

U.S. Department of Education

Washington, D.C. 20202-5335



APPLICATION FOR GRANTS UNDER THE

STATEWIDE LONGITUDINAL DATA SYSTEMS

CFDA # 84.372A

PR/Award # R372A070020

Grants.gov Tracking#: GRANT00233826

Closing Date: MAR 15, 2007

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Application for Federal Assistance SF-424

Version 02

* 1. Type of Submission: <input type="radio"/> Preapplication <input checked="" type="radio"/> Application <input type="radio"/> Changed/Corrected Application	* 2. Type of Application: <input checked="" type="radio"/> New <input type="radio"/> Continuation <input type="radio"/> Revision	* If Revision, select appropriate letter(s): _____ * Other (Specify) _____
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* 3. Date Received: 03/15/2007	4. Applicant Identifier: _____
-----------------------------------	-----------------------------------

5a. Federal Entity Identifier: _____	* 5b. Federal Award Identifier: _____
---	--

State Use Only:

6. Date Received by State: _____	7. State Application Identifier: _____
-------------------------------------	---

8. APPLICANT INFORMATION:

* a. Legal Name: Arizona Department of Education	
* b. Employer/Taxpayer Identification Number (EIN/TIN): 86-6004791	* c. Organizational DUNS: 804746097

d. Address:

* Street1: 1535 West Jefferson
Street2: _____
* City: Phoenix
County: _____
* State: AZ: Arizona
Province: _____
* Country: USA: UNITED STATES
* Zip / Postal Code: 85007

e. Organizational Unit:

Department Name: Arizona Dept. of Education	Division Name: Information Technology
---	---------------------------------------

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

Prefix: _____	* First Name: Steve
Middle Name: _____	
* Last Name: Holzinger	
Suffix: _____	
Title: Manager	
Organizational Affiliation: Arizona Department of Education - Information Technology	
* Telephone Number: 602.542.7394	Fax Number: _____
* Email: steve.holzinger@azed.gov	

Application for Federal Assistance SF-424

Version 02

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-121806-001

* Title:

Statewide Longitudinal Data Systems CFDA 84.372A

13. Competition Identification Number:

84-372A2007-1

Title:

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

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

Arizona Education Data Warehouse

Attach supporting documents as specified in agency instructions.

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant AZ-ALL

* b. Program/Project AZ-ALL

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

17. Proposed Project:

* a. Start Date: 07/01/2007

* b. End Date: 09/30/2010

18. Estimated Funding (\$):

* a. Federal	5,954,518.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	5,954,518.00

* 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.)

- Yes
- No

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: Middle Name: * Last Name: Garcia-Dugan Suffix: * First Name: Margaret * Title: Deputy Superintendent of Public Instruction * Telephone Number: 602-364-2339 Fax Number: 602-542-5440 * Email: margaret.garciadugan@azed.gov * Signature of Authorized Representative: Steve Holzinger * Date Signed: 03/15/2007

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Standard Form 424 (Revised 10/2005) Prescribed by OMB Circular A-102

Application for Federal Assistance SF-424

Version 02

*** Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

Attachments

AdditionalCongressionalDistricts

File Name

Mime Type

AdditionalProjectTitle

File Name

Mime Type



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

OMB Control Number: 1890-0004

Expiration Date: 06/30/2005

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	S 578,000	S 632,450	S 648,261	S 0	S 0	S 1,858,711
2. Fringe Benefits	S 144,500	S 158,113	S 162,065	S 0	S 0	S 464,678
3. Travel	S 14,576	S 14,576	S 14,576	S 0	S 0	S 43,728
4. Equipment	S 1,279,300	S 25,000	S 0	S 0	S 0	S 1,304,300
5. Supplies	S 4,000	S 4,000	S 4,000	S 0	S 0	S 12,000
6. Contractual	S 408,000	S 299,710	S 250,049	S 0	S 0	S 957,759
7. Construction	S 0	S 0	S 0	S 0	S 0	S 0
8. Other	S 463,418	S 100,269	S 95,518	S 0	S 0	S 659,205
9. Total Direct Costs (lines 1-8)	S 2,891,794	S 1,234,118	S 1,174,469	S 0	S 0	S 5,300,381
10. Indirect Costs*	S 368,466	S 145,354	S 140,317	S 0	S 0	S 654,137
11. Training Stipends	S 0	S 0	S 0	S 0	S 0	S 0
12. Total Costs (lines 9-11)	S 3,260,260	S 1,379,472	S 1,314,786	S 0	S 0	S 5,954,518

