas of need:

- Implement systems to provide timely access to information
- Create progress reports using individual student data to improve student performance
- Create reports using longitudinal statistics to guide system-wide improvement efforts
- Promote educator professional development and credentialing
- Promote strategies to raise awareness of available data
- Student-level course completion (transcript) data

## **IMS - Overview of the Arizona Landscape and Current System**

ADE has multiple Identity Management Systems (IMS), each of which requires its own access management. Current users have a unique ID to access functions; however, they may have several IDs depending on how many roles they have or how many entities for which they work. These multiple IDs are problematic in that ADE is unable to authenticate who is accessing the data and if he/she is accessing the appropriate information. In its current state, ADE does not have the ability to review, evaluate and update external user and data access on a regular basis. The agency also cannot report or review current user access by user or by application. The security risks are amplified by the fact that the agency currently stores user credentials within the database.

Access to ADE's systems is not an easy, user-friendly endeavor. New users looking for initial access to ADE services must go through a labor-intensive provisioning process. Additionally, a simple task like initiating a name change or new role within an entity is a highly-manual process. These hindrances are complicated by a redundant, cumbersome log on process. Because ADE currently lacks an Enterprise-wide identity solution, user identities are scattered across Common Logon, EduAccess, and other systems. In the end, users are burdened with maintaining multiple identities for getting access to services provided by ADE. This duplication exacerbates the security issues because it encourages password sharing, multiple user IDs, and simplistic passwords that are easily compromised.

As with the initiation and maintenance processes, the current user termination process is an onerous one. Data access is not completely revoked after a termination due to the inability to easily determine user access. There is not an automated process to ensure that all system and data access are deactivated during user termination. Finally, existing sign-on and authentication mechanisms are stand alone and cannot share user information between external systems (ie SharePoint).

## **Dashboards**

In 2006 ADE embarked on an ambitious project to create a data warehouse with student-level, school-level, and district-level data. The result of that project, the Arizona Education Data Warehouse (AEDW), contains this information; however, few users are successful in both accessing the data and extracting meaningful data. The AEDW also does not interface well with the research community. Ideally, ADE would have a consistent, easy policy in place to process the requests for data for research purposes and for communicating the scope of data available for analysis. Unfortunately, the current practice is a labor-intensive, manual process that has taxed the established relationships with internal and external research groups.

### ***Student Related Data***

The AEDW collects student data as submitted by schools. This data includes student personal and demographic data, absence/attendance figures, year-end outcome (integration of all possible outcomes for the school year), and withdrawal rates. Schools also report data on programs and needs participation. There are over 80 programs addressing the needs of the students in the public school system in Arizona. These programs are grouped into three areas: Special Education, Language, and Support. There are over 40 needs defined for the students in the public school system in Arizona. Categorized in nine groups, these needs are generally to economic

disadvantage, social disadvantage, and health groups. In addition to the data submitted by Arizona schools, some data like limited English proficiency and Arizona's Instrument to Measure Standards (AIMS) results is input into the warehouse by contracted vendors.

### ***School Related Data***

The AEDW contains data on school descriptors like geographic, educational, and organizational data. Data is also collected, though not currently included in the AEDW, on school district and charter schools annual budgets and expenditure data. State and federal grants awards, including allocations of federal titles money, are also collected by other ADE program areas. Other measures currently unavailable in the AEDW include state student-based equalization, and other appropriations and school performance indicators (AYP, AZ LEARNS, and school improvement). The AEDW needs to integrate these pieces to ensure the ability to provide and analyze longitudinal data.

### ***Teacher and School Staff Related Data***

ADE does collect some teacher-related data, but the data warehouse is incomplete. At this time, teacher, principal, and educational professional certifications are not housed in the AEDW, nor is Highly Qualified Teachers data. Additionally, the student-teacher connection is not complete. ADE has begun a pilot program to begin implementing course mapping to CEDS standards. This endeavor, coupled with mapping teachers to those courses, will eventually build that critical link to meaningful longitudinal data.

While the warehouse contains a significant amount of useful educational data, it has not resulted in a user-friendly system. Those willing to attempt access, which can be sporadic at times, must be able to construct and understand complex Excel pivot tables. As such, the number of actual users is quite low. The operational systems support ongoing operation and annual reports, but the data in these systems is not organized in a manner that enables long term analysis. ADE staff has created ad hoc static reports for operational data for longitudinal (historical) views. The original intent of the AEDW has not been realized, as students, parents, teachers, administrators, and policy makers are not able to use the data to make meaningful educational decisions.

## **Training and Support**

The economic downturn has severely impacted ADE's ability to provide AEDW training and support resources for stakeholders. Funds for external training activities have been eliminated in the previous 18 months, causing the divide between the goals of the AEDW and the actual usage to widen.

## **6. b. Project Deliverables Related to System Requirements and Implementation**

### **Identity Management and Access System**

ADE has already embarked on creating an identity management and access system to safeguard personal data, comply with state and federal privacy laws, and provide reporting and auditing access and security. This standards-based IMS will manage access requirements for SLDS dashboards and portal, and provide a single sign on authentication system to support access to all

the dashboards/applications by logging in once only. These changes will allow ADE to have auditing capabilities to report and track access to dashboards and other data. At final deployment, IMS training will be available for administrators and end users, complete with user guides and web-based tutorials.

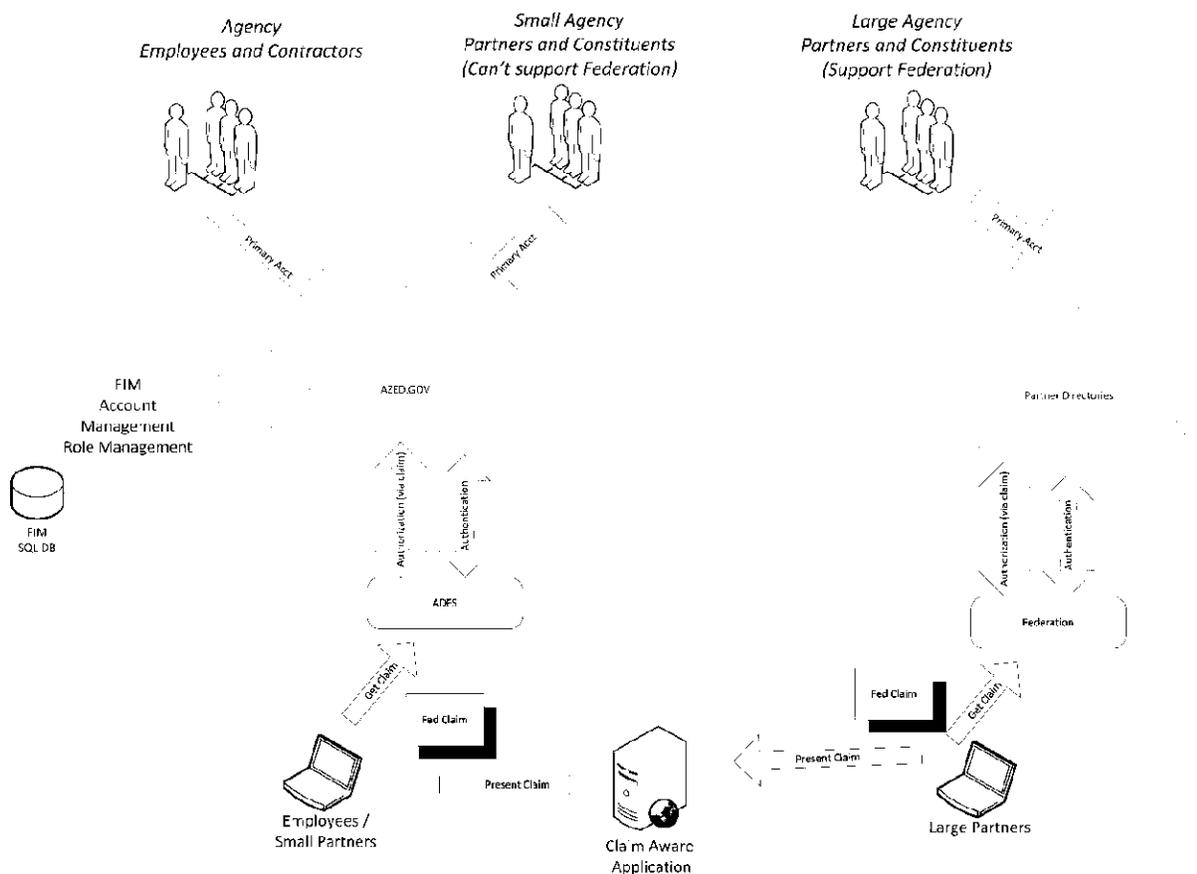
Once implemented, ADE will know who is using the system, what data he/she is accessing and will provide assurances that data is only being viewed by appropriate users. ADE will employ the following security best practices:

- a) Ensure that access granted to internal and external users is documented and authorized. Internal users should only be granted access rights that are compatible with their job responsibilities
- b) Ability to periodically evaluate and update access granted to all of its applications and systems
- c) Enforce password complexity standards
- d) Enforce password change frequency
- e) Maintain authorization and change history for user and data access
- f) Ensure that responsibilities are adequately separated and appropriate for the user's job responsibilities
- g) Ensure that access granted to external users is authorized and maintain change history

The new IMS will contain identification and credential information to verify the user's unique identity and support the user's authentication for any secondary domains with interaction may be required. It will also provide a single user account management interface through which all the component domains may be managed. The new IMS will be used to provide full identity and access management and authentication services for trusted external partners that do not have the technical capabilities for full federation (such as small school districts). Additional development will be needed to provide appropriate user interfaces to post-secondary entities, preschools, and other data providers not currently submitting data to ADE.

As part of the deployment of a new IMS, a robust, user-friendly self-service portal will be developed. A user will be able to gain access to dashboards and portals, by using Active Directory Security groups. The level of access will be also assigned at this portal, by employing role-bases access. These safeguards allow quick and easy access to appropriate users while controlling access to sensitive data like student demographics, grades, and teacher evaluations.

ADE is consolidating multiple Active Directory domains down to two domains based on user role and access for a more secure and streamlined provisioning process. ADE has begun integrating user sign-on and account management for the domains, as well as externally provided resources, by establishing an agency-wide IMS. The new IMS will provide a scalable, single user account management interface to manage access to all ADE-provided resources. It will also federate identity management and authentication services with trusted partners such as school districts. The result will be faster access to distributed resources by reducing the user's need to remember and deal with multiple usernames and passwords, lower sign-on failure rate, upgraded system security (including the ability of administrators to change a user's access to all system resources in a coordinated, consistent way), and improved administrator response when adding/removing users and modifying access rights. The new IMS will provide self-servicing features for password reset and new access requests for reduced cost and better user experience.



**Figure 1: ADE Federation Proposed Architecture**

The long-term vision for ADE identity and access management shows a single directory for agency employees, contractors, and independent partners. These accounts and application roles are managed through a single Forefront Identity Management (FIM) 2010 instance. All applications are Active Directory Federated Services (ADFS) integrated allowing them to leverage the accounts and roles published from the azed.gov forest.

Also, ADFS will allow large partners and constituent organizations to federate their directories with the agency application farm. This federation will enable these users to authenticate (and possibly be authorized) into the published ADE applications. This will dramatically reduce the cost and complexity of account and role administration within the agency.

## Dashboards

Usability and collaboration is an important part of the dashboard development and support ADE. A blog site will be created and available enabling teachers, administrators, and ADE staff to have candid exchange, inquiries, and sharing about ADE initiatives including the SLDS deliverables outlined in this proposal through the existing ADE SharePoint system.

The SLDS dashboards will provide parents, teachers, administrators, policy makers, and the public access to the state’s data warehouse in a user-friendly visual format. These dashboards will be designed to visualize the three types of information (student data, teacher data, and

school/district data) already found in the AEDW. In addition to developing the dashboards, more efficient external data request approval processes will be established to work with the research community. Tools can also be developed to work with researchers to pull data as both standard and custom reports.

| <b>Stake Holders</b> | <b>Student Visualizations</b>      | <b>School Visualizations</b> | <b>Teacher Visualizations</b>           |
|----------------------|------------------------------------|------------------------------|---|
| Students             | Yes, His/Her Own data ONLY         | Yes                          | NO                                      |
| Parents              | Yes, His/Her Own Child data ONLY   | Yes                          | TBD                                     |
| Teachers             | Yes, His/Her Students Data ONLY    | Yes                          | Yes, His/Her own Data ONLY              |
| School/Districts     | Yes, District/School Students ONLY | Yes                          | Yes, District/School Teachers Data ONLY |
| Policy Makers        | TBD                                | Yes                          | TBD                                     |
| Public               | TBD                                | Yes                          | NO                                      |
| ADE Program Areas    | Yes                                | Yes                          | Yes                                     |

### ***Student Visualizations***

Users will be able to access, via the ADE website, these comprehensive data in a visually-pleasing, user-friendly format. By clicking the type of information he/she is interested in, a visual display of the above described student information will be available by school, district, region, and statewide. These data will be able to be tracked over time and users will be able to get a complete picture of both the current state and changes over time. Parents using these dashboards will be able to see important information about their child's school and have the ability to make informed educational choices.

### ***School Visualizations***

Analysis for identification of all entities participating in public education and all data sources related to funding has been completed. It exposed the necessity to develop a new master data model that will accommodate new organizations providing public education, such as various consortiums and multiple rollups of entities. School Performance data is not currently available in the AEDW. ADE will begin to incorporate school descriptors like geographic, educational and organizational data. The data on school district and charter schools annual budgets and expenditure data and state and federal grants must also be collected and incorporated into the AEDW. Currently various ADE units produce various annual indicators, publishing each on the website in a separate spreadsheet format. To be effective all indicators per school need to be displayed together with a longitudinal perspective.

This component of SLDS is a critical piece for parents, teachers, and policy makers. Having data collected and displayed in an easy, understandable format is critical to ensure sound educational choices and decisions. Parents will know the strengths and weaknesses of a particular school and/or district and be better able to match that information to the strengths and weaknesses of their children. Administrators will know how their school measures up to others in a district,

region and statewide, quickly emphasizing areas for improvement. Policy makers will have this important data to consider when deliberating on educational-related policies.

Once completed, users will be able to visualize student data at the school, district, county and state level. Users will easily see data on the school calendar and basic school demographics. School district and charter schools annual budgets and expenditure data will be readily available as well as state and federal grant allocations (including the allocations of federal titles money). Performance indicators like AYP, AZLEARNS and school improvement information will be displayed in a visually-interesting, easy-to-use manor. The aggregated data on district graduation and dropout rate will also be included in the dashboards.

### ***Teacher Visualizations***

The teacher-focused dashboards will allow teachers to view his/her class data. In a single view, teachers will know important information about classroom students, personal performance reviews, special needs, and program participation. This real-time data is essential to providing teachers the tools for individualized instruction. Teachers can more efficiently and effectively prepare lesson plans, develop curricula, measure student progress, and identify the specific educational needs of students in his/her classroom. Teachers will also be able to view a unique personal profile, including past evaluations and other performance metrics.

### ***Completing the AEDW***

Several of the components required for this dashboard are not currently available in the data warehouse. ADE collects some of this data in other formats, so this data would need to be migrated to the AEDW. The SLDS project will provide visualization tools and dashboards in support of identified key indicators at identified levels. In order to accomplish this task, ADE will continue to incorporate common elements and standards into the AEDW and incorporate teacher data, course, and class data into AEDW for use in classroom-level instruction analyses. Longitudinal data on teacher demographics, certifications, education, and experience are currently available in ADE source systems. This effort will include the steps identified in the following sections.

**Extend the current data warehouse to contain K12 data elements required to establish student-teacher connections and related K12 data elements that can illuminate and/or influence student outcomes.** Arizona districts and schools are free to choose student management systems (SMS), set up courses and define what constitute classes for scheduling and funding purposes. The state is currently participating in pilot programs with partner districts to develop standards for data transfers between LEAs and ADE. At present, the state cannot mandate that SMS vendors provide their district customers with the means to comply with these standards.

**Create an automatic means to provide Arizona's unique teacher identifier to LEAs.** Unique teacher identifiers are maintained in ADE's statewide educator database. LEA's can extract their teacher identifiers through the state's Highly Qualified Teacher application for import into their SMSs. The completed project ideally can detect teachers in a LEAs SMS and human resources systems with missing state identifiers and provide those identifiers from the state system without human intervention.

**Establish a set of state level common course codes.** Earlier this year, ADE contracted with ESP Solutions Group to pilot a mapping of local course codes from a single LEA to the School Codes for the Exchange of Data (SCED) school code classification system. The process established during this pilot is to be extended to a larger set of partner districts and ultimately to all LEAs throughout the state. These codes will be made available to LEAs that choose to incorporate them. The district systems and a cross-reference process will be made available to those LEAs unable to do so.

**Finalize data file specifications for student-teacher connection files.** In partnership with Arizona State University, ADE defined an initial set of four file specifications for the transfer of student-teacher connection data elements: a course file, a class file, a staff assignment file, and a student roster file. We also provided data dictionaries and file creation instructional materials. Six districts provided files based upon these specifications with varying degrees of completeness and success. In partnership with the Maricopa County Educational Service Agency (MCESA) and their partner districts, these specifications and associated materials are being refined to ensure that correct and complete data can be made available to the state for inclusion in its data warehouse.

## **Training and Support**

### ***SLDS Implementation***

ADE will employ a structured process to develop a training and support system. The first objective of the plan is to conduct a needs assessment. ADE will identify and define stakeholder/user training requirements and use guidelines through tools like surveys, focus groups, and in-depth key stakeholder interviews. Business use cases designed to capture each stakeholder group's unique and diverse data needs. The resulting information will be used to design guidelines, training, and systems of support aligned to stakeholder needs. ADE staff have identified the following stakeholders necessary for a successful program:

- ADE Information Technology Division
- Students
- Parents
- Teachers
- School and district administrators
- County and state administrators
- Policy makers
- General public

ADE will also develop guidelines for SLDS that align with to stakeholder requirements and data use needs. Training materials (multiplatform/multimodal/synchronous and asynchronous) and programs will be created to respond to stakeholder needs requirements. Training will be provided to support both procedural use and on the review, examination and interpretation of available data through the SLDS. This training program supports stakeholders' efforts to enhance student learning and growth and addressing research questions regarding program effectiveness. Program artifacts will include:

- Documentation: Guidelines, Manuals
- Stand-alone modules/webinars

- Face-to-face modules
- Train-the-trainer materials

ADE will also deploy a sustainable system to support the ongoing training and technical assistance needs of users of the SLDS. To that end, ADE will use the new Regional Training Centers and County ESAs and create an ongoing system of support. This multi-modal will consist of websites of resources, in house help-desk, ADE implementation/use coaches, and collaboration with ADE program staff to infuse training within existing outreach and support. A SharePoint Portal will be used to introduce for discussion boards/social networking to build community of support.

The next activity is to partner with the pilot LEAs already fully connected to the SLDS. LEAs that have completed course mapping and the student-teacher-data link will be uniquely positioned to help ADE evaluate the developed products and training methodologies and make process revisions based on evaluation results. Finally, ADE will launch these training modules for statewide implementation and review.