***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: 7/1/2005 To: 6/30/2008 (mm/dd/yyyy)

Approving Federal agency: ED Other (please specify): _____

(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(e)(2)?



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

OMB Control Number: 1890-0004

Expiration Date: 06/30/2005

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 B - BUDGET SUMMARY
NON-FEDERAL 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	S 0	S 0	S 0	S 0	S 0	S 0
2. Fringe Benefits	S 0	S 0	S 0	S 0	S 0	S 0
3. Travel	S 0	S 0	S 0	S 0	S 0	S 0
4. Equipment	S 0	S 0	S 0	S 0	S 0	S 0
5. Supplies	S 0	S 0	S 0	S 0	S 0	S 0
6. Contractual	S 0	S 0	S 0	S 0	S 0	S 0
7. Construction	S 0	S 0	S 0	S 0	S 0	S 0
8. Other	S 0	S 0	S 0	S 0	S 0	S 0
9. Total Direct Costs (lines 1-8)	S 0	S 0	S 0	S 0	S 0	S 0
10. Indirect Costs	S 0	S 0	S 0	S 0	S 0	S 0
11. Training Stipends	S 0	S 0	S 0	S 0	S 0	S 0
12. Total Costs (lines 9-11)	S 0	S 0	S 0	S 0	S 0	S 0

ASSURANCES - NON-CONSTRUCTION PROGRAMS

OMB Approval No. 4040-0007
Expiration Date 04/30/2008

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.

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Prescribed by OMB Circular A-102

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.

<p>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL Steve Holzinger</p>	<p>* TITLE Deputy Superintendent of Public Instruction</p>
<p>* APPLICANT ORGANIZATION Arizona Department of Education</p>	<p>* DATE SUBMITTED 03-15-2007</p>

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

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

Approved by OMB

0348-0046

<p>1. * Type of Federal Action:</p> <p><input type="checkbox"/> a. contract</p> <p><input checked="" type="checkbox"/> b. grant</p> <p><input type="checkbox"/> c. cooperative agreement</p> <p><input type="checkbox"/> d. loan</p> <p><input type="checkbox"/> e. loan guarantee</p> <p><input type="checkbox"/> f. loan insurance</p>	<p>2. * Status of Federal Action:</p> <p><input type="checkbox"/> a. bid/offer/application</p> <p><input checked="" type="checkbox"/> b. initial award</p> <p><input type="checkbox"/> c. post-award</p>	<p>3. * Report Type:</p> <p><input checked="" type="checkbox"/> a. initial filing</p> <p><input type="checkbox"/> b. material change</p> <p>For Material Change Only:</p> <p>year quarter</p> <p>date of last report</p>
<p>4. Name and Address of Reporting Entity:</p> <p><input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee Tier if known:</p> <p>* Name: Arizona Department of Education</p> <p>* Address: 1535 West Jefferson Phoenix AZ: Arizona 85007</p> <p>Congressional District, if known:</p>		<p>5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:</p>
<p>6. * Federal Department/Agency:</p> <p>US Department of Education</p>	<p>7. * Federal Program Name/Description: Statewide Data Systems</p> <p>CFDA Number, if applicable: 84.372</p>	
<p>8. Federal Action Number, if known:</p>	<p>9. Award Amount, if known:</p>	
<p>10. a. Name and Address of Lobbying Registrant (if individual, complete name):</p> <p>* Name: N/A</p> <p>N/A</p> <p>* Address:</p>	<p>b. Individual Performing Services (including address if different from No. 10a):</p> <p>* Name: N/A</p> <p>N/A</p>	
<p>11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>		<p>* Signature: Steve Holzinger</p> <p>* Name: Margaret Garcia-Dugan</p> <p>Title: Deputy Superintendent of Public Instruction</p> <p>Telephone No.:</p> <p>Date: 03-15-2007</p>

Public Burden Disclosure Statement

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 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 (0348-0046), Washington, DC 20503.