### 6. c. Timeline for Project Deliverables

The timeline section describes the activities and responsibilities of ADE IT, ADE functional team, LEAs, and various review committees. The ADE IT team is comprised of ADE staff, professional services providers, consultants, applicable vendors. The various deliverables are detailed in software development and project management in section 6. d.

| Sr. No    | Activities/Tasks                                 | Responsibility                    | Start     | End         |
|-----------|--|-----------------------------------|-----------|-------------|
| <b>1.</b> | <b>Blueprint and planning</b>                    |                                   |           |             |
| 1.1.      | Project kick-off meeting                         | ADE IT, LEAs, ADE Functional team | June 2012 | June 2012   |
| 1.2.      | Project charter                                  | ADE IT                            | June 2012 | June 2012   |
| 1.3.      | Identify all stake holders for the project       | ADE IT                            | June 2012 | June 2012   |
| 1.4.      | Create high level business requirements document | ADE IT, LEAs, ADE Functional team | June 2012 | July 2012   |
| 1.5.      | Technical requirements specification             | ADE IT                            | June 2012 | July 2012   |
| 1.6.      | Top-level Development Plan                       | ADE IT                            | June 2012 | June 2012   |
| 1.7.      | Testing Plan                                     | ADE IT                            | June 2012 | July 2012   |
| 1.8.      | Configuration management plan                    | ADE IT                            | June 2012 | June 2012   |
| 1.9.      | Migration Plans                                  | ADE IT                            | June 2012 | July 2012   |
| 1.10.     | User Interface Design specification document     | ADE IT, LEA, ADE functional team  | June 2012 | August 2012 |
| 1.11.     | Risk Mitigation plan                             | ADE IT, LEA, ADE functional team  | June 2012 | June 2012   |

| Sr. No    | Activities/Tasks  | Responsibility                          | Start             | End            |
|-----------|---|---|-------------------|----------------|
| 1.12.     | Product backlog   | ADE IT, LEA,<br>ADE functional<br>team  | July 2012         | August<br>2012 |
| 1.13.     | UI prototype  | ADE IT, LEA,<br>ADE functional<br>team  | June 2012         | August<br>2012 |
| 1.14.     | Usability testing on mock-up screens  | ADE IT, LEA,<br>ADE functional<br>team  | August<br>2012    | August<br>2012 |
| 1.15.     | Budgets and resource allocation   | ADE IT, LEA,<br>ADE functional<br>team  | June 2012         | June 2012      |
| 1.16.     | Setup of code and document repository   | ADE IT,                                 | June 2012         | June 2012      |
| 1.17.     | Setup of guidelines and standards   | ADE IT                                  | June 2012         | June 2012      |
| 1.18.     | Identify additional pilot districts apart from 5 Maricopa county school districts   | ADE Functional<br>team                  | August<br>2012    | August<br>2012 |
| 1.19.     | Acceptance test scenarios   | ADE IT and<br>ADE functional<br>team    | July 2012         | August<br>2012 |
| 1.20.     | Update from IMS team  | ADE IT                                  | July 2012         | July 2012      |
| 1.21.     | Update from 5 school districts about student-teacher link   | ADE functional<br>team, LEAs,<br>ADE IT | August<br>2012    | August<br>2012 |
| 1.22.     | Develop architectural impacts to existing AEDW  | ADE IT                                  | August<br>2012    | August<br>2012 |
| 1.23.     | Identify training needs   | ADE IT, LEAs,<br>ADE functional<br>team | August<br>2012    | August<br>2012 |
| <b>2.</b> | <ul style="list-style-type: none"> <li>• <b>Development, Testing and Deployment (Phase 1)</b></li> <li>• <b>Dashboard - School/District Visualizations</b> <ul style="list-style-type: none"> <li>▪ <b>Demographics</b></li> <li>▪ <b>Schedule/Calendar</b></li> <li>▪ <b>Enrollments</b></li> <li>▪ <b>Graduation Rate</b></li> <li>▪ <b>Dropout Rate</b></li> <li>▪ <b>School Performance</b></li> </ul> </li> <li>• <b>Identity management system</b></li> </ul> <b>Training</b> |   |                   |                |
| 2.1.      | Sprint Backlogs   | ADE IT, ADE<br>functional team          | September<br>2012 | March<br>2013  |
| 2.2.      | Functional specifications document  | LEA, ADE IT,<br>ADE Functional<br>team  | September<br>2012 | March<br>2013  |

| <b>Sr. No</b> | <b>Activities/Tasks</b>  | <b>Responsibility</b>                   | <b>Start</b>      | <b>End</b>    |
|---------------|--|---|-------------------|---------------|
| 2.3.          | Functional test cases  | LEA, ADE IT,<br>ADE Functional<br>team  | September<br>2012 | March<br>2013 |
| 2.4.          | Technical design document <ul style="list-style-type: none"> <li>• Create data model</li> <li>• Design warehouse views</li> <li>• Develop reports design</li> <li>• Create source-to-target mappings</li> </ul>        | ADE IT                                  | September<br>2012 | March<br>2013 |
| 2.5.          | HTML screens   | LEA, ADE IT,<br>ADE Functional<br>team  | September<br>2012 | March<br>2013 |
| 2.6.          | Coding <ul style="list-style-type: none"> <li>• Create data tables</li> <li>• Create code for loading data</li> <li>• Load data to<br/>development/staging</li> <li>• Build Cubes</li> <li>• Create reports</li> </ul> | ADE IT                                  | September<br>2012 | March<br>2013 |
| 2.7.          | Unit testing   | ADE IT                                  | September<br>2012 | March<br>2013 |
| 2.8.          | User guides  | LEA, ADE IT,<br>ADE Functional<br>team  | September<br>2012 | March<br>2013 |
| 2.9.          | Online training  | LEA, ADE IT,<br>ADE Functional<br>team  | September<br>2012 | March<br>2013 |
| 2.10.         | Deployment guide   | ADE IT                                  | September<br>2012 | March<br>2013 |
| 2.11.         | Test data from LEAs  | ADE IT, LEAs                            | September<br>2012 | March<br>2013 |
| 2.12.         | Build automation and script  | ADE IT                                  | September<br>2012 | March<br>2013 |
| 2.13.         | Deployment and testing   | ADE IT                                  | September<br>2012 | March<br>2013 |
| <b>3.</b>     | <b>Roll-out – Phase 1</b>  |   |                   |               |
| 3.1.          | Roll-out Plan  | ADE IT, LEAs,<br>ADE Functional<br>Team | April<br>2013     | April<br>2013 |
| 3.2.          | Cutover plan   | ADE IT, LEAs,<br>ADE Functional<br>Team | April<br>2013     | April<br>2013 |
| 3.3.          | Data Preparation and Migration   | ADE IT, LEAs                            | April<br>2013     | April<br>2013 |

| <b>Sr. No</b> | <b>Activities/Tasks</b>                                   | <b>Responsibility</b>             | <b>Start</b>  | <b>End</b>    |
|---------------|---|-----------------------------------|---------------|---------------|
| 3.4.          | Bug Tracking Mechanism – System Test/Acceptance test      | ADE IT, LEAs, ADE Functional Team | April 2013    | May 2013      |
| 3.5.          | Training and user guides                                  | ADE IT, LEAs, ADE Functional Team | April 2013    | May 2013      |
| 3.6.          | Deploy Code to Production for 5 pilot school districts    | ADE IT, LEAs, ADE Functional Team | June 2013     | June 2013     |
| 3.7.          | Load data to production.                                  | ADE IT                            | June 2013     | June 2013     |
| 3.8.          | Validate data   | ADE IT, LEAs, ADE Functional Team | June 2013     | June 2013     |
| 3.9.          | Deploy Cube to Production                                 | ADE IT                            | June 2013     | June 2013     |
| 3.10.         | Process Cube  | ADE IT                            | June 2013     | June 2013     |
| 3.11.         | Validate Cube   | ADE IT, LEAs, ADE Functional Team | June 2013     | June 2013     |
| 3.12.         | Deploy Reports to Production                              | ADE IT                            | June 2013     | June 2013     |
| 3.13.         | Validate Reports  | ADE IT, LEAs, ADE Functional Team | June 2013     | June 2013     |
| 3.14.         | Release data products                                     | ADE IT, LEAs, ADE Functional Team | June 2013     | June 2013     |
| 3.15.         | Prepare Data for additional 5 school districts – Pilot II | ADE IT, LEAs, ADE Functional Team | August 2013   | October 2013  |
| 3.16.         | Training of users   | ADE IT, LEAs, ADE Functional Team | August 2013   | October 2013  |
| 3.17.         | Acceptance Test/System Test                               | ADE IT, LEAs, ADE Functional Team | October 2013  | November 2013 |
| 3.18.         | Load data to production - Pilot II                        | ADE IT                            | November 2013 | November 2013 |
| 3.19.         | Validate data   | ADE IT, LEAs, ADE Functional Team | November 2013 | November 2013 |
| 3.20.         | Deploy Cube to Production                                 | ADE IT                            | November 2013 | November 2013 |
| 3.21.         | Process Cube  | ADE IT                            | November 2013 | November 2013 |

| <b>Sr. No</b> | <b>Activities/Tasks</b>   | <b>Responsibility</b>                   | <b>Start</b>     | <b>End</b>       |
|---------------|---|---|------------------|------------------|
| 3.22.         | Validate Cube   | ADE IT, LEAs,<br>ADE Functional<br>Team | November<br>2013 | November<br>2013 |
| 3.23.         | Deploy Reports to Production  | ADE IT                                  | November<br>2013 | November<br>2013 |
| 3.24.         | Validate Reports  | ADE IT, LEAs,<br>ADE Functional<br>Team | November<br>2013 | November<br>2013 |
| 3.25.         | Release data products   | ADE IT, LEAs,<br>ADE Functional<br>Team | November<br>2013 | November<br>2013 |
| <b>4.</b>     | <b>Maintenance and Support – Phase 1</b>  |   |                  |                  |
| 4.1.          | Maintenance Plan  | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2013        | June 2013        |
| 4.2.          | Support Plan  | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2013        | June 2013        |
| 4.3.          | Tickets tracking system   | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2013        | June 2015        |
| 4.4.          | Review of tickets and feedback to<br>development team   | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2013        | June 2015        |
| 4.5.          | Provide Maintenance and Support   | ADE IT                                  | June 2013        | June 2015        |
| 4.6.          | Provide Maintenance and Support –<br>Pilot II   | ADE IT                                  | November<br>2013 | June 2015        |
| <b>5.</b>     | <ul style="list-style-type: none"> <li>• <b>Development, Testing and Deployment (Phase 2)</b></li> <li>• <b>Student Visualizations</b> <ul style="list-style-type: none"> <li>▪ <b>Demographics</b></li> <li>▪ <b>Program &amp; Needs</b></li> <li>▪ <b>Attendance</b></li> <li>▪ <b>Assessments</b></li> <li>▪ <b>Student Transcripts</b></li> <li>▪ <b>Student Growth</b></li> <li>▪ <b>College Readiness</b></li> </ul> </li> </ul> <p><b>Training</b></p> |   |                  |                  |
| 5.1.          | Sprint Backlogs   | ADE IT, ADE<br>functional team          | November<br>2013 | March<br>2014    |
| 5.2.          | Functional Specifications document  | LEA, ADE IT,<br>ADE Functional<br>team  | November<br>2013 | March<br>2014    |
| 5.3.          | Functional test cases   | LEA, ADE IT,<br>ADE Functional<br>team  | November<br>2013 | March<br>2014    |

| <b>Sr. No</b> | <b>Activities/Tasks</b>  | <b>Responsibility</b>             | <b>Start</b>  | <b>End</b> |
|---------------|--|-----------------------------------|---------------|------------|
| 5.4.          | Technical Design document <ul style="list-style-type: none"> <li>• Create data model</li> <li>• Design warehouse views</li> <li>• Develop reports design</li> <li>• Create source-to-target mappings</li> </ul>    | ADE IT                            | November 2013 | March 2014 |
| 5.5.          | HTML screens   | LEA, ADE IT, ADE Functional team  | November 2013 | March 2014 |
| 5.6.          | Coding <ul style="list-style-type: none"> <li>• Create data tables</li> <li>• Create code for loading data</li> <li>• Load data to development/staging</li> <li>• Build Cubes</li> <li>• Create reports</li> </ul> | ADE IT                            | November 2013 | March 2014 |
| 5.7.          | Unit Testing   | ADE IT                            | November 2013 | March 2014 |
| 5.8.          | User Guides  | LEA, ADE IT, ADE Functional team  | November 2013 | March 2014 |
| 5.9.          | Online training  | LEA, ADE IT, ADE Functional team  | November 2013 | March 2014 |
| 5.10.         | Deployment guide   | ADE IT                            | November 2013 | March 2014 |
| 5.11.         | Test Data from LEAs  | ADE IT, LEAs                      | November 2013 | March 2014 |
| 5.12.         | Build Automation and Script  | ADE IT                            | November 2013 | March 2014 |
| 5.13.         | Deployment and Testing   | ADE IT                            | November 2013 | March 2014 |
| <b>6.</b>     | <b>Roll-out – Phase 2</b>  |                                   |               |            |
| 6.1.          | Roll-out Plan  | ADE IT, LEAs, ADE Functional Team | April 2014    | April 2014 |
| 6.2.          | Cutover plan   | ADE IT, LEAs, ADE Functional Team | April 2014    | April 2014 |
| 6.3.          | Data Preparation and Migration   | ADE IT, LEAs                      | April 2014    | April 2014 |
| 6.4.          | Bug Tracking Mechanism – System Test/Acceptance test   | ADE IT, LEAs, ADE Functional Team | April 2014    | May 2014   |

| <b>Sr. No</b> | <b>Activities/Tasks</b>                                      | <b>Responsibility</b>                   | <b>Start</b>    | <b>End</b>        |
|---------------|--|---|-----------------|-------------------|
| 6.5.          | Training and user guides                                     | ADE IT, LEAs,<br>ADE Functional<br>Team | April<br>2014   | May 2014          |
| 6.6.          | Deploy Code to Production for 5 pilot<br>school districts    | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2014       | June 2014         |
| 6.7.          | Load data to production.                                     | ADE IT                                  | June 2014       | June 2014         |
| 6.8.          | Validate data  | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2014       | June 2014         |
| 6.9.          | Deploy Cube to Production                                    | ADE IT                                  | June 2014       | June 2014         |
| 6.10.         | Process Cube   | ADE IT                                  | June 2014       | June 2014         |
| 6.11.         | Validate Cube  | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2014       | June 2014         |
| 6.12.         | Deploy Reports to Production                                 | ADE IT                                  | June 2014       | June 2014         |
| 6.13.         | Validate Reports   | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2014       | June 2014         |
| 6.14.         | Release data products  | ADE IT, LEAs,<br>ADE Functional<br>Team | June 2014       | June 2014         |
| 6.15.         | Prepare Data for additional 5 school<br>districts – Pilot II | ADE IT, LEAs,<br>ADE Functional<br>Team | July 2014       | September<br>2014 |
| 6.16.         | Training of users  | ADE IT, LEAs,<br>ADE Functional<br>Team | July 2014       | September<br>2014 |
| 6.17.         | Acceptance Test/System Test                                  | ADE IT, LEAs,<br>ADE Functional<br>Team | August<br>2014  | October<br>2014   |
| 6.18.         | Load data to production - Pilot II                           | ADE IT                                  | October<br>2014 | October<br>2014   |
| 6.19.         | Validate data  | ADE IT, LEAs,<br>ADE Functional<br>Team | October<br>2014 | October<br>2014   |
| 6.20.         | Deploy Cube to Production                                    | ADE IT                                  | October<br>2014 | October<br>2014   |
| 6.21.         | Process Cube   | ADE IT                                  | October<br>2014 | October<br>2014   |
| 6.22.         | Validate Cube  | ADE IT, LEAs,<br>ADE Functional<br>Team | October<br>2014 | October<br>2014   |
| 6.23.         | Deploy Reports to Production                                 | ADE IT                                  | October<br>2014 | October<br>2014   |

| <b>Sr. No</b> | <b>Activities/Tasks</b>   | <b>Responsibility</b>                   | <b>Start</b>    | <b>End</b>       |
|---------------|---|---|-----------------|------------------|
| 6.24.         | Validate Reports  | ADE IT, LEAs,<br>ADE Functional<br>Team | October<br>2014 | October<br>2014  |
| 6.25.         | Release data products   | ADE IT, LEAs,<br>ADE Functional<br>Team | October<br>2014 | October<br>2014  |
| <b>7.</b>     | <b>Maintenance and Support – Phase 2</b>  |   |                 |                  |
| 7.1.          | Update Maintenance Plan   | ADE IT, LEAs,<br>ADE Functional<br>Team | July 2014       | July 2014        |
| 7.2.          | Update Support plan   | ADE IT, LEAs,<br>ADE Functional<br>Team | July 2014       | July 2014        |
| 7.3.          | Tickets tracking system   | ADE IT, LEAs,<br>ADE Functional<br>Team | July 2014       | June 2015        |
| 7.4.          | Review of tickets and feedback to development team  | ADE IT, LEAs,<br>ADE Functional<br>Team | July 2014       | June 2015        |
| 7.5.          | Provide Maintenance and Support   | ADE IT                                  | October<br>2014 | June 2015        |
| <b>8.</b>     | <ul style="list-style-type: none"> <li>• <b>Development, Testing and Deployment (Phase 3)</b></li> <li>• <b>Teacher Visualizations</b> <ul style="list-style-type: none"> <li>▪ <b>Teacher Assessments</b></li> <li>▪ <b>Student- Teacher connection for courses taken</b></li> </ul> </li> </ul> <b>Training</b> |   |                 |                  |
| 8.1.          | Sprint Backlogs   | ADE IT, ADE<br>functional team          | October<br>2014 | December<br>2014 |
| 8.2.          | Functional Specifications document  | LEA, ADE IT,<br>ADE Functional<br>team  | October<br>2014 | December<br>2014 |
| 8.3.          | Functional test cases   | LEA, ADE IT,<br>ADE Functional<br>team  | October<br>2014 | December<br>2014 |
| 8.4.          | Technical Design document <ul style="list-style-type: none"> <li>• Create data model</li> <li>• Design warehouse views</li> <li>• Develop reports design</li> <li>• Create source-to-target mappings</li> </ul>   | ADE IT                                  | October<br>2014 | December<br>2014 |
| 8.5.          | HTML screens  | LEA, ADE IT,<br>ADE Functional<br>team  | October<br>2014 | December<br>2014 |

| <b>Sr. No</b> | <b>Activities/Tasks</b>  | <b>Responsibility</b>             | <b>Start</b>  | <b>End</b>    |
|---------------|--|-----------------------------------|---------------|---------------|
| 8.6.          | Coding <ul style="list-style-type: none"> <li>• Create data tables</li> <li>• Create code for loading data</li> <li>• Load data to development/staging</li> <li>• Build Cubes</li> <li>• Create reports</li> </ul> | ADE IT                            | October 2014  | December 2014 |
| 8.7.          | Unit Testing   | ADE IT                            | October 2014  | December 2014 |
| 8.8.          | User Guides  | LEA, ADE IT, ADE Functional team  | October 2014  | December 2014 |
| 8.9.          | Online training  | LEA, ADE IT, ADE Functional team  | October 2014  | December 2014 |
| 8.10.         | Deployment guide   | ADE IT                            | October 2014  | December 2014 |
| 8.11.         | Test Data from LEAs  | ADE IT, LEAs                      | October 2014  | December 2014 |
| 8.12.         | Build Automation and Script  | ADE IT                            | October 2014  | December 2014 |
| 8.13.         | Deployment and Testing   | ADE IT                            | October 2014  | December 2014 |
| <b>9.</b>     | <b>Roll-out – Phase 3</b>  |                                   |               |               |
| 9.1.          | Roll-out Plan  | ADE IT, LEAs, ADE Functional Team | January 2015  | January 2015  |
| 9.2.          | Cutover plan   | ADE IT, LEAs, ADE Functional Team | January 2015  | January 2015  |
| 9.3.          | Data Preparation and Migration   | ADE IT, LEAs                      | January 2015  | January 2015  |
| 9.4.          | Bug Tracking Mechanism – System Test/Acceptance test   | ADE IT, LEAs, ADE Functional Team | January 2015  | February 2015 |
| 9.5.          | Training and user guides   | ADE IT, LEAs, ADE Functional Team | January 2015  | February 2015 |
| 9.6.          | Deploy Code to Production for 5 pilot school districts   | ADE IT, LEAs, ADE Functional Team | February 2015 | February 2015 |
| 9.7.          | Load data to production.   | ADE IT                            | February 2015 | February 2015 |

| <b>Sr. No</b> | <b>Activities/Tasks</b>                                      | <b>Responsibility</b>                   | <b>Start</b>     | <b>End</b>       |
|---------------|--|---|------------------|------------------|
| 9.8.          | Validate data  | ADE IT, LEAs,<br>ADE Functional<br>Team | February<br>2015 | February<br>2015 |
| 9.9.          | Deploy Cube to Production                                    | ADE IT                                  | February<br>2015 | February<br>2015 |
| 9.10.         | Process Cube   | ADE IT                                  | February<br>2015 | February<br>2015 |
| 9.11.         | Validate Cube  | ADE IT, LEAs,<br>ADE Functional<br>Team | February<br>2015 | February<br>2015 |
| 9.12.         | Deploy Reports to Production                                 | ADE IT                                  | February<br>2015 | February<br>2015 |
| 9.13.         | Validate Reports   | ADE IT, LEAs,<br>ADE Functional<br>Team | February<br>2015 | February<br>2015 |
| 9.14.         | Release data products  | ADE IT, LEAs,<br>ADE Functional<br>Team | February<br>2015 | February<br>2015 |
| 9.15.         | Prepare Data for additional 5 school<br>districts – Pilot II | ADE IT, LEAs,<br>ADE Functional<br>Team | March<br>2015    | April<br>2015    |
| 9.16.         | Training of users  | ADE IT, LEAs,<br>ADE Functional<br>Team | March<br>2015    | April<br>2015    |
| 9.17.         | Acceptance Test/System Test                                  | ADE IT, LEAs,<br>ADE Functional<br>Team | March<br>2015    | April<br>2015    |
| 9.18.         | Load data to production - Pilot II                           | ADE IT                                  | March<br>2015    | April<br>2015    |
| 9.19.         | Validate data  | ADE IT, LEAs,<br>ADE Functional<br>Team | March<br>2015    | April<br>2015    |
| 9.20.         | Deploy Cube to Production                                    | ADE IT                                  | March<br>2015    | April<br>2015    |
| 9.21.         | Process Cube   | ADE IT                                  | March<br>2015    | April<br>2015    |
| 9.22.         | Validate Cube  | ADE IT, LEAs,<br>ADE Functional<br>Team | March<br>2015    | April<br>2015    |
| 9.23.         | Deploy Reports to Production                                 | ADE IT                                  | March<br>2015    | April<br>2015    |
| 9.24.         | Validate Reports   | ADE IT, LEAs,<br>ADE Functional<br>Team | March<br>2015    | April<br>2015    |

| <b>Sr. No</b> | <b>Activities/Tasks</b>                            | <b>Responsibility</b>                                       | <b>Start</b>  | <b>End</b>    |
|---------------|--|---|---------------|---------------|
| 9.25.         | Release data products                              | ADE IT, LEAs,<br>ADE Functional<br>Team                     | March<br>2015 | April<br>2015 |
| <b>10.</b>    | <b>Maintenance and Support – Phase 3</b>           |   |               |               |
| 10.1.         | Update Maintenance Plan                            | ADE IT, LEAs,<br>ADE Functional<br>Team                     | March<br>2015 | March<br>2015 |
| 10.2.         | Update Support Plan                                | ADE IT, LEAs,<br>ADE Functional<br>Team                     | March<br>2015 | March<br>2015 |
| 10.3.         | Tickets tracking system                            | ADE IT, LEAs,<br>ADE Functional<br>Team                     | March<br>2015 | June 2015     |
| 10.4.         | Review of tickets and feedback to development team | ADE IT, LEAs,<br>ADE Functional<br>Team                     | March<br>2015 | June 2015     |
| 10.5.         | Provide Maintenance and Support                    | ADE IT  | April<br>2015 | June 2015     |
| <b>11.</b>    | <b>Project Governance</b>                          |   |               |               |
| 11.1.         | PMO Status Reporting                               | ADE IT  | June 2012     | June 2015     |
| 11.2.         | Program Steering committee meetings and reporting  | ADE IT, LEAs,<br>ADE functional<br>team                     | June 2012     | June 2015     |
| 11.3.         | Data Governance Commission(meeting, reporting)     | Governance<br>commission,<br>ADE IT, ADE<br>Functional team | June 2012     | June 2015     |
| 11.4.         | Ad-hoc committee(meeting, reporting)               | Ad-Hoc<br>committee,<br>ADE IT, ADE<br>Functional team      | June 2012     | June 2015     |
| 11.5.         | Status updated to US Department of Education       | ADE IT, ADE<br>Functional team                              | June 2012     | June 2015     |

## 6. d. Project Management and Governance Plan

### Software Development and Program Management Approach

ADE will follow a two-phased approach to this program. The first phase will serve to gather high level details on the requirements from the proposed system and components, create a blueprint of all the system components in the ecosystem in which the proposed system and components reside, and their mutual interaction. Subsequently, ADE will adopt an agile approach towards development of the product.

- Setup and planning
- High level requirements
- High level architecture
- High level development plans
- Product and Sprint backlog
- Development using SCRUM methodology
- Testing using V-Model for testing
- Deployment and systems architecture
- Release management
- Roll-out to pilot LEAs
- Data migration and Cut-over
- Training
- Maintenance Plan
- SLAs
- Support Level 1, 2 and 3
- Plan for implementing it across the state

**Figure 2: Software Development Cycle**

***Phase 1 – Blueprint/Planning Phase***

**Methodology:** The requirements gathering phase will involve a detailed study of the system and all the associated integration needs. It will also address the larger business requirement of the changing context (e.g. new programs being introduced by ADE), updates, reporting needs, etc. Before the conclusion of the first phase, requirements will be prioritized at a broad level, providing a road map for development, and detailed priorities will be worked out for the initial two or three development sprints.

**Deliverables:** The following will be the key deliverables of Phase 1:

| <b>Item</b>                                | <b>Content / Details</b>  | <b>ADE IT’s Responsibility</b>  | <b>ADE Functional Team and LEA’s Responsibility</b>                          |
|--|---|---|--|
| <b>Business Requirements Specification</b> | The complete scope of the system will be identified as a combination of use cases, functional specifications and non-functional specifications. Key risks, dependencies and assumptions will be documented as well. | Draft document, Work with functional leaders at agency to incorporate review changes, Work with Functional teams to identify priorities | Review, Ensure completeness, Ensure correctness, Assign Priorities, Sign Off |

| <b>Item</b>                                 | <b>Content / Details</b>  | <b>ADE IT's Responsibility</b>  | <b>ADE Functional Team and LEA's Responsibility</b>                           |
|---|---|---|---|
| <b>Project Charter</b>                      | Development approach for the project along with roles and responsibility of various teams, deliverables, quality, communication and risk management plans, high level scope   | Create a draft project charter, review the document and work with functional teams for sign-off                     | Review and sign-off   |
| <b>Technical Requirements Specification</b> | <p>The complete technical scope of the system including:</p> <ol style="list-style-type: none"> <li>1) additional technologies to be used</li> <li>2) related systems to interact with</li> <li>3) risks, dependencies, assumptions</li> <li>4) additional infrastructure needs and constraints</li> <li>5) High Level Design</li> <li>6) Any architecture considerations/ changes</li> <li>7) Data model, if applicable</li> <li>8) Integration approach</li> <li>9) migration needs and approach, if required</li> <li>10) Refine Coding and design guidelines if needed</li> </ol> | Work with Functional Team to procure all information required, document them, make changes based on review comments | Review document in a timely manner for completeness, correctness and quality. |

| <b>Item</b>                          | <b>Content / Details</b>   | <b>ADE IT's Responsibility</b>  | <b>ADE Functional Team and LEA's Responsibility</b>  |
|--------------------------------------|--|---|--|
| <b>Top-level Development Plan</b>    | <p>Major requirement chunks and milestones associated with them.</p> <p>Detailed Development Plan for the first 2 sprints</p> <p>Sign off acceptance criteria for development in broad strokes as well as for the sprints which have been detailed out</p> | <p>Create top level development plan, milestones per sprint</p>   | <p>Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off</p> |
| <b>Testing Plan</b>                  | <p>Test plan for broad-level requirements</p> <p>Test plan in detail for the first 2 sprints</p> <p>User acceptance testing methodology including UAT Scenarios</p> <p>System Test Scenarios, Performance / Load Testing and Memory Profiling</p>          |   | <p>Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off</p> |
| <b>Configuration Management Plan</b> | <p>Software configuration management, build management, tools, release plans, automation of build etc</p>  | <p>Code and hardware configuration management, decide on automation tools for creating a build, develop release management plan and contribute to enterprise release management</p> | <p>Work with ADE IT to decide on releases of the products</p>  |

| <b>Item</b>                           | <b>Content / Details</b>  | <b>ADE IT's Responsibility</b>  | <b>ADE Functional Team and LEA's Responsibility</b>   |
|---------------------------------------|---|---|---|
| <b>Migration Plan</b>                 | Detailed migration plan with roles and responsibilities of individual and various stakeholders, data quality control agreements, data access mechanism for LEAs and ADE, changeover plan, migration test plan   | Create the document, make review changes  | Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off   |
| <b>Project and Communication Plan</b> | Project plan – top level<br>Communication protocol between various teams, including regular as well as contingency communication.<br><br>Bug tracking system access as well as access to Wiki, SharePoint sites for regular communication with all the stakeholders | Create the document, make review changes  | Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off   |
| <b>Design Specification Document</b>  | Visual and User Experience design requirement and solution specification<br><br>Branding specification<br><br>Personalization options   | Create document, make review changes (up to 2 rounds of design iteration will be considered at the proposed cost) | Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off<br><br>Provide design crops and images as necessary (e.g. logo, branding guidelines etc.) |
| <b>Risk Mitigation Plan</b>           | Identify and mitigate all the risks for the program and actively manage the risks   | Create risk mitigation plan along with probability of risk  | Review and contribute to risk mitigation plan   |

### ***Phase 2 – Development, Testing, and Deployment***

**Methodology:** The second phase will be conducted based on the agile development methodology. This is an incremental development approach where sprints are defined for a period of two to four weeks, with clear developmental priorities and goals for that period. The scope and priorities will be defined by the ADE development team and functional team. ADE has been using modified SCRUM methodology for development for the last few months. This program will use the same agile development methodology for development once the blueprint/planning phase is complete.

**Deliverables:** The following are deliverable as part of Phase 2:

| <b>Item</b>   | <b>Detail</b>   | <b>ADE IT's Responsibility</b>  | <b>ADE Functional Team and LEA's Responsibility</b>   |
|---|---|---|---|
| <b>Sprint backlog for each sprint</b><br><br><b>(Each sprint's plan will be finalized before the start of that sprint at the very least and ideally at least one sprint ahead.)</b> | Development plan, including detailed requirements, priority for each requirement and test plan for each sprint. Every sprint plan is to have clear sign off criteria laid out | To make the sprint plan available for review for project management team and functional team  | To ensure that the sprint plan captures ADE's vision and priorities in the product.<br><br>Determine the set of test cases that constitute the acceptance criteria. |
| <b>Functional Specifications Document</b>   | The complete scope of the functionality of module will be identified as a combination of use cases, functional specifications and non-functional specifications.              | Draft document, Work with functional leaders at agency to incorporate review changes, Work with Functional teams to identify priorities | Review, Ensure completeness, Ensure correctness, Assign Priorities, Sign Off  |
| <b>Bug Tracking Mechanism</b>   | Identify, track, prioritize and fix bugs in the system  | Proactively fix bugs as found and actively fix bugs identified based on mutually agreed upon timelines and priorities                   | Identify, log, track and prioritize bugs in the application in a timely manner. Ensure that fixes have removed the bug and close reports on fixed bugs              |

| <b>Item</b>                              | <b>Detail</b>  | <b>ADE IT's Responsibility</b>                                       | <b>ADE Functional Team and LEA's Responsibility</b>  |
|--|--|--|--|
| <b>Detailed Technical Design</b>         | Fully resolved technical architecture, web service / API definitions, database model, top level class diagram, if applicable | Create document, make review changes, approvals from technology lead | Ensure access to resources to get the required information in a timely and complete manner, Review document  |
| <b>Detailed Test Cases and Test Plan</b> | Functional and unit test cases   | Create document, make review changes                                 | Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off  |
| <b>Developed Code</b>                    | Application code, configuration files, database scripts, build scripts, XML schemas, integration services                    | Develop the application  | Review at every sprint, evaluate against agreed upon test cases for the agreed upon scope. If the test cases pass, the evaluation criteria for that sprint are considered to have been met and the acceptance certificate will be due from at that point for that sprint. Review, Provide Acceptance Certificate in a timely manner for each sprint. |
| <b>Deployment Notes</b>                  | Identify deployment details and any final deployment requirements and mechanisms   | Create document, make review changes                                 | Ensure access to resources to get the required information in a timely and complete manner, Review document, Sign Off  |

| <b>Item</b>                          | <b>Detail</b>  | <b>ADE IT's Responsibility</b>   | <b>ADE Functional Team and LEA's Responsibility</b>                         |
|--------------------------------------|--|--|---|
| <b>Help, User guide and Training</b> | Develop online help, user and administrator guides, online training videos for the users | Create online and print user guides, administrator guides and online training videos | Review and approve user guides, online training manuals and help in videos. |

### ***Phase 3 - Rollout***

**Methodology:** The third phase will be to rollout the deliverables to pilot school districts. ADE has identified five sample school districts from Maricopa County. ADE will rollout the deliverables in phases to the pilot school districts. For example ADE will rollout few dashboards at a time along with help/training guides. This is an incremental rollout approach where sprints are defined for a period of two to four weeks, with clear developmental priorities and goals for that period. The release plan will be defined along with functional team and LEAs

**Deliverables:** The following are deliverable as part of Phase 3:

| <b>Item</b>   | <b>Detail</b>   | <b>ADE IT's Responsibility</b>   | <b>ADE Functional Team and LEA's Responsibility</b>  |
|---|---|--|--|
| <b>Roll-out Plan</b>  | Plan all the roll-out activities such as releases, training, smoke-test, cut-over plan, availability etc. | Develop release plan and training plan along with LEAs, cut-over plan.   | Work with ADE IT to decide on roll-out with users and training   |
| <b>Cutover plan</b>   | Develop cut-over plan for actual cut-over and implementation of the system                                | Draft document, Work with functional leaders at agency to incorporate review changes                                     | Review, Ensure completeness, Ensure correctness, Assign Priorities, Sign Off   |
| <b>Bug Tracking Mechanism – System Test/Acceptance test</b> | Identify, track, prioritize and fix bugs in the system  | Proactively fix bugs as found and actively fix bugs identified by based on mutually agreed upon timelines and priorities | Identify, log, track and prioritize bugs in the application in a timely manner. Ensure that fixes have removed the bug and close reports on fixed bugs |

| <b>Item</b>                           | <b>Detail</b>  | <b>ADE IT's Responsibility</b>                                   | <b>ADE Functional Team and LEA's Responsibility</b>                    |
|---------------------------------------|--|--|--|
| <b>Training and user guides</b>       | Create user guides, administration guides and online training for users  | Develop context sensitive user guides, online training for users | Work with ADE IT to develop and review user guides and online training |
| <b>Data Preparation and Migration</b> | Create data preparation and migration plan from LEAs to ADE environments | Develop data migration scripts and dry run of the scripts        | Work with ADE IT to review data migration plan                         |

#### ***Phase 4 - Maintenance and Support***

**Methodology:** The fourth phase will be to support and maintain the product for the pilot LEAs. ADE has identified 5 school districts from Maricopa County. ADE will be responsible for providing Level 1, 2, and 3 support to the pilot school district and work with LEAs to roll out this product to other school districts in future after the pilot is stabilized.

**Deliverables:** The following are deliverable as part of Phase 4:

| <b>Item</b>             | <b>Detail</b>   | <b>ADE IT's Responsibility</b>   | <b>ADE Functional Team and LEA's Responsibility</b>      |
|-------------------------|---|--|--|
| <b>Maintenance Plan</b> | Plan all the maintenance activities required for the product              | Develop maintenance plan with LEAs and functional teams to maintain the application, backup/restore, disaster recovery for the application/product | Work with ADE IT to decide on maintenance plan           |
| <b>Support plan</b>     | Develop product support plan for level 1, 2 and 3 support, decide on SLAs | Develop SLAs and level 1, 2 and 3 support plan   | Work with ADE IT to provide product support requirements |

| <b>Item</b>                    | <b>Detail</b>                      | <b>ADE IT's Responsibility</b>   | <b>ADE Functional Team and LEA's Responsibility</b>                 |
|--------------------------------|------------------------------------|--|---|
| <b>Tickets tracking system</b> | Use tickets tracking system at ADE | Develop standard change catalog and link it to tickets tracking system | Identify and provide details to users about tickets tracking system |

ADE uses SCRUM Methodology and V-Model Testing. See Appendix A

## **Program Governance**

ADE IT and functional teams provide various status and progress reports on regular basis to different stakeholders who monitor and govern state of the program and implementation on regular basis. This helps to handle any risks, contingencies, management of issues, review of budgets, review of technology, communication plans, and quality of work on regular basis.

### ***Project Management Office (PMO) status reporting***

ADE has setup a program management office that monitors the progress of all the projects along with various metrics to check the health of the projects and programs. The detailed report and deliverables are provided to PMO office on bi-weekly basis by program teams. Program director, program manager, and project managers are responsible for reviewing the status of the projects with PMO office on bi-weekly basis.

### ***ADE IT***

The ADE IT team has project and program management, a business analyst, a technology architect, software engineers, and QA engineering professionals. ADE IT also utilizes professional services contractors and various software vendors. Additionally, the division also has support and infrastructure services resources.

### ***ADE Functional team***

ADE functional team comprises of various departments under Arizona Department of Education like school finance, assessment, certification, adult education program, etc. The representatives of these departments will help this project under the direction of the superintendent, CIO, and COO of the department will set the part of functional team.

### ***LEAs***

LEAs are participating in this project for piloting the solution. There are five sample school districts from Maricopa County that will be participating in the pilot. ADE will identify additional five school districts from other regions of Arizona to be part of this program as a part of Phase II.

### ***Technology Review Committee (TRC)***

It is necessary to evaluate technology architecture, data models, hardware/software, and capacity needs of application/products that ADE is developing. It will be responsibility of TRC to closely review the technology aspect of the project. Technology architects and leads will present the

technology side of the product on monthly basis to TRC. Following roles will participate on technology review team:

- ADE Deputy CIO
- Director of Technology of pilot school district
- IT Executive from a private company in Arizona
- ADE Technology Architect

### ***Program Steering Committee***

A steering committee will be formed during the setup phase of the project. The steering committee will be accountable for ensuring program progress. The committee will meet monthly over the duration of the program. Following stakeholders will be part of the steering committee

- Mark Masterson, ADE CIO
- Pamela Smith, ADE Executive Director of Special Projects
- Linda Jewell, ADE Deputy CIO
- Dr. Don Covey, Superintendent Maricopa County Educational Services Agency
- Director of Technology, School District

### ***Data Governance Commission (DGC)***

The DGC was established to coordinate with ADE to create and implement the Arizona Education Learning and Accountability System (AELAS). DGC shall identify and evaluate the needs of public educational institutions, provide recommendations and establish guidelines relating to ELAS technology and its application. The Commission is a statutorily created commission established to identify, examine, and evaluate the needs of public educational institutions; provide recommendations on proposals for technology spending in the education arena; analyze and recommend policies for various aspects of data management; and, establish guidelines for future technology implementation. The Commission is a 13-member body that represent various aspects of expertise in the areas of administration, information technology, and business.

### ***Ad Hoc Committee on Education Data Systems***

Speaker of the House Andy Tobin created the Ad Hoc Committee on Education Data Systems, co-chaired by Representatives Heather Carter and Kate Brophy McGee. The Ad Hoc Committee's main focus is to raise public awareness on the value of a P-20 longitudinal education data system. The committee was created because the key to meaningful education reform is to set academic goals that lead to systematic change. This change is not achievable without accurate and reliable data.

The Ad Hoc Committee acts as public forum for discussion on the design, construction, and implementation of state education data systems. Key individuals who have day-to-day operational involvement in the efforts currently underway to build our state education data system have been appointed to the Committee:

- Rebecca Gau, Director, Governor's Office of Education Innovation
- Mark Masterson, CIO, ADE
- Jaime Molera, President, State Board of Education
- J. Elliott Hibbs, Chair, Data Governance Commission

- Jeff Billings, Director of Technology, Paradise Valley Unified School District

### ***Regular status updates to the US Department of Education***

ADE will provide regular status updates to the US Department of Education and the grant review team on regular basis by providing status reports, face-to-face meetings and conference calls/remote online meetings.

All of the above committees and teams will provide strong program governance to the project and help for a successful delivery of the product to pilot school districts.

## **6. e. Staffing**

**Appendix C** contains the resumes of the management team members listed in the following table. The table below identifies each team member's position. These individuals are selected based on the range of experience they bring to the team as indicated by their current positions. They were also the primary authors of this application.

Their first order of business will be the hiring of a fulltime program manager followed by a fulltime business analyst / project coordinator. With the addition of these two individuals to the management team, work will begin. The table below lists the members of this team.

| <b>Project Management Team</b> |   |
|--------------------------------|---|
| <b>Name</b>                    | <b>Position / Role</b>                      |
| Mark Masterson                 | Chief Information Officer                   |
| Pamela Smith                   | Executive Director of Strategic Initiatives |
| Linda Jewell                   | Program Director                            |
| Alexandra Jones                | Enterprise Data Architect                   |
| Amit Soman                     | Information Architect                       |
| Satya Indukuri                 | Sr. Software Developer                      |
| Surya Vipparthy                | Business Information Specialist             |
| TBD                            | Program Manager                             |
| TBD                            | Business Analyst / Project Coordinator      |

### **Roles, Responsibilities, and Time Commitments**

All deliverables will be managed by ADE staff and, where possible, staffed with ADE FTE's. Grant-funded FTEs and individual contractors will be used for staff augmentation as needed.

| Position   | Description   |
|--|---|
| CIO<br>(FTE 0.05)                                      | The CIO provides overall project guidance for IT Department within ADE.   |
| Program Director<br>(FTE 0.1)                          | The program director provides project strategies developing new data system concepts.   |
| Program Manager<br>(FTE 1.0)                           | The program manager provides direct project planning and management including QA coordination and oversees grant execution and reporting.   |
| Project Coordinator<br>(FTE 0.5)                       | The project coordinator will provide coordination among the various team members maintaining focus on deliverables and meeting the timeline.  |
| Developers<br>(FTE 2.0)                                | Software developers will develop the programming code supporting the project deliverables including stakeholder dashboards.   |
| IMS – Developer<br>(FTE 2.0)                           | The IMS developers will implement the IMS solution. If a commercial product is used then the IMS developer will customize the product for use in the ADE environment and support the rollover of existing IMS systems into the new system.  |
| QA<br>(FTE 1.5)  | The Quality Assurance team will support the project by verifying that the deliverables work according to the needs of the various stakeholders. For IMS this will include verification of system security and proper access of users to the correct information. For dashboards QA will verify that the information provided in the dashboards are correct and appropriate to the stakeholders with a given access.   |
| Business Analyst /<br>Project Coordinator<br>(FTE 1.0) | The role of the business analyst / project coordinator is the use analysis, statistical, and Business Information tools to identify data useful to stakeholders and make that information available to dashboards.  |
| User Interface<br>Designer<br>(FTE1.0)                 | The user interface designer primary task will be to design and implement dashboards making available to stakeholders an easy to use visually appealing user interface.  |
| Training / User<br>Guide<br>(FTE 1.0)                  | The task of completing training and user guide materials will be performed by a technical writer. The materials may be print based (PDF), compiled help, or web based.  |
| LEAs – Tech<br>Support<br>(FTE 1.0)                    | As stakeholders dashboards needs are identified it may be necessary for the LEAs to export more information to ADE. LEA tech support will be needed to support system change to download data to ADE.   |
| ADE Functional<br>Teams<br>(FTE 0.25 to 0.5)           | The ADE functional teams will provide support for various phases of the project. During implementation of the new IMS system a functional team may be responsible for transferring users from legacy IMS system into the new system. To facilitate changes to the data received from LEAs to support the new dashboards functional teams may assist with changes to SMS systems. To support the new dashboards functional teams may support data acquisition from the AEDW to the dashboards. |

## Other Attachment File(s)

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\* Mandatory Other Attachment Filename:

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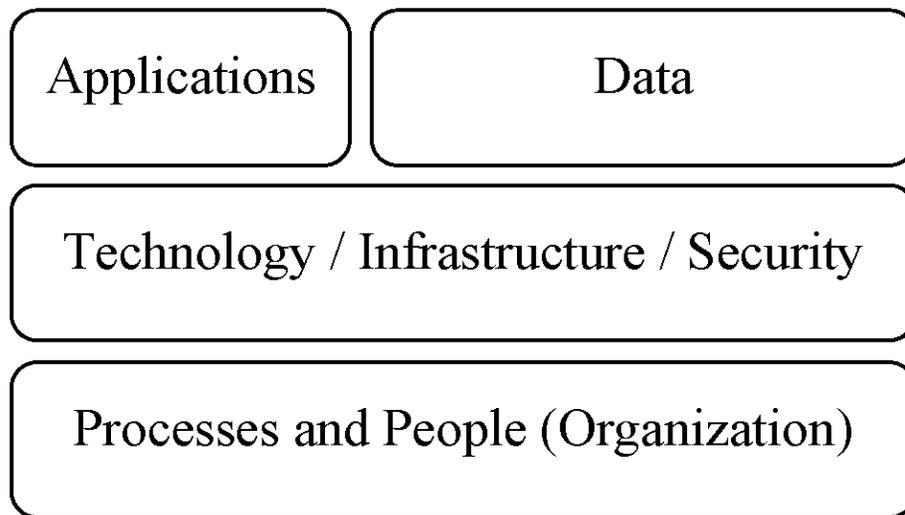
To add more "Other Attachment" attachments, please use the attachment buttons below.