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: Margaret Middle Name:

* Last Name: Garcia-Dugan Suffix: * Title: Deputy Superintendent of Public Instruction
--

* SIGNATURE: Steve Holzinger * DATE: 03/15/2007
--

SUPPLEMENTAL INFORMATION REQUIRED FOR DEPARTMENT OF EDUCATION GRANTS

1. Project Director

* Name:

Donald

Houde

* Address:

1535 West Jefferson, Bin #17

Phoenix

AZ: Arizona

85007

USA: UNITED STATES

* Phone Number:

(602) 364-1368

Fax Number:

Email:

Donald.Houde@azed.gov

2. Applicant Experience:

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:

FileName

MimeType

Project Narrative

Abstract Narrative

Attachment 1:

Title: Pages: Uploaded File: **8479-Abstract_FINAL.pdf**

ABSTRACT

The gathering and reporting of education data in Arizona has historically been driven by disparate needs, conducted in an ad hoc manner, and performed by separate operating units using a variety of hardware and software. There had been no standard data definition or organization. For these reasons, it has not been possible to track the effect various factors have upon education, over time.

In 2005 Arizona Department of Education (ADE) leadership took steps to correct this situation. We successfully implemented a limited-scope proof of concept data warehouse project in early 2006. After that success, ADE has achieved several more milestones: obtained firm commitment from government leaders and the state legislature to progress to a full data warehouse; received the necessary funding appropriation (the state legislature committed \$2.5 million in state funds); achieved a positive change in ADE's culture; and established a multi-disciplined steering committee. In November 2006 we embarked on building the full data warehouse, beginning a two-year project. The immediate course of action is to cleanse and bring together Student data from one system with Achievement data that resides in an entirely separate system.

When this initial Arizona Education Data Warehouse (AEDW) is launched late this year, it will include appropriate data marts and tools for analysis and visualization, and will be the bare beginning of a Statewide Longitudinal Data System for education in Arizona. Though uniting student and achievement information will be a worthy accomplishment never previously accomplished here, it is not sufficient to support the most important education decisions. For these, a wide variety of data elements that are not now collected must be gathered, cleansed, correlated, and stored—elements associated with teacher, class, curriculum, and special needs. The collection of this broader array of needed information, and its incorporation into the AEDW, would enable educators, administrators, legislators, and other decision makers to observe how areas such as curriculum affect achievement, to identify highly qualified teachers and highly effective methodologies, and to understand which policies improve education (and which should be rescinded because they do not). The AEDW will support highly informed decisions, by delivering to the decision makers a clear vision of how Arizona's children are being educated.

Arizona lacks the resources necessary to move from the initial AEDW to the full Statewide Longitudinal Data System just described. To supplement existing funding, the state proposes a grant of \$5.9 million in Statewide Longitudinal Data System funding over three years, to be used toward: broadening data collection to include teacher, classroom and curriculum; creating a unified data dictionary; establishing a unified enterprise-wide data architecture; enhancing security infrastructure and data securitization; developing a consolidated calendar and automatic reporting; aligning the AEDW with NCLB and EDEN reporting requirements; creating online data collection capabilities for rural districts and extremely small schools; standardizing methodologies for data exchange with outside entities; training and supporting the broad spectrum of users; establishing formative and summative evaluation procedures; and forging a structure to enable ongoing SLDS support. Arizona intends to collaborate with Maine and Connecticut in building data dictionaries, SIF for reporting, FERPA issues in data sharing, and creating common EDEN reporting data models.