## Appendix A – Optional Attachments

### Proposed Technology Architecture

The architecture for the data warehouse is described in terms of four inter-related components:

- 1) Application layer
- 2) Data layer
- 3) Security layer
- 4) Support (processes and organization)



**Figure 1: Data Warehouse Components**

#### Application Layer

The application layer provides reports such as dashboards, tools for querying, planning, and forecasting. Dashboards communicate information with easy-to-understand graphics such as scorecards and meters, and charts. Typically dashboards are used to report on established performance indicators, measured at predefined intervals. Dashboards make it easy for end users to quickly assess current state and progress against goals. Also application layer can provide explorer tools for selecting data, drilling down or summarizing data, and combining data across subject area. Data warehouse views which organize the information into simpler structures which are easily understood and navigated by particular kinds of users.

#### Data Layer

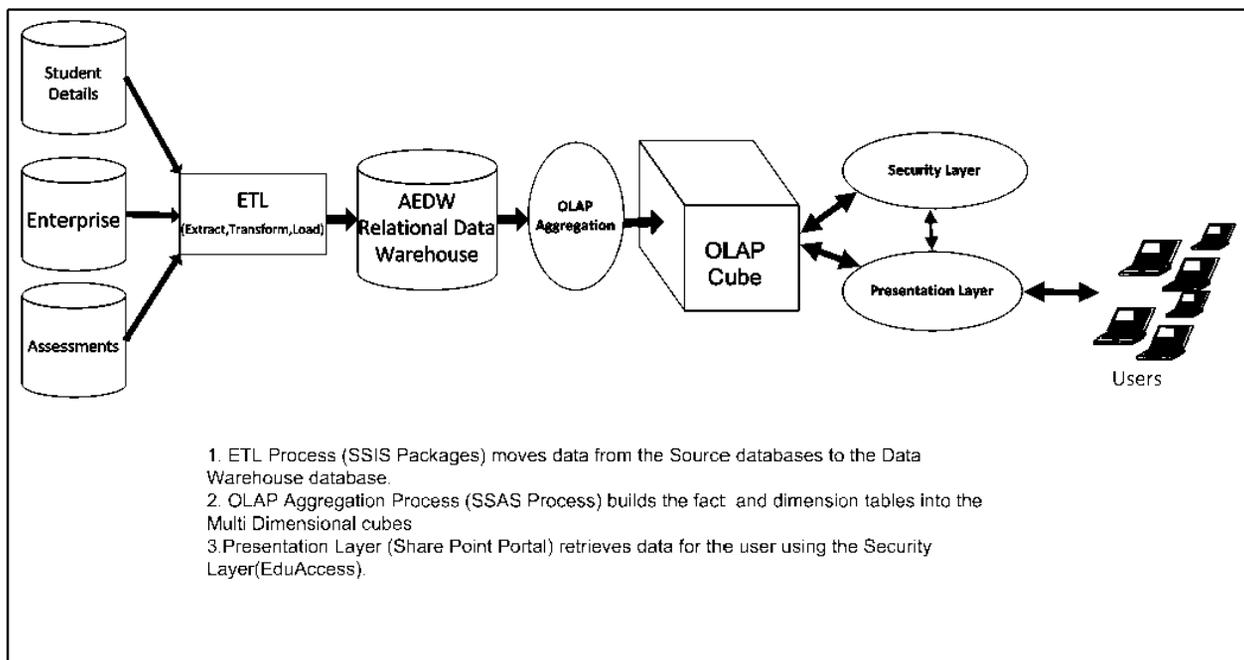
The data layer contains information about history and plans. These are referred to as *facts*, as they usually consist of discrete facts or measurements. Facts or measurements occurred in terms a context is referred as *dimensions*. The warehouse is a collection of tables and views consumed

by end users, directly or through the applications tools described above. The data in the warehouse has been processed for consistency and alignment with standard data descriptions and value sets. Facts have been aligned with the standard dimensions. Data layer contains a staging environment is a set of databases and files used by the ETL process to prepare data for publication in the warehouse as it flows from the operational systems which collect it originally. Metadata is a repository of business rules and its data definitions. Cubes are specialized views of a set of facts and dimensions. They take a form very similar to spreadsheets, in the sense that they are composed of cells visualized along a set of axes.

### Security Layer

The goal of the security layer is to provide fine-grained control over access to data, administered according to the policies of appropriate data custodians. This includes managing access at the individual data element level. Current data access requirements mean that sometimes the warehouse has to control access to information within a particular context, such as information about students who have taken certain classes or studied with particular instructors. Restrictions on small sample sizes imply that for some uses, data access is restricted to answer sets large enough not implicitly identify individual persons. Meeting all these requirements is done by a set of facilities, some automated in the data bases and some in the reporting portal.

### Current Architecture



**Figure 2: Current Architecture**

**Source System:** A periodic snapshot of the student details, enterprise, and assessments data is analyzed and extracted into data warehouse.

**ETL Process:** This process extracts, transforms, and loads the source data into data warehouse using **SQL Server Integration Services 2008**.

**AEDW Relational Data Warehouse:** AEDW relational data warehouse contains source data transformed into facts and dimensional data using **SQL Server 2008**.

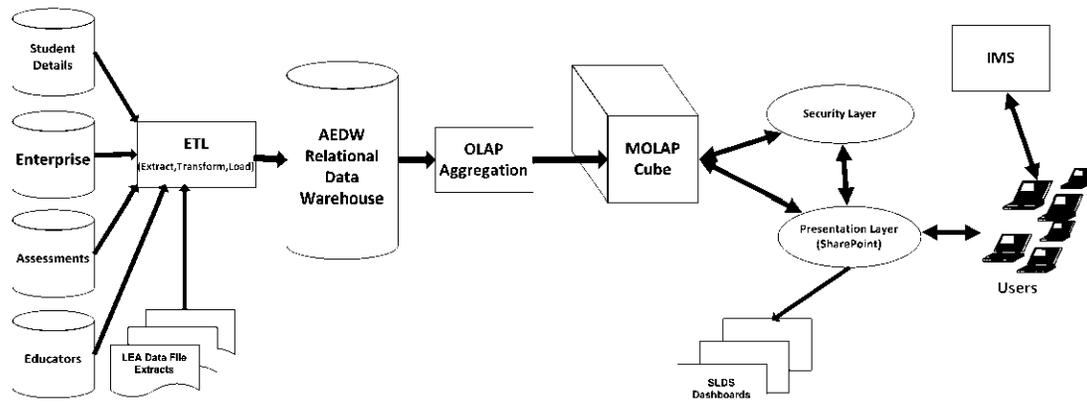
**OLAP Aggregation Process:** This process creates data warehouse views and converts fact and dimensions into multidimensional cubes using **SQL Server Analysis Services 2008**.

**OLAP Cubes:** ADE currently provides two MOLAP cubes with 49 measures. These cubes are updated periodically using **SQL Server Analysis Services 2008**.

**Presentation Layer: SharePoint** is used as presentation layer for analysis and reporting. This layer provides users with reports and other analytical tools to analyze the data. A data dictionary, user guide, and other documents are provided for support and feedback from users

**Security Layer:** EduAccess is a custom **Identity Management** system which manages users and their accounts, permissions, authentication for access, and usage of reports and other tools.

## Proposed Architecture



**Figure 3: Proposed Architecture**

The following components will be included in the data warehouse to compliment components already available in the data warehouse:

**LEA Data Collection Process:** A new data collection process will be developed using common data extracts for the 10 pilot LEAs. The data collection process periodically extracts teacher, school, and student data from the LEAs collection database to a staging environment. Validation

reports are then generated for district review and certification. Once certified, the data will be transformed into information required for state and federal reporting using **SQL Server Integration Services 2008, SQL Server Reporting Services 2008, and SQL Server Analysis Services 2008.**

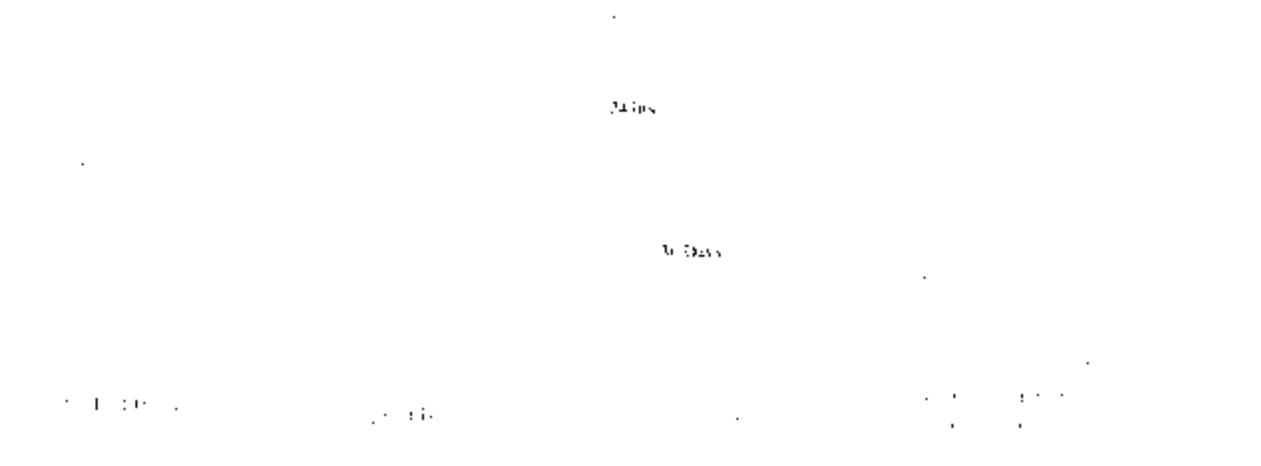
**Educators Source System:** Educators data will be extracted, transformed, and loaded into existing data warehouse data using **SQL Server Integration Services 2008.** Once completed, transformed data will be analyzed and aggregated with currently available student, school and teacher data for state and federal reporting using **SQL Server Reporting Services 2008 and SQL Server Analysis Services 2008.**

**Dashboards:** Dashboards and user-friendly analytical tools will be developed for stakeholders (such as students, parent, teacher, school, district, policy makers, researchers, ADE program areas, and public) using **Server Reporting Services 2008 and SQL Server Project Crescent Tools.** User-friendly reports will be developed and made available to stakeholders via the **SharePoint** web portal.

**Security Layer and IMS:** This layer will provide identity management and authentication through single sign on mechanism. It will provide self-service features such as password reset, user account changes, provisioning, de-provisioning, and group management through a web-based portal. Standards based web and Security Technologies/Protocols such as SAML, SSL, HTTPS, and certificates will be utilized to make this layer interoperable and flexible. Federation with other entities will also be explored in discussions with districts that have the capabilities.

## **SCRUM Methodology**

ADE Information Technology (IT) uses modified SCRUM methodology for development of applications and products. SCRUM, an agile development methodology, helps ADE IT to build the product incrementally and also implement or rollout the product in smaller increments to LEAs.



**Figure 4: SCRUM Process Framework**

SCRUM delivers value in four distinct areas of a project:

- Managing changing requirements
- Increasing productivity
- Ensuring quality standards are met
- Developing and delivering a product increment more often

The following are some general practices of SCRUM:

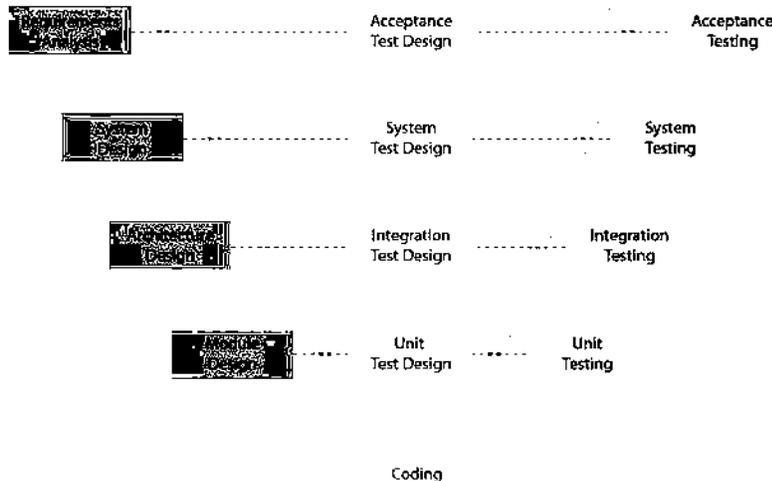
- Functional team of ADE become a part of the development team
- The product backlogs and the sprint backlogs will be shared across and tasks will be prioritized in close collaboration with functional team and LEAs.
- SCRUM has frequent, intermediate deliveries with working functionality, like all other forms of agile software processes. This enables the functional team to get working software earlier and enables the project to change its requirements according to changing needs.
- Frequent risk and mitigation plans are developed by the ADE IT team itself—risk mitigation, monitoring and management (risk analysis) occur at every stage and with commitment.
- Transparency in planning and module development identifies who is accountable for what and by when.
- Frequent stakeholder meetings are held to monitor progress, displaying balanced dashboard updates (delivery, customer, employee, process, and stakeholders).
- There should be an advance warning mechanism, i.e., visibility to potential slippage or deviation ahead of time.
- Problems are not overlooked, and no member of the team is penalized for recognizing or describing any unforeseen problem.

## V-Model Testing

ADE IT uses V-Model for testing to make sure maximum requirements coverage happens for quality assurances (QA) in order to release a defect-free product to various users of ADE. Various metrics are tracked to continuously improve the quality of the product.

Defect density for each project/work stream will be published on a monthly basis and a root-cause analysis conducted, resulting in corrective measures of processes, checklists, and test cases. Various tests that will be followed by ADE IT will be:

- Functional testing
- System/Integration testing
- Acceptance testing
- Test automation
- Regression testing
- Performance testing
- Break fix testing
- UAT planning and execution
- User interface testing
- Usability testing
- Accessibility testing



**Figure 5: V-Model**

The V-Model provides the following benefits to the software engineering and QA process:

- Greater transparency in test process and reporting
- Strong emphasis on Metric collection and analysis
- Reduced testing effort in performing technical acceptance testing
- Reduction in cost of quality

## SLDS Grant – SLDS Requirements Template

| Governance and Policy Requirements   | Requirement Met<br>(Yes or No) | Current State  | Development Need / Deliverables   |
|--|--------------------------------|--|---|
| <p><b>Need and Uses</b></p> <p>In addition to providing information that helps to improve student achievement and reduce achievement gaps among students, a successful data system should address several of the State’s other key educational policy questions. The system should provide data and data-use tools that can be used in education decision-making at multiple levels, from policy to classroom instruction.</p>   | No                             | Student enrollment, state-level student assessment, program participation data available for state-level and school-level analysis.  | Incorporate teacher data, course and class data into AEDW for use in classroom-level instruction analyses. Provide visualization tools and dashboards in support of identified key indicators at identified levels. |
| <p><b>Governance</b></p> <p>A successful data system rests upon a governance structure involving both State and local stakeholders in the system’s design and implementation. Particularly when expanding the data capacity in existing K-12 systems to include other educational data, an SLDS must identify the entities responsible for the operation of the statewide data system and should include a common understanding of data ownership, data management, and data confidentiality and access, as well as the means to resolve differences among partners.</p> | Yes                            | The Data Governance Commission (DGC) is a statutorily created commission established to identify, examine and evaluate the needs of public educational institutions, provide recommendations on proposals for technology spending in the education arena; analyze and recommend policies for various aspects of data management; and, establish guidelines for future technology implementation. The DGC is established within the ADE to further its goal of responsible technological innovation in the educational community. | ADE will continue to work with the DGC to develop guidelines and data standards of AZ-SLDS.   |

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| <p><b>Institutional Support</b></p> <p>A successful data system requires institutional support from leadership within the SEA and from relevant stakeholders within and outside the SEA. The support must include authorization to develop and implement the SLDS, as well as the commitment of necessary staff and other resources. If the SLDS is to be expanded to include data from other systems, all involved institutions must agree to a shared vision for deliverables and objectives.</p> | <p>Yes</p> | <p>ADE, Arizona State University and Maricopa County Educational Service Agency have entered into a unique partnership to develop the AZ-SLDS. The three organizations, with the support of Governor Jan Brewer’s Office, will pool their human and capital resources to develop and implement a statewide longitudinal education data system.</p> <p>At its core, Governor Brewer’s education reform plan is rooted in the idea that before systematic reform can occur it is essential that there be high quality data systems to inform instruction, drive innovation and improve accountability. The data systems must provide timely and relevant information to teachers, school leaders and policy makers. The use of data to drive instruction must become a cultural given within our schools and inform all of our reform efforts. To that end, the number one recommendation in the reform plan is to create a SLDS governance structure.</p> | <p>Innovative dashboards, along with an enhanced identity and access management system, will provide ADE the capability to collect and measure results (describe) through providing stakeholders at all levels with critical access to visualize and analyze meaningful, actionable data. These data will serve to support ongoing state accountability efforts through providing the significantly enhanced capacity to conduct ongoing analysis of data to drive instructional, programmatic and policy decisions, help the state and schools to identify best practices and engage in program effectiveness evaluations, and provide a strong foundation for future education research efforts.</p> |
| <p><b>Sustainability</b></p> <p>A successful data system requires ongoing support from the SEA after it has been implemented. At a minimum, the system requires ongoing commitment of staff and other resources for system maintenance, quality control, and user training.</p>   | <p>Yes</p> | <p>To support ADE’s efforts, The Educational Learning and Accountability (AELAS) Fund was established to provide funding for a statewide educational technology system. The Arizona State Legislature supported the fund with \$5.0M from basic state aid and imposed a \$6 fee for full-time students attending public post-secondary institutions in Arizona (total fund \$6.3M).</p>  | <p>ADE has begun using AELAS funds develop a new Enterprise Architecture that will be the foundation for AZ-SLDS. This systematic approach will allow ADE to implement future technology upgrades.</p>   |

| <b>Technical Requirements</b>   |     |  |  |
|---|-----|--|--|
| <p><b>Federal Reporting.</b><br/>A successful data system must be able to meet Federal reporting requirements, including those of the U.S. Department of Education’s (Department) EdFacts system. The system should provide efficiencies that reduce the burden of Federal reporting for schools and districts.</p>   | No  | AEDW has been the source of some EDFACTS reports.  | Identify or add measures to meet those of the agency’s K-12 federal reporting requirements that it does not already meet. Automate the generation of federal reports according to reporting calendars. |
| <p><b>Privacy Protection and Data Accessibility.</b><br/>An SLDS must ensure the confidentiality of student data, consistent with the requirements of the Family Educational Rights and Privacy Act (FERPA) and State laws or regulations concerning the confidentiality of individual records. The system should also include public documentation that clearly articulates what data will be accessible, to which users, and for what purposes.</p> | Yes | All mandated privacy protections in place using current identity management and data access protocols. Data accessibility rules are in place. Data accessibility rules and guidelines are provided on the Public Data Warehouse training site. AEDW home page states how the data should and should not be used. | ADE will modify data warehouse data access to work with new identity management system. Updates will be shared on both the AEDW and ADE web site.  |
| <p><b>Data Quality.</b><br/>A successful data system must ensure the integrity, security, and quality of data. It should include an ongoing plan for training those entering or using the data, as well as procedures for monitoring the accuracy of information.</p>   | Yes | Data cleansing is limited to physical and logical consistency. Error reports document data issues to be resolved at the source system AEDW brings in integrity indicators and provides instruction on how to use them.   | ADE has identified the need to create and implement a data quality improvement plan.   |
| <p><b>Interoperability.</b><br/>The system should use a common set of data elements with common data standards to allow interoperability and comparability of data among programs</p>   | No  | Common set of data elements currently limited to existing set of conformable dimensions.<br><br>Adopting CEDS and CCD for data elements; adopting  | Common elements and standards will be incorporated into the AEDW.  |

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| <p>such as the Common Education Data Standards (<a href="http://nces.ed.gov/programs/ceds/">http://nces.ed.gov/programs/ceds/</a>), as available and applicable. A successful data system has the capacity to exchange data between the SEA and its LEAs, as well as among LEAs, or with other appropriate State agencies or educational entities.</p>   |            | <p>SIF/PESC as for interoperability</p>   |  |
| <p><b>Enterprise-wide Architecture.</b><br/>A successful SLDS includes an enterprise-wide data architecture that links records across information systems and data elements across time and allows for longitudinal analysis of dropout and graduation rates and student achievement growth. The architecture should include, at a minimum, a system for assigning unique student identifiers, a data dictionary, a data model, and business rules. The system must make data dictionaries publicly available.</p> | <p>Yes</p> | <p>While the AEDW currently has unique student identifier assignment, data dictionary, data model and business rules and the data dictionary available on AEDW web site, significant enterprise-wide challenges remain. ADE has multiple system domains, each of which requires its own access management. Current users have a unique ID to access functions, but they may have several, depending on how many roles they have or how many entities they work for. ADE is consolidating multiple Active Directory domains down to two domains based on user role and access for a more secure and streamlined provisioning process. ADE currently collects a substantial number of master data items, predominately about facilities providing education, programs and organizations that are serviced or supported through ADE. Another central system keeps track of the programs and services offered by entities, as well as collecting data about which students use the programs and services at what place. This system, Student Accountability Information System (SAIS), depends on the Enterprise system for entity data. These shortcomings prompted ADE to create artificial entities and artificial relationships between those entities in Enterprise.</p> | <p>ADE has begun integrating user sign-on and account management for the domains, as well as externally provided resources, by establishing an agency-wide Identity Management Solution (IMS). IMS will provide a robust and scalable single user account management interface to manage access to all ADE-provided resources. It will also federate identity management and authentication services with trusted partners such as school districts. The result will be faster access to distributed resources by reducing the user's need to remember and deal with multiple usernames and passwords, lower sign-on failure rate, upgraded system security including the ability of administrators to change a user's access to all system resources in a coordinated, consistent way, and improved administrator response when adding/removing users and modifying access rights. IMS will provide self-servicing features for</p> |