Project Narrative

Project Narrative

Attachment 1:

Title: Pages: Uploaded File: **2057-Mandatory_SLDS_Grant_Application_Project_Narrative_FINAL.pdf**

Attachment 2:

Title: Pages: Uploaded File: **3651-0-Resumes_KeyStaff&Advisory_0703150950.pdf**

Attachment 3:

Title: Pages: Uploaded File: **6991-Letters.pdf**

Attachment 4:

Title: Pages: Uploaded File: **3802-Project_Timeline.pdf**

Project Narrative

The federal No Child Left Behind Act of 2001 (NCLBA) mandated states to establish an accountability system to evaluate performance of local public schools, charter schools and school districts. It requires states to publish annual achievement results, attendance rates, and graduation data along with demographic information to support schools and districts in their quest to exercise their ability to make continuous student achievement improvement decisions at the local level.

Also in 2001, in conjunction with NCLB, Arizona voters approved Proposition 301 which established the requirement for an Arizona public school accountability system. Since the passage of NCLB and Proposition 301 the Arizona Department of Education (ADE) has worked with scholars, school administrators, teachers, higher education, members of the public, business leaders, educators and education stakeholders to develop an accountability system that complies with both mandates. The result was Arizona LEARNS (AZ LEARNS) an accountability system that complies with NCLB by providing a one-year snapshot of student performance based upon Arizona's Instrument to Measure Standards (AIMS – Arizona's high-stakes test) scores and other evaluation components. Additionally AZ LEARNS complies with the mandates of Proposition 301 by focusing on longitudinal change of student performance.

As a result of the Arizona accountability model several long term strategic initiatives have become critical path in realizing the goals of relating accountability measures to academic achievement. In answer to one of those initiatives, Proposition 301 allocated funding for the development and deployment of a state level student accountability information system (SAIS). A primary objective of SAIS was to improve school finance processes and services to Local Education Agencies (LEA's). SAIS's implementation resulted in increasing the accuracy and timeliness of student count information required for state and federal funding and reporting. Adopting the national data standards when architecting SAIS has resulted in ADE's ability, since 2002, to assign and manage unique student identifiers for every one of the one million plus students benefiting from Arizona is educational public resources or services.

After successful deployment of SAIS, the need for a unified view of all the rich ADE managed data stores became apparent. Out of that need, as responsible stewards of that data, ADE created the vision of Arizona's Education Data Warehouse (AEDW). ADE's unifying plan to cleanse, normalize and coalesce the ninety plus data stores dispersed throughout the agency has a long horizon. The fact that these disparate data stores range from simple school mailing address databases to complex graduation rate analytic stores requires ADE to analyze each on its individual value, risk and cost of AEDW integration. ADE is currently rating each data store based upon its potential value in responding to the user requirements of the AEDW. If all of the data stores were deemed to add value to the AEDW and require integration, it is estimated that it will require up to five years to complete.

In 2005 the Arizona legislature appropriated to ADE a modest budget to generate a data warehouse proof-of-concept (POC) demonstrating the ability to successfully link several key transactional data repositories (OLTP) and transform them into a more static dimensional reporting/ analytics structure (OLAP). Even though coalescing these data stores revealed challenges resulting from differing methods of record identification and normalization levels, the project demonstrated that the data from these siloed data stores could be linked successfully and used in a practical and useful way. The siloed data stores selected for the POC were relatively recent constructs and the detail level data was already reasonably clean, so error levels at the

detail level were statistically insignificant when aggregating the information. The POC cubed data store was utilized to support the web based Arizona School Improvement Plan (ASIP) application. The ASIP application has been lauded as a rousing success, giving LEA's unprecedented easy access to a limited consolidated view of their data.