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|   |    |  | password reset and new access requests for reduced cost and better user experience. IMS will be used to provide full identity management and authentication services for trusted external partners that do not have the technical capabilities for full federation (such as small school districts). |
| <p><b>Secure Access to Useful Data for Key Stakeholder Groups.</b><br/>Appropriate and secure access to data must be provided to key stakeholder groups including policymakers, SEA program staff, external researchers, district administrators, and school-level educators. Access must be balanced with the need to protect student privacy and confidentiality consistent with applicable privacy protection laws.</p>            | No | <p>Access limited to individuals trained in use of AEDW – SEA internal staff, some district and county level staff.</p> <p>Security consistent with FERPA and state law.</p> | Access needs to be extended to all identified key stakeholders as each group’s data is incorporated into AEDW.   |
| <p><b>Data Use Deliverables.</b><br/>The system must include deliverables to meet end-user needs (to inform decision-making and evaluate policies and programs) such as reporting and analysis tools. Design of these deliverables must be informed by early and sustained engagement of representatives from user groups to ensure the system will meet their information needs and continuously improve to meet evolving needs.</p> | No | Current AEDW front-end is Excel 2007 pivot tables.   | Acquire/develop more flexible, easier-to-use tools.  |
| <p><b>Training on Use of Data Tools and Products.</b><br/>The system should include a professional development program to prepare end-</p>  | No | Training program discontinued for lack of resources.   | The grant will support the creation of guidelines, training materials and a system of support to assist  |

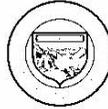
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| users to effectively use the data products.   |    |  | stakeholders to effectively use newly developed SLDS dashboards. Training will be provided to teachers, building and district administrators, county and state administrators, parents, policy makers and the general public.   |
| <b>Professional Development on Data Use.</b><br>The system should include a professional development program to help end-users effectively interpret and apply the data to inform decision-making and improve practices.              | No | The Governor’s reform plan calls for support to LEAs in transitioning to the common core standards and assessments. Support and assistance in curriculum alignment, standards based instruction and use of interim and formative assessments will be critical to both teachers’ teaching and students’ learning. The plan also prescribes training and support for Arizona’s SLDS and effective data use.. | ADE will work in collaboration with partners (Governor’s Office, county ESAs, WestED, post-secondary partners, vendors and LEA advisory groups) to help create training and guidance products. These tools will be responsive to the needs of LEAs, and will develop and pilot a comprehensive system of support to schools as the new functionalities are implemented.   |
| <b>Evaluation of Data Products, Training, and Professional Development.</b><br>The system should include a process for evaluating the effectiveness of the data use deliverables, and training and professional development programs. | No | No process is defined.   | ADE will conduct a needs assessment to identify and define stakeholder/user training requirements and use guidelines. Tools will include surveys, focus groups and in-depth key stakeholder interviews to develop business use cases designed to capture each stakeholder group’s unique and diverse data needs. The resulting information will be used to design guidelines, training and systems of support aligned to stakeholder needs. |
| <b>Partnerships with Research</b>   | No | Have labor-intensive, manual process in place. Have  | More efficient external data request  |

|   |            |  |  |
|---|------------|--|--|
| <p><b>Community.</b></p> <p>The State must have a policy in place for the processing of requests for data for research purposes and for communicating the scope of data available for analysis. The State should establish partnerships with internal and/or external research groups to assist with answering questions that can inform policy and practice. The State should actively disseminate research and analysis findings to the public while ensuring confidentiality of individual student data.</p> |            | <p>established relationships with internal and external research groups.</p>   | <p>approval process. Data store of large-volume, frequently requested data. Tools to pull data as standard or custom reports</p>   |
| <p><b>Sustainability Plan.</b></p> <p>The system must include a plan for sustaining the deliverables and training beyond the life of the grant.</p>   | <p>Yes</p> | <p>Arizona’s SLDS was built with a grant and is currently being upgraded and supported through ARRA appropriations. Budget shortfalls at have caused ADE to have poorly planned sustainment strategies, resulting in the implementation of an unsupportable product. These shortfalls have required early replacements, expensive end-of-life buys and emergency sustainment solutions. SAIS is currently being reengineered under the AELAS program, which is legislatively supported through a fixed cost per student charged to the LEAs.</p> | <p>Arizona is moving to a model where sustainment risk is mitigated with a model that charges a fixed-cost per student for software maintenance, hardware support and replacement, and training sustainability. To further increase the life of the investment, Arizona is focused on only delivering highly sustainable, flexible solutions that can change quickly with the user requirements and still stay within Arizona’s limited budgets.</p> <p>The ADE SLDS sustainability plan will address the following areas:<br/> <b>Human Resources:</b> Flexible staffing model to have the right flexible talent pool to keep up with demands on the system. <b>Policies:</b> Engagement plan of state governing bodies regularly to positively impact state policy decisions. <b>Standards:</b> Plan that outlines recommendation and implementation of development, data,</p> |

|  |  |  |   |
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|  |  |  | <p>and governance standards to increase effectiveness statewide. <b>Evolution:</b> Plan that applies feedback to develop continuously enhancements to SLDS to meet the changing needs of stakeholders. <b>Impact:</b> Prioritization plan demonstrating to stakeholders that the SLDS is worth the investment. <b>Marketing:</b> Deployment of a robust ADE IT Communication, Branding, and Marketing Plans that deliver regular status reporting on program achievement.</p> |
|--|--|--|---|

## Appendix B – Letters of Support

### Arizona Superintendent of Public Instruction, John Huppenthal



State of Arizona  
Department of Education  
Office of John Huppenthal  
Superintendent of Public Instruction

December 14, 2011

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

RE: Statewide Longitudinal Data Systems Grants (SLDS Grant) CFDA #84.372A

Dear Secretary Duncan:

The Arizona Department of Education (ADE) is in the process of submitting a grant application under the Statewide Longitudinal Data System (AZ-SLDS) grant application. This project is designed to ensure that parents and educators have access to the best information possible upon which to base educational decisions for their children and students.

The AZ-SLDS project will further enhance and build the capacity of our existing SLDS through developing innovative dashboards to visualize data based on unique stakeholder needs, creating and enhancing an identify management solution, and providing and implementing guidelines, training and a system of support for stakeholders on how to effectively use the tools available through the SLDS to positively impact student learning and growth.

We feel this planned expansion and enhancement of the Arizona SLDS will provide parents, teachers, students, school leaders, policy makers, researchers and the public with the quality data and information they need to make the informed, strategic decisions necessary to increase student academic growth and enhance student learning environments. We are confident that this grant will provide the Arizona Department of Education the critical resources needed to transform our data warehouse into a robust, flexible and accessible tool for accurate, real-time informed decision making.

As a state with particular economic challenges, Arizona needs significant enhancements to its efforts to ensure all students realize significant, measurable improvements in student achievement. It is our top priority to ensure all students graduate from high school college- and career-ready. I strongly support the AZ SLDS initiative because it addresses the core needs, follows the Absolute Priorities and is sustainable.

Sincerely,

(b)(6)

John Huppenthal



1535 West Jefferson Street, Phoenix, Arizona 85007 • (602) 542-5460 • www.azed.gov

**Arizona Governor Jan Brewer**

STATE OF ARIZONA

JANICE K. BREWER  
GOVERNOR

December 14, 2011

EXECUTIVE OFFICE

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

RE: Statewide Longitudinal Data Systems Grants (SLDS Grant) CFDA #84.372A

Dear Secretary Duncan:

My office is pleased to partner with the Arizona Department of Education (ADE) in its Statewide Longitudinal Data System (AZ-SLDS) grant application. Helping parents and educators obtain the information they need to better inform the decisions they make regarding a child's education has been a top priority for my administration. The completion of this project will help Arizona take significant steps toward this goal.

When I released my policy agenda for this year, it was based upon Four Cornerstones of Reform – one of which was Education Reform. Under this banner, one of my top priorities was to finalize the P-20 longitudinal data system. To highlight this importance, my budget also requested \$6 million to work on its completion. The legislature agreed and the Department of Education has been able to make considerable progress this year.

Earlier this year I also released my education reform plan, *Arizona Ready*. It is based substantially on our second Race to the Top application with a longitudinal data system as one of the four pillars. With this as our guide, data driven decisions will be used to implement new college and career standards and assessments, train great teachers and great leaders, and support our struggling schools. Ultimately, we expect that this work will culminate in higher student achievement.

I strongly support this effort and will continue to advocate for improved transparency and accountability which can only come through the establishment of a robust and user-friendly P-20 longitudinal data system.

Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script that reads "Janice K. Brewer".

Janice K. Brewer  
Governor1700 WEST WASHINGTON STREET, PHOENIX, ARIZONA 85007  
602-542-4331 • FAX 602-542-7602

**Arizona State Senate President Steve Pierce****STEVE PIERCE**  
DISTRICT 1SENATE PRESIDENT-ELECT  
FIFTEETH LEGISLATURECAPITOL COMPLEX, SENATE BUILDING  
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FAX (602) 417-3224  
E-MAIL: spierce@azag.gov

COMMITTEES:

RULES, CHAIRMAN

**Arizona State Senate**

December 14, 2011

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

RE: Statewide Longitudinal Data Systems Grants (SLDS Grant) CFDA #84.372A

Dear Secretary Duncan:

The Arizona State Senate is an enthusiastic partner with the Arizona Department of Education (ADE) in its Statewide Longitudinal Data System (AZ-SLDS) grant application. This project is designed to ensure that parents and educators have access to the best information possible upon which to base educational decisions for their children and students.

The AZ-SLDS project will further enhance and build the capacity of our existing SLDS through developing innovative dashboards to visualize data based on unique stakeholder needs, creating and enhancing an identity management solution, and providing and implementing guidelines, training and a system of support for stakeholders on how to effectively use the tools available through the SLDS to positively impact student learning and growth.

We agree that this planned expansion and enhancement of the Arizona SLDS will provide parents, teachers, students, school leaders, policy makers, researchers and the public with the quality data and information they need to make the informed, strategic decisions necessary to increase student academic growth and enhance student learning environments. We are confident that this grant will provide the Arizona Department of Education the critical resources needed to transform our data warehouse into a robust, flexible and accessible tool for accurate, real-time informed decision making.

As a state with particular economic challenges, Arizona is in need of significant enhancements to its efforts in ensuring all students realize significant, measurable improvements in student achievement, and that all students graduate college or career ready. I strongly support this effort, which addresses the core needs, follows the Absolute Priorities and is sustainable.

Sincerely,

A handwritten signature in black ink that reads "Steve Pierce".

STEVE PIERCE  
Senate President-elect

**Arizona State Senator Rich Crandall**

Rich Crandall  
DISTRICT 19

STATE SENATOR  
FIFTIETH LEGISLATURE

CAPITOL COMPLEX, SENATE BUILDING  
PHOENIX, ARIZONA 85007-2880  
PHONE: (602) 928-3020  
FAX: (602) 417-3262  
EMAIL: rcranall@azleg.gov

**Arizona State Senate****COMMITTEES:**

EDUCATION, CHAIRMAN

APPROPRIATIONS

ECONOMIC DEVELOPMENT AND  
JOBS CREATION

PUBLIC SAFETY AND HUMAN SERVICES

December 15, 2011

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

Dear Secretary Duncan:

As Chairman of the Senate Education Committee I am writing this letter in strong support of the Arizona Department of Education (ADE) in its Statewide Longitudinal Data System (AZ-SLDS) grant application.

The AZ-SLDS project will further enhance and build the capacity of our existing SLDS through developing innovative dashboards to visualize data by creating and enhancing an identify management solution, and by providing and implementing guidelines training and a system for stakeholder support.

In addition, this planned expansion and enhancement of the Arizona SLDS will provide parents, teachers, students, school leaders, policy makers, researchers, and the public with quality data and information they need to increase student academic growth and enhance student learning environments.

I am confident that this grant will provide the Arizona Department of Education the critical resources needed to transform our data warehouse into a robust, flexible and accessible tool for accurate, real-time informed decision making. Therefore, I strongly support this effort which addresses the core needs, follows the Absolute Priorities, and is sustainable.

Sincerely,

A handwritten signature in black ink that reads "Rich Crandall".

Rich Crandall  
Senator

RC:ld

**Arizona State Representative Heather Carter**

HEATHER CARTER  
1700 WEST WASHINGTON, SUITE H  
PHOENIX, ARIZONA 85007-2844  
CAPITOL PHONE: (602) 966-5506  
CAPITOL FAX: (602) 417-3107  
TOLL FREE: 1-800-352-8404  
hcarter@azleg.gov



COMMITTEES:  
EDUCATION  
ENVIRONMENT  
HEALTH AND HUMAN SERVICES

DISTRICT 7

**Arizona House of Representatives**  
Phoenix, Arizona 85007

December 14, 2011

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

RE: Statewide Longitudinal Data Systems Grants (SLDS Grant) CFDA #84.372A

Dear Secretary Duncan:

The Arizona House of Representatives is an enthusiastic partner with the Arizona Department of Education (ADE) in its Statewide Longitudinal Data System (AZ-SLDS) grant application. This project is designed to ensure that parents and educators have access to the best information possible upon which to base educational decisions for their children and students.

The AZ-SLDS project will further enhance and build the capacity of our existing SLDS through developing innovative dashboards to visualize data based on unique stakeholder needs, creating and enhancing an identify management solution, and providing and implementing guidelines, training and a system of support for stakeholders on how to effectively use the tools available through the SLDS to positively impact student learning and growth.

We agree that this planned expansion and enhancement of the Arizona SLDS will provide parents, teachers, students, school leaders, policy makers, researchers and the public with the quality data and information they need to make the informed, strategic decisions necessary to increase student academic growth and enhance student learning environments. We are confident that this grant will provide the Arizona Department of Education the critical resources needed to transform our data warehouse into a robust, flexible and accessible tool for accurate, real-time informed decision making.

As a state with particular economic challenges, Arizona is in need of significant enhancements to its efforts in ensuring all students realize significant, measurable improvements in student achievement, and that all students graduate college and career ready. I strongly support this effort, which addresses the core needs, follows the Absolute Priorities and is sustainable.

Sincerely,

A handwritten signature in black ink, appearing to read "Heather Carter", written over a white oval background.

Representative Heather Carter  
Co-Chair of the House Ad Hoc Committee on Education Data System

## West Ed, Paul Koehler



December 13, 2011

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

RE: Statewide Longitudinal Data Systems Grants (SLDS Grant) CFDA #84.372A

Dear Secretary Duncan:

WestEd is pleased to support the Arizona Department of Education (ADE) Statewide Longitudinal Data System (AZ-SLDS) grant application. The AZ-SLDS will ensure that parents, teachers, students, school leaders, policy makers, and researchers have access to the best information possible to make informed, strategic decisions necessary to increase student academic growth.

The AZ-SLDS project will further enhance and build the capacity through:

- Developing innovative dashboards;
- Creating and enhancing an identify management solution; and
- Implementing guidelines, training, and a system of support for stakeholders.

Arizona is in need of significant enhancements to its efforts in ensuring that parents and educators have access to the best information possible to make well-informed educational decisions for their children and students.

The Arizona Department of Education and the Southwest Comprehensive Center are close working partners. We understand the need and opportunity this grant presents and strongly support this effort.

Sincerely,

(b)(6)

Paul Koehler, Ph.D.  
Director  
Southwest Comprehensive Center at WestEd

PHK:ps

**Maricopa County Education Service Agency, Don Covey****MCESA**

Office of the Superintendent of Schools



Maricopa County Education Service Agency

December 14, 2011

Secretary Arne Duncan  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

RE: Statewide Longitudinal Data Systems Grants (SLDS Grant) CFDA #84.372A

Dear Secretary Duncan:

Maricopa County Education Service Agency (MCESA) is an enthusiastic and invested partner with the Arizona Department of Education (ADE) in its Statewide Longitudinal Data System (AZ-SLDS) grant application. This project is designed to ensure that parents, educators, and community have access to the best information possible upon which to base decisions.

Leveraging resources from prior funding sources, and in collaboration with MCESA's TIF grant, Rewarding Excellence in Instruction and Leadership (REIL), the AZ-SLDS project will further enhance and build the capacity of our existing SLDS through developing innovative dashboards to visualize data based on unique stakeholder needs, creating and enhancing an identify management solution, and providing and implementing guidelines, training and a system of support for stakeholders on how to effectively use the tools available through the SLDS to positively impact student learning and growth.

This planned expansion and enhancement of the Arizona SLDS will provide parents, teachers, students, school leaders, policy makers, researchers and the public with the quality data and information they need to make the informed, strategic decisions necessary to increase student academic achievement in urban and rural communities throughout the state of Arizona. We are confident that this grant will provide the ADE the critical resources needed to transform our data warehouse into a robust, flexible and accessible tool for accurate, real-time, informed decision making all the way from the classroom to the state policy level.

As a state with particular economic challenges, Arizona is in need of significant enhancements to its efforts in ensuring all students realize substantial, measurable improvements in learning, and that all students graduate college and career ready. As a committed partner in this on-going statewide endeavor, I strongly support this effort, which addresses the core needs, follows the Absolute Priorities and creates a sustainable data system.

Sincerely,

(b)(6)

Dr. Don Covey  
Maricopa County Superintendent of Schools

## **Memorandum of Understanding with MCESA and ASU**

Arizona Student Longitudinal Data System:  
AZ-SLDS  
Memorandum of Understanding Draft Version

Prepared For  
Maricopa County Education Service Agency,  
Arizona State University  
Arizona Department of Education  
May 19, 2011



**MCESA**  
Maricopa County Education Service Agency



**MEMORANDUM OF UNDERSTANDING**

This memorandum outlines the relationship between the Arizona Board of Regents for and on behalf of Arizona State University (ASU) represented by the Mary Lou Fulton Teachers College (MLFTEC), the Maricopa County Educational Services Agency (MCESA), and the Arizona Department of Education (ADE) for the cooperative enhancement of the K12 Arizona Statewide Longitudinal Data System (AZ-SLDS).

Each of the parties has a responsibility through grant awards, research requirements and/or government mandates to separately develop components of a statewide student longitudinal data system.

Each party has elected to enter into a collaborative relationship that leverages the efforts of each to enhance the Arizona Statewide Longitudinal Data System.

**Program Governance**

Each party from ASU, MCESA and ADE will identify a primary representative to the AZ-SLDS Steering Committee (Steering Committee).

The Steering Committee will:

- Provide active direction, leadership
- Meet regularly to review interim progress, results and make adjustments as needed
  - Steering Committee Meetings to be held twice monthly until the Steering Committee mutually agrees to a new meeting calendar
- Identify and execute adjustments to the program
- Ensure achievement of the planned outcomes.
- Assure that all federal, state and local laws, mandates, guidelines are adhered to
- Maintain program policies and practices such as a data dictionary, communications, contract management

In support of the Steering Committee and attending, as needed, the Steering Committee meetings will be the AZ-SLDS Program Manager, Project Managers from each party, the Principal Investigators or a designee from the respective grants, and a representative from the Arizona Governor's Office.

Additional members can be named to the Steering Committee as mutually agreed upon.

In addition, the Steering Committee will direct a program manager to:

- Integrate efforts, continuously assess and refine approaches and plans, and ensure good communication.
- Collaborate with each party's project managers to achieve defined outcomes aligned with business strategies.
- Manage for on-time delivery of program deliverables
- Upon execution of this MOU develop an Inter-Governmental Agreement (IGA), AZ-SLDS Program Charter and AZ-SLDS Program Plan as dictated by standard project management practices of PMI for review and approval by the Steering Committee.

ASU, MCESA and ADE will assign a dedicated project manager as a single point of contact for the organization whose sole responsibilities will include the following.

- Define work within the project plan framework for their organization.
- Plan, organize, direct, and control the project efforts as well as resources within their organization.
- Manage for on-time delivery of program milestones for their organization.

Each party will assist in identifying reports for visualization in a dashboard display, including the data elements, data sets, layouts, etc that need to be present in the AZ-SLDS as required by grants, funded initiatives for each organization.

Each party will assist in identifying other reporting outputs.

#### AZ-SLDS Data Stewardship

The Steering Committee will hold itself accountable for the quality of data collected, transmitted and reported on by:

- Increasing the consistency and confidence in decision making, reporting and analysis
- Meeting present and future regulatory needs
- Improving data security
- Maximizing the public policy and program potential of AZ-SLDS data
- Generating greater accountability for information quality

#### Program Overview

The AZ-SLDS collaboration will develop a system that:

1. Associates teacher and principal assignment data to student achievement data.
2. Connects student performance achievement data to each eligible teachers' and principal's performance incentive which may include but is not limited to payroll and human resource systems.
3. Integrates an open-standard based identity management solution that rigorously validates the user's credentials and ensures the user is exposed to data and functionality that they are authorized to view.
4. Provides portals and other gateways to provide system administrators, teachers, and principals (and other appropriate staff) the requisite level of transparency necessary to review accuracy of their specific information (e.g., verification of student roster, verification of performance award).
5. Produces student, teacher, school and district academic growth calculations using a variety of methodologies.
6. Imports student, teacher, school and district data from a number of different sources – source files, relational data-base(s), student information systems.
7. Captures and transforms data where appropriate to support transactional data stores, data warehouses or other technologies as required.
8. Integrates data visualization or dashboards to communicate information clearly and effectively through graphical means as well other reporting mechanisms such as text files, custom queries, and standardized outputs.
9. Tracks and reports on the associated costs of hardware, software, people, facilities, for both the program, districts and all aspects of the AZ-SLDS program.

No party to this MOU will hold any other party of the MOU to licensing and/or royalty fees in return for access and the use of processes and technologies created during the term of this MOU and as part of any development efforts in this collaboration.

All parties will comply with Schools Interoperability Framework (SIF) Standards within their scope of work.

This Agreement shall be governed by and construed in accordance with the laws of the State of Arizona.

No party may assign or in any way transfer its interests or obligations under this MOU except with the express written prior consent of the other party or parties.

This agreement is in effect upon the date of signature by all parties and upon review by each partner's legal counsel where required by policy and/or practice.

This memorandum of understanding will terminate on December 31, 2015.

|   |       |         |
|---|-------|---------|
| (b)(6)  | _____ | 5-19-11 |
| Dr. Virginia McElyea, Executive Director (FSC)  | Date  |         |
| Office Innovation Partnership – Mary Lou Fulton |       |         |
| Teachers College                                |       |         |
| Arizona State University                        |       |         |
| (b)(6)  | _____ | 5-19-11 |
| Dr. Don Covey, Superintendent                   | Date  |         |
| Maricopa County Educational Services Agency     |       |         |
| (b)(6)  | _____ | 5-19-11 |
| Mr. Mark Masterson, Chief Information Officer   | Date  |         |
| Arizona Department of Education                 |       |         |

## Appendix C – Resumes of Key Personnel

### Mark Masterson

#### Executive Profile

Selected by Arizona Governor to qualify and quantify re-architecture of 132 agency customer and financial legacy systems many over 20 years old...objective is to integrate on a single ERP platform...handpicked to start effort in State 2nd largest most broken State Education Agency.

Selected by DP/DHL executive management to transform underperforming IT teams. Moved into 3 different executive management responsibility roles in 5 years due to influential, leadership approach.

10+ year's exp. leading teams through complex merger and acquisitions requiring extensive ERP integration for core financial, customer service and operations business units...Efforts included ERP, (PeopleSoft, Oracle Financials, and SAP), CRM, ecommerce, and legacy finance applications.

#### Areas of Expertise

##### Global Development Leadership:

Teams Agile Development Methods  
Supply Chain / ECRM/ eCom/  
Quality Assurance Best Practices/  
Product Harmonization/  
Shared Services / ESB  
ITIL/Six Sigma/ Lean  
CMMI /  
Budget Forecast / Execution

##### Global Program Management:

IT Portfolio Management/  
Offshore Development and Support Model /  
Matrix Management /  
Critical Path Analysis /  
Cost Estimation / Evaluation /  
Tracking /  
Major Program Staffing /  
Scheduling / Contract Bidding /  
Negotiation / Award /

##### Concepts & Technology:

##### SOFT ARCHITECTURE

Oracle / SAP / Siebel /  
Java, SQL, C++, .Net, XML /  
SOA / SaaS / MS Dynamics

##### HARDWARE

Enterprise System and  
Network Architecture /  
Mainframe IBM ZOS  
UNIX & WINTEL Platforms /  
Virtualization / SAN/ NAS/

#### Professional Experience

##### CIO, Arizona Department of Education (ADE)

Jan 2011 -- Present

Hired by Governor and State Superintendent selection to lead transformation of broken IT function in the Department of Education.

Kicked off statewide Enterprise Architecture strategic initiative to identify and eliminate system duplication through integration and consolidation. Effort expected to reduce costs by \$500M in 5 years.

Build initial architectural framework to migrate legacy custom education services ensuring SOX compliance onto a state deployed education ERP (MS Dynamics) in a private cloud. Ultimate state savings estimated to exceed \$200M annually.

##### Deputy CIO, State of Arizona.

Apr 2010 -- Jan 2011

Reengineered delivery for Information Technology in 132 decentralized State Agencies.

Directed State of Arizona IT Program Management, System Security, Privacy, Network and

Enterprise Architecture to ultimately provide centralized platform and operations and decentralized execution.

Launched state-wide data architecture initiative to define data structure in support of agency applications in order to identify both redundancy and opportunities for system integration and consolidation.

Initiated effort to collapse 15 federated data centers to provide immediate IT cost relief.

**DP (Duetsche Post)/DHL, Global Business Services, IT Services, Scottsdale AZ. (Feb 2004 - Nov 2009)**

**DP/DHL Head of Shared Systems and Management Reporting (VP of IT): Feb 2007 -- Nov 2009**

Led 250 person global team with direct P&L of \$60M in Prague, Kuala Lumpur, India, Bonn, and Scottsdale. Team included directors, senior managers, project managers, custom technical developers (Mainframe, Oracle, Siebel, SAP, and Web Methods), business system analysts, off shore and on shore contractors, and partners.

Led America's migration and transformation off of custom legacy HR, Customer Service and Business Intelligence applications which include a PeopleSoft (HR) and SAP integration ensuring Global Finance and HR transparency.

Globally reputation for delivering on-time, high quality programs...over 300 software development efforts (\$24M) using both SDLC and agile methodology.

Relocated over 178 critical IT services without customer impact while executing \$110M global strategy for data center consolidation program.

Directed go-to-market strategy for SAP Financial and Controlling build services; prioritize and “productize” into discrete packages that could be deployed to multiple countries reducing TCO by 25%.

**DP/DHL Director Enterprise Accounting Systems** **Feb 2005 – Feb 2007**

Transformed dysfunctional team responsible for implementation, quality assurance, security, admin and support activities for billing, finance and ecommerce systems on multiple (Mainframe and distributed) platforms.

Executed a turnaround in a troubled operations and support team in less than 90 days through the implementation of ITIL Service Management.

Orchestrated IT/Business solution to reduce Unapplied Cash from \$100M to below \$4M in 90 days.

Uncovered significant revenue problems that created reporting shortfalls in excess of \$6.5M.

Led internal and external cross functionally teams to identify root cause and executed a plan that rebuilt 6 months of data.

**DP/DHL IT Director Infrastructure Support Services** **Feb 2004 – Feb 2005**

Handpicked to lead Global Transformation Infrastructure activities related to DHL's Airborne \$2B acquisition. Hired to lead multi-disciplined 120 person staff, responsible for all related acquisition budget, program & projects.

Executed six month rigorous integration plan to move Mainframe and infrastructure from Seattle WA. to Scottsdale AZ with zero customer impact.

In less than 6 months, completed 538 site domestic WAN migrations, including migration of thousands of customer EDI interfaces...Consolidate 13 call centers to support the newly merged organization.

Selected by DHL Express CEO to negotiate the merging of ABX Air and DHL Express IT Services in the newly acquired Wilmington OH Air Hub.

**Lloyd Electric, Richardson TX.**

**Oct 2002 - Nov 2003**

**National Director of Operations**

Managed \$84M P&L for electrical / voice / data program in support of the Homeland Security administration's US Baggage Screening Program Implementation...supervised staff of 81 engineers and project managers.

Exceeded Boeing's compressed schedule to meet National Security demands by engineering / designing / constructing / installing over 5300 specialized systems including networks to support these systems at 467 Airports. Initial engineering and implementation substantially completed in less than three months.

Executed implementation of management controls/systems for \$30M monthly burn rate which did not exist.

**American Airlines, Ft Worth TX.**

**Mar 2001 to Oct 2002**

**Eastern, Caribbean, and Latin America Regional IT Business Manager**

Responsible for delivery of innovative, high-return technology solutions in support of 54 stations including 6 out of 9 highly visible airline hub cities. Led the re-integration of IT from long term vendor EDS, key team member in the successful TWA, and Reno Air Finance, Customer Service and Web services acquisition .

Selected to lead \$700M infrastructure installation program for American Airlines (AA) 62 gate Miami North Terminal Redevelopment Project.

Led a regional team that completed a complex parallel 52 site \$150M network upgrade project... completed 15% under-budget.

Provided IT Program management for a \$7M, 450 person call center build-out and relocation. Saved over \$750K in vendor related costs by identifying unnecessary and redundant processes.

**Education**

MSIS IT Program Management, 1998, Hawaii Pacific University (Conferred with Distinction)

MBA Global Business Management, 1998, Hawaii Pacific University (Conferred with Distinction)

BS Business Administration, Minor Computer Science, 1991, Columbia (Cum Laude)

**Directorships**

Member, Board of Governors – Boys and Girls Club of Greater Scottsdale 2007—Present

## **Pamela Smith**

### **Professional Summary**

- 19 years of leadership experience in business administration, operations management/planning, program management, process improvement, and workforce planning
- Program management experience in IT development/infrastructure and process implementation
- “Big picture” strategist, with innovative ideas for creating, implementing and sustaining corporate growth throughout every sector of the organization
- Experience serving as a liaison between business and technical (IT and Engineering) management,
- Experience documenting and improving a wide range of business processes and methodologies with appropriate solutions in IT and Operations
- Excellent Communications and Public Relations skills
- Microsoft Office Suite (Word, Excel, PowerPoint) MS-Project, Visio, Lotus Notes, PeopleSoft, Oracle
- PMP framework methodology

### **Professional Experience**

#### **Arizona Department of Education**

**May 2011 – Present**

##### **Executive Director of Strategic Initiatives**

- Responsible successful execution of AELAS (Arizona Educational and Learning Accountability System), MCESA (Maricopa County Education Service Agency), and Education Initiatives programs
- Work with CIO to develop new data system concept to accommodate both longitudinal and accountability initiatives per state legislation
- Create IT PSO (Project Support Organization) department and framework
- Liaise and partner with state Governor’s Office, legislators, educational stakeholder groups
- Create framework for IT department Communications and Public Relations Strategic plan
- Develop IT Programs financial budget tracking and auditing processes for multi-million dollar initiatives

#### **Project Management Institute – Phoenix Chapter – 2300 members**

**June 2007 - Present**

##### **President**

**2010 – Present**

- Responsible for directing activities 9 board members in accordance the chapters’ mission, vision, and by-laws
- Serve as a liaison to Global PMI organization
- Preside over chapter, special and business meetings
- Represent the PMI Phoenix Chapter at local and international Project Management Institute functions, as well as at local business, service organization, government, and university functions
- Provide direction to the other executive teams/committees and monitor and oversee activities
- Realigned External Relations Team, Professional Development Team, Programs Team, Membership Team, Marketing Program, Governance Program, Leadership Advisory Council, and Elections Program.

- Launched Leadership Development Program, Collegiate Project of the Year, Arizona Project Management Week

**President-Elect / Operations / Secretary** **2009**

- Sponsored by chapter to represent chapter in quarterly PMI leadership conference in Kuala Lumpur, Malaysia – February 2009
- Provide direction to the Operation, Membership and Volunteer Committees; monitor, and oversee activities of all chapter teams
- Responsible for all non-financial reporting, chapter process documentation, asset management, statistics/metrics, surveys, chapter elections, leadership initiatives, chapter governance in accordance with the provisions of the bylaws and/or as required by law
- Grew Operations Team from 2 volunteers to 27 volunteers in 11 months
- Created centralized Marketing Team for chapter. Point of contact for Public Relations Consultant. Developed chapter marketing collateral
- Created Volunteer Orientation, Leader Orientation, Leadership Development, Chapter Statistics, Guided Corporate Outreach Team on creating framework for Corporate Ambassador program
- Drove SharePoint implementation for chapter

**Vice President Membership** **2008**

- Decreased membership attrition from 28.42% to 27.15% from December 2007 through December 2008
- Increased chapter volunteer corps by 32% in 2008
- Grew “Membership” chapter team from 4 to 21 volunteers in 2008
- Developed and conducted annual member needs assessment survey and volunteer satisfaction survey with 87% membership satisfaction or very satisfied results and 89% volunteer experience good to excellent results respectively in 2008
- Actively promoted new PMI memberships and renewals of membership among existing members in the Phoenix area
- Met with committee members directing chapter membership activities
- Chaired 2008 PMI Phoenix Chapter Annual Awards Dinner to recognize and honor 144 volunteers and 7 business partners

**Director of Volunteer Services** **2007**

- Managed team to establish needed framework by creating volunteer matrices, processes, and support documentation

**March of Dimes, Phoenix, AZ September 2009 – November 2009/June 2007 – October 2007**

**Project Manager**

- Responsible for public relations project management function for annual fund-raising

**Senior Technical Consultant** **October 2004 to December 2005**

- Hewitt Associates is a global management consulting firm specializing in human resources solutions.
- ConsultNet is staffing firm that markets IT recruiting services to corporations across the U.S.

**Intertec Consulting, Phoenix, AZ****September 2003 to October 2004****Director of Operations and Information Technology**

- Identified business needs in order to reach projected goals for start-up IT Consulting firm
- Responsible for management and development of IT, Recruiting, and Administration teams
  - Projects included creation, documentation, and implementation of:
    - Asset Management System for IT field consultants
    - Creation and implementation of disaster recovery plan
    - Creation and implementation of corporate IT Policy and Procedure
- Member of 7 person company leadership team directly contributing input to direction of company

**Inntech, Inc., Minneapolis, MN****December 1992 to August 2003****President (Company sold)**

Inntech is an Engineering and IT consulting company that marketed staff augmentation and IT infrastructure projects consulting services to Minnesota area corporations.

- Led company from start-up mode to successfully operational \$7M dollar entity
- Recognized in 1996 as Young Entrepreneur of the Year by NAWBO
- Responsible for identifying and analyzing business needs in order to reach projected production
- Acted as liaison/advisor for both clients and consultants providing high level of communication and customer service
- Hired and managed internal team of 8 direct reports and staff of 70 IT and Engineering consultants
- Created and managed marketing program for company
- Refined and implemented company-wide policies and procedures to ensure consistent high quality delivery
- Projects included creation, documentation, and implementation of:
  - Implementation of IT system upgrade for small company clients
  - Creation and implementation of disaster recovery plan (client and internal)
  - Creation and implementation of corporate IT policy and procedure (client and internal)
  - Asset management system for IT field consultants (internal)

**Education**

Bachelor of Science, Business Administration/Management – University of Phoenix

**Training**

PMI Leadership Institute – various technical and leadership training seminars; PMO, Agile, SCRUM, Risk Management, Microsoft Project; University of Minnesota - Carlson School of Management - Business Contracts; EBEA – COBRA Law; NATSS – Immigration Law

Foreign Languages – French, Spanish, German

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## Linda Jewell

### Summary

A senior leader with a proven track record combining business knowledge, technology expertise, and product management skills to oversee day-to-day technology operations including complex budget and staff management.

- Conceive, develop, and manage exceptionally successful global portfolios throughout design, development, delivery, and support processes.
- Assemble, lead, and motivate high-caliber technical and professional teams.
- Proactive vision, leadership, and execution of IT strategies to support business, cross-departmental initiatives, while expertly maintaining all aspects of IT budget.
- Extensive experience in leading data center logical and physical consolidation programs designed to reduce cost and increase data center availability, performance for customer critical systems.
- Accomplished technical leader for a variety of platforms including .net, JAVA, mainframe, websphere, Siebel CRM, infrastructure - security, networks, and disaster recovery. Special emphasis on data warehousing platforms including Teradata, Informix, DataStage, Informatica, Sal Server, Oracle, MicroStrategy, Business Objects, Siebel Analytics, and Cognos.

### Professional Experience

**Syntel, Inc** (Contracting for American Express)

**Oct 2010-present**

***Program Director***

Provide outstanding cross-functional program leadership for Global Network Services

- Manage development portfolio for Global Network Services senior leadership
- Provide capacity planning for employee, onshore/offshore, and environments allowing leadership to make informed project decisions
- Lead Program and Project managers to assess project impacts across portfolio
- Manage development for large global disputes platform
- Provide project management for large cross-platform programs
- Develop portfolio reporting for senior leadership
- Assess portfolio opportunities for leadership to grow revenue business including developing concept of complete outsourced projects

**Independent Contractor for American Express**

**Feb 2010-Oct 2010**

***Program Director***

Provide outstanding cross-functional program leadership for Global Network Services

- Directed large high-profile mainframe and distributed programs for Global Network Services. Managed and controlled budgets and financial forecasts for 1 M + portfolio.
- Introduced capacity planning and resource utilization metrics for Global Network Service Technologies.
- Developed pre-project activity process providing prioritization and governance of long range planning against current base-lined projects.

- Introduced engagement process and communication strategy for Global Network Services, including strategy and business partners. Allows for other American Express entities to engage Global Network Services in a clear, consistent manner.
- Developed three year application roadmap for mainframe global system.
- Introduced risk management premium assessment.
- Developed strategic review process for Partner Settlement group.

**DHL Global IT Services Americas, Phoenix, Arizona****2005-2009*****Data Center Consolidation Lead (2008- 2009)***

Provided outstanding cross-functional leadership to highly skilled team of project managers and engineers to facilitate Americas Data Center shutdown 120 M EUR program.

- Directed workstreams to consolidate/move 100+ applications and infrastructure from America to Prague, CZ and Kuala Lumpur, MY to facilitate Americas Data Center shutdown. Managed large consolidation of IVRICTI, Oracle, Java, and .net initiatives for support in Malaysia and Czech Republic. Expert user of MS Project to manage global resource loading, and financial forecasting. Managed development projects aligning technical requirements to business requirements.
- Responsible for managing the Americas Data Center shutdown/consolidations from conception, detailed work plans, staffing assessments, equipment, security, infrastructure plans and applications re-deployment to Czech Republic and Malaysia global data centers.
- Led Secure Access - infrastructure, extranet, intranet service migration to Prague and Malaysia, including BigIP F5, DNS management, NOC, SOC, VPN, PKI, and other security functions. Managed SAN data center migration. Generated best practices for security transfer to other data centers to keep functions within budget. Managed decommission and redeployment of mainframe and legacy applications.
- Managed change requests, risk and mitigation plans to reduce overall program risk utilizing ITIL standards. Facilitated re-use of Americas Data Center equipment resulting in reduced CAPEX of project.
- Led Knowledge Capture and Transfer efforts for business intelligence, sales, marketing, and infrastructure security projects.
- Interacted with C-Level executives for program status updates. Established reporting standards for program level communications.

***Head of Business Intelligence Americas/Global Siebel CRM*****2007- 2009**

Exceptional cross-cultural and cross-functional leader providing direction to highly skilled team of project managers, business analysts, architects, DBA's, developers during lifecycles of varied technical products. Technology platforms and projects include web applications, business intelligence, and global Siebel CRM solutions. Manage large 20,000,000+ EUR Profit/Loss statement in a professional services setting.

- Led large 25 person cross functional team in all phases of professional career growth.
- Approval and management of all technology budgets and projects for Enterprise Data Warehouse, Global Siebel CRM/Oracle system, and sales and marketing applications. Extensive experience in development and deployment on multiple platforms.

- Developed Business Intelligence product roadmap to meet business needs for large data warehouse including data sourcing, application front ends, and ETL processing.
- Expert customer relationship management including RFPs, strategy reviews, and architectural go-forward initiatives for BI platforms consisting of Teradata, Oracle, Informatica, IBM DataStage, IBM QualityStage, IBM ProfileStage, MicroStrategy, Business Objects, Siebel Analytics, and Cognos.
- Managed all aspects of project lifecycles for data warehouse including risk mitigation and reforecasts. Project methodologies include RAD, SCRUM, RUP, Prince2, and internal processes.
- Maintained change management, release management, and application development for all data warehouse, CRM, and Oracle projects utilizing ITIL standards.
- Exceptional leader for large global enterprise Siebel/Oracle CRM system and Siebel Analytics deploying 56 projects in current year to 134 countries with 8000+ users. Mentored team for exceptional standards and best practices for Global Enterprise Data Warehouse using Teradata platform with multiple IBM DataStage ETL processes and Cognos front-end. Developed and managed Quality Assurance testing plans.
- Expertly managed disaster recovery for data warehouse and global CRM system
- Created requests for proposals and project estimations detailing technical specifications in business terms.
- Mentored business partners in data warehousing best practices for better project delivery.
- Successfully led Data Center Quality Assessment team to CMMI Level 3 through IT process improvements

***Product Manager*****2005-2007**

Product Manager for large Teradata warehouse, including ETL, Cognos environments and large .net systems.

- Expertly managed product lifecycles within complex matrixed organization. Successfully managed global releases of .net products through disciplined ITIL standards.

**Charles Schwab & CO., INC., Phoenix, Arizona****2000 - 2005*****Senior Manager. Project and Portfolio Management***

Responsible for the direction and tactical execution of multiple cross-functional initiatives including application development, delivery of large *Genesys/CTI* projects and FileNet Imaging Products.

- Provide leadership and direction to project managers, team members, and business partners during all lifecycles of a project.
- Successful project management of over 50 technical initiatives I releases for Schwab's financial, imaging, and workflow applications ranging in budget from \$200,000 to over several million dollars and consisting of project teams up to 100 members.
- Managed systems development life cycle of large, high profile call center projects across several locations.

**Education**

University of Phoenix, BS Information Technology

Indiana University, Biology

## Alexandra Jones, Ph.D.

### Professional Profile

Over twenty years experience mastering emerging database and software technologies and applying them to the needs of government, business and industry. Skilled in relational and dimensional data modeling and database design. Extensive experience in business analysis, rapid prototyping and developing client friendly software. Analytical, pragmatic and creative. Committed to completing projects on time and within budget. Can work independently or as part of a team.

### Skill Sets

- Conceptual and logical data modeling, relational and dimensional database design and implementation, data transformation, SQL Server 2000/2005/2008
- Descriptive and regression based statistical analysis.
- Development languages: Transact-SQL, SAS, R, C#.NET, some VB.NET, Visual Basic 6.0, VBScript
- Development tools: SQL Server Reporting Services (SSRS) 2000/2005, SQL Server Integration Services (SSIS) 2008, Visual Studio .NET, MS Office, Visio, Visual UML, Enterprise Architect.
- Development technologies: .NET Framework, ADO.NET. Full life-cycle n-tier application development
- Object-oriented requirements analysis and design using UML, particularly Rosenberg's use-case driven ICONIX process.

### Professional Experience

#### Arizona Department of Education, Phoenix, Az

Dec 2008 – Present

As Enterprise Data Architect, responsible for determining most efficient and effective means of persisting enterprise data, establishing data quality standards and managing data quality, establishing a data request fulfillment system which empowers consumers of education data. Primary analyst for data warehouse proposed source data for structure, content and quality. Lead architect of new, flexible data model of the state educational system – all public, private and tribal entities and the ownership, oversight, funding and reporting relationships between them. Developing fact tables and ETL processing to load norm-referenced test data (Stanford 10) into the data warehouse. Produced feasibility study for Arizona's adoption of the Colorado Growth Model. Migrated and reengineered federal (AYP) and state (AZ Learns) accountability system statistical calculations from desktop SAS to server-side Transact-SQL, improving repeatability and transparency.

#### Continental Promotion Group, Inc. Tempe, Az

Nov 2006 – Nov 2008

As sole developer, designed and implemented a dimensional accounting data mart for reporting on and analyzing the final disposition of rebate checks. Converted T-SQL scripts for ETL to SSIS packages. As Content Manager and primary troubleshooter, participated in introduction of SQL Server Reporting Services as corporate reporting platform. Sole developer of system

extending and integrating SSRS subscription delivery capabilities with existing client-facing reporting systems. Reengineered or replaced T-SQL stored procedures as required to improve performance of transaction processing systems.

Utilizing: SSRS, SSIS for business intelligence, ICONIX process for analysis and design, C# for application development.

**Trivita, Inc., Scottsdale, Az**

**Sep 2002 – Sep 2006**

As sole developer, delivered a system which scores machine-readable health assessments and generates customized health reports based on those scores. System runs both unattended and with a user interface for managing the process. Delivered automated process transforming external call center order data into company order-entry system format. New system reduced processing time from hours to seconds. Delivered administrative UI for managing call center and product data in support of automated transformation process. As part of SQL team, provided stored procedures and report designs to reengineer MS Access reports for SQL Server Reporting Services. Utilized: UML for analysis and design, C#, Transact-SQL for development, MS Word for report creation, FTP, DTS for call center data transformations.

**Bank of America, Phoenix, Az**

**Apr 2002 – Jul 2002**

As sole developer, delivered automated transformation process for ATM/Debit Card fraud analysis and reporting. Began design of data mart for next phase. Utilized SQL Server 7.0/2000 DTS, Transact-SQL for data warehouse transformation, loading and analysis services. Planned Crystal Reports 8.0 for report creation, ASP for report requests.

**Everett Charles Technologies Inc., Tempe, Az**

**Jan 2000 – Mar 2002**

Developed performance metrics reporting for the design, manufacture and delivery of semiconductor test boards. Delivered applications for employee time tracking and scrapped materials tracking and reporting. Created ad hoc reporting system that allowed users to select from more than 60 specialized reports in Excel spreadsheet format.

Utilized: UML for analysis and design, Visual Basic 6.0, Transact-SQL for client/server development.

**Salt River Project, Tempe, Az**

**Sep 1999 – Jan 2000**

Company maintains water contracts with Indian tribes and municipalities around the state. Created programs to calculate water usage rates, availability and costs based on the rules outlined in each contract.

Utilized: MS SQL Server 7.0 stored procedures and views.

**Tosco Marketing, Tempe, Az**

**Apr 1999 – Jul 1999**

As sole developer, delivered application for automating the transfer and transformation of retail data from a distributed point of sale system to a centralized database.

Data conversion: SQL Server 6.5 to AS/400 using RDO; MS Access 2.0 to Oracle 7.3 using ADO.

**Excell Agent Services, Phoenix, Az**

**Apr 1998 – Mar 1999**

As Senior Analyst and Developer, reengineered daily data processing, reducing processing time for several hundred thousand daily records from nearly 24 hours to 2 hours.

Utilized: MS SQL Server 6.5 stored procedures.

**Icg Consulting, Inc. Phoenix, Az****Jan 1997 – Mar 1998**

As Senior Programmer/Analyst, delivered accounts payable applications to Fortune 500 company, integrating client-server workflow and document processing with mainframe database maintenance.

Utilized: Visual Basic 4.0, Oracle 7.x servers, FileNet image processing, Attachmate for mainframe access.

**Arizona Public Service Co., Phoenix, Az****Nov 1990 – Dec 1996**

As Senior Programmer/Analyst, delivered specialized interface applications between existing work management systems and material ordering system. Provided tracking and analytical applications in support of Palo Verde Nuclear Generating Station (PVNGS) Lubrication Laboratory and Lubrication Program.

Utilized: Visual Basic 3.0 and 4.0 clients, Sybase System 10 server.

**Arizona Public Service Co., Phoenix, Az****Nov 1980 - Apr 1984, Aug 1985 - Nov 1990**

Capacity Planning Consultant. Forecast mainframe computer utilization, predicted computer performance and recommended hardware upgrades to satisfy availability and response time requirements.

**Legent Corporation, Vienna, Va****Apr 1984 – Aug 1985**

Designed and developed SAS commercial mainframe capacity planning software. Designed and conducted software training classes. Provided technical and analytical support to customers.

**Education**

- Ph. D. in Computer Sciences, University of Wisconsin, Madison, WI
- M.S. in Computer Sciences, University of Wisconsin, Madison, WI
- B.S. in Computer Sciences, University of Wisconsin, Madison, WI

**Professional Certifications**

- ITIL v3 Foundations
- Microsoft Certified Professional, SQL Server Database Design and Implementation
- Regular A.1.a Teaching Certification with endorsements in Mathematics and Computer Sciences,  
Community Colleges of the State of Arizona, Maricopa County, AZ

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## Amit Soman

### Information Technology Executive

- Technically sophisticated and business-savvy senior management professional of Information Technology and software engineering with pioneering career spanning over 17 years mostly in consulting and services field for Education, Publishing, Transportation, E-Learning & Financial Services vertical and Internet (Java/J2EE and .NET), Mobile, Client/Server (VB, Oracle), ERP (SAP / PeopleSoft) technology.
- Experience in product Management from conception to sales and implementation in various product life cycles. Portfolio Management and Project Management of large projects.
- Architected, Developed, Managed products like LMS, Assessment systems, education portals, publishing research portals, Student Information systems, Content Management Systems, Reporting/Analytics systems, Mobile apps etc. in education and publishing industry
- Worked with various top 10 education and publishing companies like Pearson, McGraw-Hill, Harcourt, Scholastic, Elsevier in the US, Europe as a service provider on various education and publishing systems
- Proven expertise in executing projects with various development methodologies like Water Fall method, Rational Unified Process, ASAP and Agile Development like SCRUM (SCRUM Master), XP and Test Driven.

### Professional Experience

#### *LearningMate Solutions Inc*

##### VP Enterprise Solutions

**December 2010 – Current**

- Architect, Oversee enterprise products and solutions for various publishing customers in the US such as Pearson Education, McGraw-Hill, Houghton Mifflin Harcourt, ALM, Elsevier etc
- Part of executive team at LearningMate to define strategy, budgets and other decisions
- Managed development of various Assessment, Mobile, SIS, Learning Analytics, LMS products for various customers

#### *American Express*

##### IT Consultant

**November 2009 – November 2010**

Manage Global HR IT programs / roadmaps for American Express

- To revamp Global Career Site with social media tools, search engine optimization, new user interface, hosting services etc
- Responsible for managing various team members across different regions – internal / external(JWT Interactive, Accenture, IBM, JWT Interactive, Jobs2Web, Syntel, TCS)
- Responsible for managing various projects/programs with Method/1
- Management of evaluation of vendors and hosting environment, RFPs for various vendors involved in projects

#### *The 41st Parameter*

##### IT Executive Consultant (Consulting Assignment)

**March 2010 – July 2010**

The 41st Parameter is a mid-size software product company in online fraud detection software for banking, travel, credit card and ecommerce industry with top 5 out of 10 companies.

Helped executive management (COO, VP of Engineering, Directors of development) to perform:

- Gap Analysis of processes within the organization and develop roadmap for improvement of processes for project management, development, IT, customer support, problem/incident management, P&L management, contract management
- Define ITIL 3.0 practices
- Suggest implementation strategies for Hosted solution, SaaS solution, product management
- Define and implement Disaster recovery, backup/restore and security related strategies

***DP (Deutsche Post) DHL Information Technology Services Americas – Largest Transportation Company in the world in 220 countries***

**Head – Finance, HR, Procurement, Legal and Real Estate Applications for Americas (37 countries) July 2006 – November 2009**

Oversee and manage software engineers(Java/J2EE, .NET, SAP ABAP/XI, SAP Functional), project / program managers, QA/Business Analysts providing services to various DHL / Deutsche Post World Net(DPWN) companies in Americas(37 Countries) region focused on Finance, HR, Procurement, Real Estate and Legal Applications

Activities and tasks included

- Product management/portfolio management and roadmap for Finance, HR, procurement, legal and real estate IT applications for Americas region
- Responsible for development, maintenance and support of high volume, scalable web based applications on Java/J2EE/XML and .NET technologies with Oracle/SQL Server as backend
- Responsible for SAP implementation for finance, controlling, procurement, materials management for DPWN companies in 37 countries in Americas region
- Program Management/Development of DHL.com(Java/J2EE), DHL-USA.com(ASP - Classic) and various APIs/Web Services(XML/J2EE), for embedding the shipping process/application on partner's websites, EDI applications
- Responsible for software development and maintenance of global applications deployed in Asia, Europe, Americas based on SAP Business Warehouse in 45+ countries
- Managed to reduce multi-million dollar yearly RUN/Maintenance. Cost for products implemented in 40 different countries by 40% in two years (Euros 4 Mil savings every year). Year on year Savings on RUN cost of Euros 1.5 Mil(15%) in 2008 and Euros 2.5 Mil(25%) in 2009 on various products
- Responsible for development, maintenance and product management of 10-15 software products and Euros 20 Million+ annual budget for build and maintenance
- Managing customer perceptions / relationship - One point contact for CIO of GBS in Americas, VPs of Finance Operations, CFOs/Director of HR Operations in International Americas region from IT Services
- Responsible for developing software product roadmap, strategy and budgets with CFOs, Director of HRs/procurement from various countries and global unit heads.

***Soft4Edu Technologies – K-12 Web based Assessment / Testing / Adaptive Learning System***

**Co-Founder**

**October 2006 – April 2010**

Soft4Edu Technologies has developed K-12 web based assessment and testing systems for classroom and benchmark testing needs of schools and school districts integrated with off the shelf LMS applications. The product is developed on .NET technologies with Service Oriented

Architecture (SOA). Product can be private labeled or integrated easily through web services with other reporting, student information system products.

- Participate in Solution and System Architecture of product
- Development of Project Plans, management of costs, schedule and quality of the system
- Responsible for managing content development activities
- Review of Scalability and performance requirements of the software product

***LionBridge Technologies Inc – CMM Level 5 and ISO 9000 company***

**Project Director**

**April 2001 – July 2006**

- Responsibility of Software Engineering(Java/J2EE/Microsoft technologies), Architecture Practice(Java/J2EE and Microsoft Technologies, SAP, Mainframes), Project & Program Management(PMO) team and QA organization
- Worked on projects/Programs for various customers like McGraw-Hill, Pearson, Harcourt, Thomson and Scholastic on various projects/platforms for Assessment platforms, Learner Management System, Content Management Systems, Content Delivery systems, Reporting Systems and Student Information Systems etc.

The activities included

- Managing Project/Program Management Office
- Chair Architecture practice of outsourced vendor for education/publishing customers
- Development of projects/products for education, publishing companies in K-12/Higher Education space
- Worked for customers like Pearson Technology on various products for LMS, Benchmark Testing, portal for assessment, Student information system for K-12 / Higher Education etc.
- Key player of Executive council for setting up offshore development center for Pearson School Technology
- Production Support Management of existing products
- Setup Quality Assurance group

**Lionbridge Technologies acquired Mentorix Technologies Inc.**

**October 2003**

***Project Director - Mentorix Technologies Inc – CMM Level 5 Company.***

Part of Core Team of Mentorix Technologies Inc. (company grew from 50 to 1500 in 3 years) responsible for managing Architecture / program/project management application development projects for various e-learning customers.

- Managed one of the biggest E-learning initiatives from outsourced service provider to offer portal for student instructions, learning and assessment. Responsible for managing team of 225-250 with 10 direct reports at onsite and offshore locations. The product was developed on J2EE platform.
- Managed knowledge transition exercise while taking over products from existing development teams and moving development to low cost development location

**Education**

Master of Business Administration [MMS- MBA], University of Bombay

Bachelor of Engineering in Electronics [BS], University of Bombay

## Satya Indukuri

### Summary

- 7+ years of experience with analysis, design, development and maintenance of System and Application Software
- Expert level development skills in C/C++/C#, JavaScript, ASP.NET, WCF/Web Services/SOAP/Workflows, XML, XSLT, XPATH, LINQ
- Extensive experience in Database Design, Query and Index Optimization, TSQL, Stored Procedures and Triggers, SSIS/DTS Packages, etc.
- Hands on experience with SDLC, Agile/Scrum methods and Test Driven Development.
- Strong Object Oriented Design and Design Patterns knowledge.
- Working knowledge of RESTful Web Services
- Strong Computer Science background and passion for high-quality, scalable and maintainable software.
- Expertise in Identity Management, Federation and other Information Security technologies
- Ability to communicate effectively with PMs, BAs and QAs to gather, understand and communicate requirements and coordinate timelines.
- Experience with variety of technologies (C, C++, C#, JAVA) and platforms (UNIX, Linux, Windows)

### Education

- **Masters in Computer Science**, LSU, Baton Rouge, LA.
- **Bachelor of Engineering** in Computer Science, JNT University, Hyderabad, India.

### Technical Skills

|   |  |
|---|--|
| <b>Programming</b>                              | C, C++, C#, Java, J2EE   |
| <b>Web Development</b>                          | .NET framework 2.0/3.5/4.0, ASP.NET, C#, JavaScript, XML, XSL, XSLT, XPATH/XQUERY, SOAP, WCF/Web Services, .NET Remoting, SQL, TSQL, IIS 6.0/7 |
| <b>Operating Systems</b>                        | Windows XP/ Windows 7, Server 2003/2008 R2, Linux, Solaris.  |
| <b>Databases</b>                                | SQL Server 2005/2008, Oracle 9i/8i, MySQL  |
| <b>Tools</b>                                    | VS .NET 2005/2008/2010, Visual SourceSafe, Team Foundation Server, Source Gear Vault, Nunit, Cruise Control, NAnt, MSBuild                     |
| <b>3<sup>rd</sup> party utilities/libraries</b> | Infragistics, Telerik, jQuery  |

### Professional Experience

**Arizona Department of Education (consultant)**

**Nov 2007 – Current**

**Sr. Software Developer**

#### Responsibilities:

- Delivered several projects successfully from scratch, including some in a Lead role.
- Contributed to the development group by helping standardize development practices and coding standards within the organization.

- Worked on Identity Management/SSO solution that uses Active Directory Federation Services (ADFS), Windows Identity Foundation, and Forefront Identity Manager (FIM)
- Worked on a transaction based data collection system that accepts data through different interfaces (Web UI, WCF Services and file uploads).
- Designed and developed the system using .NET Workflows, WCF Services at the core.
- Successfully guided the team and helped integrate different modules of the system work cohesively, yet retain the flexibility of scaling, performance and maintainability.
- Currently working on an Identity Management/Single Sign On project using Microsoft ADFS and WIF SDK. This system is designed to support large number of users and is being built for agency wide deployment and potentially shared with all the school districts and charter schools. Phase 1 of the project is deployed and functioning properly.
- Experience with Configuration and Management of Team Foundation Server 2010 for Source Management, Work Item Management and Continuous Integration

Environment:

.NET Framework 2.0/3.5/4.0 Beta 2, Visual Studio .NET 2010, C#, WCF, WF, LINQ, Windows Server 2003/2008 R2, IIS 7.5, Windows XP/ Windows 7 and SQL Server 2005/2008, Nunit, Cruise Control, NAnt, Team Foundation Server (2010), MSBuild, Visual Source Safe 2007.

**Intel, Chandler, AZ**

**Oct 2006 – Oct 2007**

**Sr. Software Developer**

Responsibilities:

- Involved in the Design and Development of various projects using Agile Software Development methodologies
- Proactive in introducing new tools/methods available in .NET 2.0/VS 2005 to the team.
- Used Scrum development methods (Weekly Iteration Planning, Daily Status Updates, etc).
- Regularly communicated with Customers/BA in preparing requirements and understand feedback to develop software that best meets the customer requirements.
- Used Test Driven Development and Pair Programming to achieve excellent quality.
- Implement applications using MVP and other Design Patterns
- Developed reusable framework to use across a range of applications. This initiative was recognized as improving efficiencies (saving costs) in development and Operations groups.

Environment:

.NET Framework 2.0, Visual Studio .NET 2005, ASP.NET 2.0, C#.NET, IIS, Windows 2000/XP and SQL Server 2005., Nunit 2.0, Cruise Control, NAnt, Rhino Mocks, Team Foundation Server, Visual Source Safe 2005.

**Chaindrugstore.net, Alexandria, VA**

**Jun 2006 – Sep 2006**

**Sr. Software Consultant**

Responsibilities:

- Designed and developed a solution that provides interactive access to pharmaceutical/prescription information necessary for high-level executives to make decisions based on how it affects profitability; Web-based Dashboard application for pharmaceutical chains (CVS, Wal-Mart, Rite Aid, etc).

- Actively involved in Business and Technical meetings for the requirements specifications.
- Analyzed the requirements and reviewed various 3<sup>rd</sup>-party controls necessary for the project (ChartFX, DOTnetCharting, Infragistics, Dundas tools, Telerik Controls, etc).
- Involved in the design/import of database tables and stored procedures necessary in business/front-end perspective.
- Thorough unit testing using NUnit 2.0
- Was proactive in using AJAX extensively for many pages in the project, which won a great deal of appreciation from the company and clients.
- Extensive use of Extreme Programming (XP) practices to adapt to dynamic requirement changes and tight deadlines.
- Redesigned and implemented new dynamic navigation system (as a custom control) for the whole application using Telerik web controls. Modularity and security were included.

**Environment:**

.NET Framework 2.0, Microsoft Visual Studio .NET 2005, ASP.NET 2.0, C#.NET, Web Services, SourceGear Vault, IIS, Nunit 2.0, Windows 2000/XP, SQL Server 2000, Infragistics and Telerik.

**Louisiana State University****Apr 2004 – Dec 2005****Graduate Assistant**Responsibilities:

- Involved in the development of software for research projects in areas such as Sensor Networks, Databases, Operating systems and 3D Visualization/Imaging. Managed departmental servers/Research Lab running Mail, Web, Authentication and Database servers.
- 3D Visualization of Atomic Data: Researched, designed and developed an interactive tool to display 3D data generated from the simulation of atomic behavior in materials.
- Integrated Development Environment for Real-Time Linux: Developed an IDE for RTLinux platform by providing functionality and tools required for rapid development of Real time Modules which were not available on IDEs. Tweaked with Linux Kernel source to make this possible.
- Implementation of Sensor Network Routing Protocol in ns2: Implemented Random Asynchronous Wakeup Protocol in ns2. Involved in analyzing and testing of the protocol implementation with 802.11b at MAC Layer, on ns2.
- Distributed File System for Linux: Implemented a DFS based on Remote-Access model for Linux. Location Transparency, UNIX like file-sharing semantics, stateless file server, servers side block level caching are some of the features included.

**Environment**

C, C++, JAVA, Linux, Solaris, Unix, Eclipse IDE, Shell Scripting, OpenGL, x86 Assembly language, TCL/Tk, Perl scripting, PHP.

## Surya Vipparthy

### Professional Summary

I have 16 years of experience IT industry in analysis, design, development and implementation, and maintenance of Business Intelligence, Data warehouse, BI Reporting, Web based reporting applications and Client/Server applications using Microsoft BI, Micro Strategy, Informatica, SSIS, SSAS, SSRS, Micro Strategy, Tableau, Cold Fusion, SQL Server, and Oracle on Windows and Unix operating systems.

### Technical Skills

**BI/Reporting Tools:** Micro Strategy, Microsoft BI, Tableau, SSAS, SSRS, SharePoint, Excel Pivots  
**ETL Tools:** DTS, SSIS, Informatica  
**RDBMS:** SQL Server, Oracle, Access, DB2  
**Data Modeling Tools:** Erwin, MS Visio  
**Languages:** C, UML, COBOL, SQL  
**Operating System:** Windows, UNIX and OS2  
**Web Technologies:** Cold fusion, HTML, CSS, XML and XSLT  
**IDE/Tools:** Microsoft Office Tools, Cold Fusion Studio, Crystal Reports, ERWIN, TOAD, Home-site, Rational Rose, Dream weaver, Visual Studio  
**Version Control:** Team Foundation Server, Visual Source Safe, Rational Clear Case, Source Offsite

### BI Work Experience

**Arizona Department of Education (ADE), Phoenix, AZ** **Apr 2007 – Current**  
Developed Arizona Education Data Warehouse (AEDW) using Microsoft BI Products. AEDW contains longitudinal education data that is reliable, unified, well organized, fully suitable for analyzing the results of education policies, and for supporting decision-making about educating the children of Arizona.

**Roles & Responsibilities:** As IT Consultant, my roles and responsibilities include requirements gathering, analyzing functional specs, designing, developing and implementing and educate the users on applications.

**First American Corporation (Firstam), Santa Ana, CA** **Jan 2003 – Apr 2007**  
Developed Centralized Data Marts for customers using Informatica and Micro Strategy BI Products. Developed Business Intelligence Reports on Data Mart. The scope of the project involves providing Business users with daily, weekly, monthly, and quarterly Financial Reports in the mortgage industry.

**Roles & Responsibilities:** AS IT Consultant, my roles and responsibilities include requirements gathering, analyzing functional specs, designing, developing and implementing and educate the users on applications.

**BI Trainings Attended**

Undergone Training in Microsoft BI in Phoenix, AZ

Undergone Training in Micro Strategy BI in San Diego, CA.

Undergone Training in Advanced Course on Micro Strategy BI, in Los Angeles, CA.

Undergone Training in Oracle Reports 10g, DBA in UCSD, San Diego, CA.

**Education**

Bachelor of Technology in Electronics and Communication Engineering, India

**Work History****iTech US Inc., VT****Jul 2010 - Current**

Enhanced Arizona Education Data Warehouse (AEDW) using Microsoft BI Products for ADE, AZ.

**Roles & Responsibilities:** As Programmer analyst, my roles and responsibilities include requirements gathering, analyzing functional specs, designing, developing and implementing and educate the users on applications.

**GCI Inc., VA****Jan 2005 – Jul 2010**

Developed Arizona Education Data Warehouse (AEDW) using Microsoft BI Products for ADE, AZ.

Enhanced Centralized Data Mart using Informatica and Micro Strategy BI Products for Firstam, CA.

**Roles & Responsibilities:** As Programmer analyst, my roles and responsibilities include requirements gathering, analyzing functional specs, designing, developing and implementing and educate the users on applications.

**CSS Inc., CA****Apr 2002 – Jan 2005**

Developed Centralized Data Mart using Informatica and Micro Strategy BI Products for Firstam, CA.

Migrated web applications from 3-tier to 2-tier for Shea Homes Inc, CA.

**Roles & Responsibilities:** As Programmer analyst, my roles and responsibilities include requirements gathering, analyzing functional specs, designing, developing and implementing and educate the users on applications.

**Ace Tech Inc., CA****Aug 2000 – Apr 2002**

Developed web based reporting application for customers.

**Roles & Responsibilities:** As Programmer analyst, my roles and responsibilities include Requirements gathering, Analyzing Functional specs and designing and developing and implementing and educate the clients on web applications.

**CMOSSOFT Ltd, India****Sep 1999 - Aug 2000**

Developed web based reporting applications for customers.

**Roles & Responsibilities:** As Member Technical Staff/Internet Developer, Involved in Requirements gathering, Analyzing Technical specs and designing and developing and implementing web based e-commerce products.

**FCS Ltd, India****Dec 1998 - Jul 1999**

Developed automated sales recruitment management system.

**Roles & Responsibilities:** As Programmer, Involved in Analysis and design, development and implementation of application.

**IMR Ltd, India****Feb 1996 - Nov 1998**

Converted legacy systems compatible with year 2000 compliance Standards

**Roles & Responsibilities:** As Software Engineer, Performed Impact analysis of all online programs batch programs, codes reviews and modify the code to year 2000 compliance standards.

**Axiom Ltd, India****Aug 1995 – Jan 1996**

Developed automated sales inventory management system.

**Roles & Responsibilities:** As Programmer, Involved in analysis coding and testing

## Appendix D - Acronym List

The following terms are used in this document. They are included for general reference.

| Name      | Term  |
|-----------|---|
| A.R.S.    | Arizona Revised Statutes                      |
| ADE       | Arizona Department of Education               |
| ADFS      | Active Directory Federation Services          |
| AEDW      | Arizona Education Data Warehouse              |
| AIMS      | Arizona's Instrument to Measure Standards     |
| API       | Application Programming Interface             |
| AYP       | Adequate Yearly Progress                      |
| AZ LEARNS | name for Arizona's school evaluation system   |
| CEDS      | Common Education Data Standards               |
| CFDA      | Catalog of Federal Domestic Assistance        |
| CIO       | Chief Information Officer                     |
| COO       | Chief Operating Officer                       |
| DGC       | Data Governance Commission                    |
| DQC       | Data Quality Campaign                         |
| ELAS      | Education Learning and Accountability System  |
| ETL       | Extraction-Transform-Load                     |
| FIM       | Forefront Identity Manager                    |
| HTTPS     | HyperText Transfer Protocol Secure            |
| IES       | Institute of Education Sciences               |
| IMS       | Identity Management System                    |
| LEA       | Local Education Agency                        |
| MCESA     | Maricopa County Education Service Agency      |
| MOLAP     | Multidimensional Online Analytical Processing |
| NAEP      | National Assessment of Educational Progress   |
| NCES      | National Center for Education Statistics      |
| OLAP      | Online Analytical Processing                  |
| PMO       | Project Management Office                     |
| SAIS      | Student Accountability Information System     |
| SAML      | Security Assertion Markup Language            |
| SCED      | School Codes for the Exchange of Data         |
| SEA       | State Education Agency                        |
| SLDS      | Statewide Longitudinal Data System            |
| SMS       | Student Management System                     |
| SQL       | Structured Query Language                     |
| SSAS      | SQL Server Analysis Services                  |
| SSL       | Secure Sockets Layer                          |
| TAT       | Technical Acceptance Testing                  |
| UAT       | User Acceptance Testing                       |
| XML       | eXtensible Markup Language                    |

## Budget Narrative File(s)

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\* Mandatory Budget Narrative Filename:

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To add more Budget Narrative attachments, please use the attachment buttons below.

## 7. Budget Narrative

### Summary Project Budget

ADE is requesting a total of \$5M over three project years to complete the various deliverables detailed in section **6.b. Project Deliverables** based on the timelines detailed in **6.c. Timeline for Project Deliverables**. The following table provides detailed budget needed for the next three years.

| <i>Budget Narrative</i>   |                |                |                |
|---|----------------|----------------|----------------|
|   | <b>Year 1</b>  | <b>Year 2</b>  | <b>Year 3</b>  |
| <b>Personnel</b>  |                |                |                |
| CIO (.05 FTE of 135,000 for 36 Months)  | 9,608          | 9,896          | 10,193         |
| Program Director (.1 FTE of 110,000 for 36 Months)  | 15,740         | 16,212         | 16,699         |
| Program Manager (1 FTE @ 85,000 for 36 Months)  | 122,650        | 126,330        | 130,119        |
| ADE Functional Team - 1 (.5 FTE of 80,000 for 36 Months)  | 57,850         | 59,586         | 61,373         |
| ADE Functional Team - 2 (.25 FTE of 80,000 for 36 Months)   | 28,925         | 29,793         | 30,687         |
| ADE Functional Team - 3 (.25 FTE of 80,000 for 36 Months)   | 28,925         | 29,793         | 30,687         |
|   |                |                |                |
| <i>NOTE: Salaries are adjusted to reflect an annual 3% increase</i>   |                |                |                |
| <b>Total Personnel</b>  | <b>263,698</b> | <b>271,609</b> | <b>279,757</b> |
|   |                |                |                |
| <b>Benefits</b>   |                |                |                |
| Benefits @ 39%  | 102,842        | 105,927        | 109,105        |
|   |                |                |                |
| <b>Total Benefits</b>   | <b>102,842</b> | <b>105,927</b> | <b>109,105</b> |
|   |                |                |                |
| <b>Travel</b>   |                |                |                |
| <b>Washington, D.C. SLDS Grant Meeting (2 Attendees)</b>  |                |                |                |
| Airfare 1 @ \$500   | \$1,000        | \$1,000        | \$1,000        |
| Hotel 1 Night @ \$200 night x 1 person  | \$400          | \$400          | \$400          |
| Per Diem 1 Person, 1 Days, @\$80  | \$160          | \$160          | \$160          |
|   |                |                |                |
| <b>In State travel for project personnel</b>  | 35,000         | 35,000         | 35,000         |
| In state travel for project personnel conduct onsite interviews, feedback sessions, training, technical assistance and professional development with LEAs |                |                |                |
|   |                |                |                |
| <b>Total Travel</b>   | <b>36,560</b>  | <b>36,560</b>  | <b>36,560</b>  |
|   |                |                |                |
| <b>Equipment</b>  |                |                |                |
| Hardware purchased in support of SLDS Deliverables  | 150,000        | 0              | 0              |
|   |                |                |                |
| <b>Total Equipment</b>  | <b>150,000</b> | <b>0</b>       | <b>0</b>       |
|   |                |                |                |

| <b>Budget Narrative</b>  | <b>Year 1</b>    | <b>Year 2</b>    | <b>Year 3</b>    |
|--|------------------|------------------|------------------|
| <b>Contractual</b>   |                  |                  |                  |
| <i>Purchased professional IT services for the following in support of the SLDS grant:</i>  |                  |                  |                  |
| Project Coordinator (1 FTE, Rate/Cost: 45, Total Duration: 36 Months)  | 43,200           | 44,496           | 45,831           |
| Developer (2 FTEs, Rate/Cost: 65, Total Duration: 36 Months)   | 249,600          | 257,088          | 264,801          |
| IMS - Developer (2 FTEs, Rate/Cost: 65, Total Duration: 9 Months)  | 187,200          | 0                | 0                |
| QA (1.5 FTEs, Rate/Cost: 65, Total Duration: 36 Months)  | 187,200          | 192,816          | 198,600          |
| Business Analyst / Project Coordinator (1 FTE, Rate/Cost: 65, Total Duration: 36 Months)   | 124,800          | 128,544          | 132,400          |
| Communications (.25 FTE, Rate/Cost: 50, Total Duration: 36 Months)   | 24,000           | 24,720           | 25,462           |
| User Interface Designer (1 FTE, Rate/Cost: 60, Total Duration: 9 Months)   | 86,400           | 0                | 0                |
| Training / User Guides (1 FTE, Rate/Cost: 40, Total Duration: 36 Months)   | 76,800           | 79,104           | 81,477           |
| Release Management (.25 FTE, Rate/Cost: 50, Total Duration: 36 Months)   | 24,000           | 24,720           | 25,462           |
| LEAs - Tech Support (1 FTE, Rate/Cost: 50, Total Duration: 36 Months)  | 96,000           | 98,880           | 101,846          |
|  |                  |                  |                  |
| <b>Total Contractual</b>   | <b>1,099,200</b> | <b>850,368</b>   | <b>875,879</b>   |
|  |                  |                  |                  |
| <b>Other - Project Operating Expenses</b>  |                  |                  |                  |
|  |                  |                  |                  |
| <b>Operating Expenses</b>  |                  |                  |                  |
| <b>FTE Operating Expenses - (\$4,500 per 1.0 FTE for 2.15 FTEs)</b>  | 9,675            | 9,675            | 9,675            |
| Rent for FTEs @ \$1600 each  |                  |                  |                  |
| Telephone for FTEs @ \$1500 each   |                  |                  |                  |
| Copier use for FTEs @ \$250 each   |                  |                  |                  |
| Risk Management for FTEs @ \$210 each  |                  |                  |                  |
| MIS charge for FTEs @ \$925 each   |                  |                  |                  |
| Employee recognition program for FTEs @ \$15 each  |                  |                  |                  |
|  |                  |                  |                  |
| <b>Additional Operating Expenses</b>   |                  |                  |                  |
| Other Project Operating Expenses   | 40,000           | 40,000           | 37,000           |
| <i>To include: Electronic and Print Outreach and Marketing, PD, Training and Technical Assistance Materials, Printing, Postage, Facilities/Meeting Space, and other Office Expenses, Supplies, and Equipment</i> |                  |                  |                  |
|  |                  |                  |                  |
| <b>Total Other</b>   | <b>49,675</b>    | <b>49,675</b>    | <b>46,675</b>    |
|  |                  |                  |                  |
| <b>Total Direct Costs</b>  | <b>1,701,975</b> | <b>1,314,139</b> | <b>1,347,977</b> |
|  |                  |                  |                  |
| <b>Total Direct Costs All Budget Periods</b>   | <b>4,364,091</b> |                  |                  |

| <b>Budget Narrative</b>  | <b>Year 1</b>    | <b>Year 2</b>    | <b>Year 3</b>    |
|--|------------------|------------------|------------------|
| <b>Total Indirect Costs (14.3%)</b>  | <b>246,957</b>   | <b>191,497</b>   | <b>196,336</b>   |
| <i>(NOTE: Indirect costs are only applied to the first \$25,000 of each contracted service, and is not taken against assistance funds (subgrants to LEAs))</i> |                  |                  |                  |
| <b>Total Indirect Costs All Budget Periods</b>   | <b>634,790</b>   |                  |                  |
| <b>Total Direct Costs and Indirect Costs Each Budget Period</b>  | <b>1,948,933</b> | <b>1,505,636</b> | <b>1,544,312</b> |
| <b>Total Direct Costs and Indirect Costs All Budget Periods</b>  | <b>4,998,881</b> |                  |                  |

A separate budget narrative has been given for each phase of deliverables. However, to avoid repetition, general considerations and items that are applicable to all of the deliverables are addressed below.

### **General Information**

Each of the phases has been designed as a separate effort to meet or enhance a combination of the project requirements. However, the deliverables are also interconnected in ways. Phase 1 consists of Identity Management System enhancements, few dashboards and training for various users. ADE IT has been implementing basic identity management solution for the entire stakeholders in the state under budget approved by the state. The basic identity management framework will be enhanced for needs of dashboards under this SLDS grant. Phase 2 uses the architectural components and identity management components built in Phase 1 and provide additional dashboards for the users. When Phase 1 goes to production the maintenance and support phase for phase 1 starts immediately based on the SLAs developed between ADE IT team and LEAs/ADE functional teams.

The budget has been prepared under the following assumptions:

- Each of the phases will be funded as requested. This will help ADE to accomplish all the required dashboards, training requirements to end users and necessary enhancements to identity management framework.
- Partner agencies, partner institutions, and participating LEAs will be able to meet ADEs proposed schedule. Although preliminary discussions have been held with a number of these organizations, if actual work arrangements were to take longer than expected this would impact the budget.
- The proposed budget will be reviewed as part of the project planning phase, and adjustments made as necessary to appropriately allocate costs between line-items, across project years, and among phases.

### **Budget Category Notes Applicable to All of the phases**

The following considerations apply to each phases:

***Personnel***

Personnel costs on yearly basis represent only those classified, salaried employees of the ADE who will be assigned to the project. Non-salaried personnel (consultants/contractors) have been listed on per hour cost basis. Any non-DOE classified, salaried employees (i.e., partner-agency personnel assigned to the project) have likewise been listed under “Contractual” – since DOE would obtain their services under a Memorandum of Understanding (MOU) or similar agreement between DOE and the partner agency. For all personnel a 3% cost-of-living adjustment (COLA) has been applied in each of the second and third project years.

***Benefits***

All salaried Personnel will have associated Benefit costs at 39% of annual salary. There is \$4500 cost per year for overhead of the employees. Non-salaried personnel have 14.3% of indirect cost that is added to the total.

The rates will stay the same for all three project years (except that a 3% cost-of-living adjustment has been added in the second and third project years, in recognition of recent cost trends).

***Travel***

Unless otherwise controlled by Federal grant requirements, SLDS project travel-related expenses will be governed by the applicable *State Travel Regulations*.

***Equipment***

This category includes only hardware and software purchased for ownership by ADE or an individual LDS partner agency. ADE has already invested \$300K+ on identity management systems and \$160K to set up HP-Microsoft hardware/software real time accessible data warehouse configuration. The cost mentioned in the Equipment is to add additional components or scale to the existing system.

***Supplies***

ADE is not requesting any funding for supplies, having estimated that the need will be minimal. This is based on the assumption that training materials – a significant item – will either be delivered electronically, or will be included in one or more of the contractual expenses.

***Contractual***

This category consists generally of two types of costs – contractors or services directly engaged by ADE, and agreements made between ADE and one or more of its partner or partner institutions to perform one or more project tasks.

***Construction***

ADE is not requesting any funding for construction.

***Other***

In the present application, all proposed “Other” expenses represent flow-through funding. Indirect costs have not been applied to this category (see below).

***Indirect Costs***

The ADEs current Indirect Cost Rate is 14.3% of Total Direct Costs

|   |                    |
|---|--------------------|
| <b>Phase I</b>  | <b>\$2,226,748</b> |
| Phase I will consists of building additional components on top of existing identity management platform at ADE and build first set of dashboards for Schools/Districts. It includes building additional data fields from school districts. There will be training plan created and implemented with user guides, online help, online training, and face to face training.<br>Dashboard - School/District Visualizations |                    |
| Demographics  |                    |
| Schedule/Calendar   |                    |
| Enrollments   |                    |
| Graduation Rate   |                    |
| Dropout Rate  |                    |
| School Performance  |                    |
| Identity management system  |                    |
| Training plan   |                    |
| Hardware and Software acquisition   |                    |
| <b>Phase II</b>   | <b>\$1,091,479</b> |
| Phase II includes the development of additional dashboards in the following areas. It also includes bringing additional data for developing dashboards for following areas. It includes providing support and maintenance for Phase dashboards. Additional training will be created for new dashboards  |                    |
| Student Visualizations  |                    |
| Demographics  |                    |
| Program & Needs   |                    |
| Attendance  |                    |
| Assessments   |                    |
| Student Transcripts   |                    |
| Student Growth  |                    |
| College Readiness   |                    |
| Training  |                    |
| <b>Phase III</b>  |                    |
| Phase III includes the development of additional dashboards in the following areas. It also includes bringing additional data for developing dashboards for following areas. It includes providing support and maintenance for Phase dashboards. Additional training will be created for new dashboards   | <b>\$1,002,027</b> |
| Teacher Visualizations  |                    |
| Teacher Assessments   |                    |
| Student- Teacher connection for courses   |                    |
| Training  |                    |

**U.S. DEPARTMENT OF EDUCATION  
BUDGET INFORMATION  
NON-CONSTRUCTION PROGRAMS**

OMB Number: 1894-0008  
Expiration Date: 02/28/2011

Name of Institution/Organization

Arizona Department of Education

Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form.

**SECTION A - BUDGET SUMMARY  
U.S. DEPARTMENT OF EDUCATION FUNDS**

| Budget Categories                 | Project Year 1 (a) | Project Year 2 (b) | Project Year 3 (c) | Project Year 4 (d) | Project Year 5 (e) | Total (f)    |
|-----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|
| 1. Personnel                      | 263,698.00         | 271,608.94         | 279,757.21         | 0.00               | 0.00               | 815,064.15   |
| 2. Fringe Benefits                | 102,842.22         | 105,927.49         | 109,105.31         | 0.00               | 0.00               | 317,875.02   |
| 3. Travel                         | 36,560.00          | 36,560.00          | 36,560.00          | 0.00               | 0.00               | 109,680.00   |
| 4. Equipment                      | 150,000.00         | 0.00               | 0.00               | 0.00               | 0.00               | 150,000.00   |
| 5. Supplies                       | 0.00               | 0.00               | 0.00               | 0.00               | 0.00               | 0.00         |
| 6. Contractual                    | 1,099,200.00       | 850,368.00         | 875,879.04         | 0.00               | 0.00               | 2,825,447.04 |
| 7. Construction                   | 0.00               | 0.00               | 0.00               | 0.00               | 0.00               | 0.00         |
| 8. Other                          | 49,675.00          | 49,675.00          | 46,675.00          | 0.00               | 0.00               | 146,025.00   |
| 9. Total Direct Costs (lines 1-8) | 1,701,975.22       | 1,314,139.43       | 1,347,976.56       | 0.00               | 0.00               | 4,364,091.21 |
| 10. Indirect Costs*               | 246,957.46         | 191,496.94         | 196,335.65         | 0.00               | 0.00               | 634,790.05   |
| 11. Training Stipends             | 0.00               | 0.00               | 0.00               | 0.00               | 0.00               | 0.00         |
| 12. Total Costs (lines 9-11)      | 1,948,932.68       | 1,505,636.37       | 1,544,312.21       | 0.00               | 0.00               | 4,998,881.26 |

**\*Indirect Cost Information (To Be Completed by Your Business Office):**

If you are requesting reimbursement for indirect costs on line 10, please answer the following questions:

(1) Do you have an Indirect Cost Rate Agreement approved by the Federal government?  Yes  No

(2) If yes, please provide the following information:

Period Covered by the Indirect Cost Rate Agreement: From: 07/01/2011 To: 06/30/2012 (mm/dd/yyyy)

Approving Federal agency:  ED  Other (please specify):

The Indirect Cost Rate is 14.30 %.

(3) For Restricted Rate Programs (check one) -- Are you using a restricted indirect cost rate that:

Is included in your approved Indirect Cost Rate Agreement? or,  Complies with 34 CFR 76.564(c)(2)? The Restricted Indirect Cost Rate is %.

|   |   |  |
|---|---|--|
| Name of Institution/Organization<br>Arizona Department of Education | Applicants requesting funding for only one year should complete the column under "Project Year 1." Applicants requesting funding for multi-year grants should complete all applicable columns. Please read all instructions before completing form. |  |
|---|---|--|

**SECTION B - BUDGET SUMMARY  
NON-FEDERAL FUNDS**

| Budget Categories                    | Project Year 1<br>(a) | Project Year 2<br>(b) | Project Year 3<br>(c) | Project Year 4<br>(d) | Project Year 5<br>(e) | Total<br>(f) |
|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------|
| 1. Personnel                         |                       |                       |                       |                       |                       |              |
| 2. Fringe Benefits                   |                       |                       |                       |                       |                       |              |
| 3. Travel                            |                       |                       |                       |                       |                       |              |
| 4. Equipment                         |                       |                       |                       |                       |                       |              |
| 5. Supplies                          |                       |                       |                       |                       |                       |              |
| 6. Contractual                       |                       |                       |                       |                       |                       |              |
| 7. Construction                      |                       |                       |                       |                       |                       |              |
| 8. Other                             |                       |                       |                       |                       |                       |              |
| 9. Total Direct Costs<br>(lines 1-8) |                       |                       |                       |                       |                       |              |
| 10. Indirect Costs                   |                       |                       |                       |                       |                       |              |
| 11. Training Stipends                |                       |                       |                       |                       |                       |              |
| 12. Total Costs<br>(lines 9-11)      |                       |                       |                       |                       |                       |              |

**SECTION C - BUDGET NARRATIVE (see instructions)**