The POC also revealed some then-existing organizational, cultural, and process challenges that made creation of a centralized collection of ADE managed data difficult to achieve. Historic practices of ADE's divisions self-managing technology projects and a MIS department that focused on creating applications/toolsets without considering the rigor of operating them are symptomatic of these issues. As a result, with the full support of State Superintendent of Public Instruction Tom Home, the old technology division undertook a wholesale transformation from a dispersed development shop to a centralized IT service organization. Roles and responsibilities, including those of the business users, were clearly defined for the first time. Software development life cycle (SDLC) policies and practices were defined and deployed. Change control procedures were created and deployed. A centralized IT operations and data management group, along with a user support desk were formed. These types of organizational, cultural and systemic process changes are a journey not a destination, but ADE as an organization is now successfully well down that road.

Another emerging strategic initiative is the unification of ADE's 19 existing web sites and portals. These portals range from sites delivering ADE internal human resource information accessible through the intranet to external delivery of ADE generated LEA funding reports accessible to a limited audience on the internet. The natural extension of this initiative is the development of a secure single sign-on (SSO) identity management authentication engine. ADE began that journey by partnering with Arizona State University (ASU) and investing in the development of ADE's IDEAL portal (Integrated Data to Enhance Arizona's Learning, www.ideal.azed.gov). Current authenticated access to this portal is limited to Arizona teachers and other Arizona classroom professionals and to Arizona principals and school administrators. IDEAL offers include anonymous student access for AIMS practice testing. Even though the IDEAL portal is a reality and in production, it is still in its infancy. A primary objective of our IDEAL three year project plan is unifying access to all of ADE's technological resources and creating a single sign-on engine that is robust enough to manage the security and FERPA requirements associated with the increased data access requirements of students, parents and all educational stakeholders. At the current level of required data access, ADE is securely managing student and teacher level data from all perspectives. The increased data access requirements of AEDW make additional funding a critical path element to achieving the highly secure SSO objective.

Overlapping the POC time period, Arizona's Auditor General's Office embarked on its ten-year performance audit of ADE's information management function. This regularly conducted audit was comprehensive and lasted nearly nine months. Beyond uncovering process deficiencies, this audit revealed the need for an increased systemic security focus. Since the second quarter of 2006, ADE IT has retrained its staff and upgraded its critical applications to minimize the risks associated with the top 10 web vulnerabilities defined by the Open Web Application Security Project, or OWASP (e.g., invalid input, broken access control, cross site scripting, injection flaws, etc.). Once again, with the full support of Superintendent Home, IT was empowered to embark on a full moratorium, reallocating all of its resources for sixty days to address and resolve the issues surrounding application and data securitization. The moratorium completed successfully and on time. Securitization is an ongoing process, but with IT's new

formalized policies, implementation of best practices, application upgrades, network restructuring and system hardening, ADE is in a strong data/infrastructure risk management position.

As a result of the successful POC and the successful transformation of ADE's IT unit, in June 2006 the Arizona legislature appropriated \$2.5 million in state funds to ADE to take the next step in the creation of a full state level education data warehouse. This allocation funds the current Arizona Education Data Warehouse (AEDW) project. Our technical design and two-year project plan and budget were approved by all state stakeholders and the project commenced in November 2006. Given the issues This current project is promoting the POC into the fully functional Arizona Education Data Warehouse (AEDW) by incorporating further existing ADE managed, siloed data. The state appropriation enables ADE to retain the resources and purchase the requisite software licenses, hardware and toolsets to unify, standardize (adoption of SIF - Schools Interoperability Framework) and simplify ADE's current data collection and reporting functionality. The appropriation also provides ADE the opportunity to design and implement governance policies including organizing the AEDW Steering Committee. This project will provide views linking our student level data – including demographics, membership, needs assessment and program participation (e.g., special education, ELL, giftedness) – with AIMS assessment data. The initial dimensions and measures are limited in scope, so a controlled rollout can be achieved.

Project Need

There are many contributing factors in defining Arizona's needs. One factor is the years of utilizing a non-standards based, decentralized view when responding to technology initiatives. This has led to the deployment of systems that are solely focused on addressing specific mandates. These "siloed" environments were developed with single purpose as an objective; they are not interdependent. They were also developed with a simple security context as well as limited views on operability, capacity planning and future requirements. Legacy systems can be upgraded or will be allowed to sunset for rewrite, but that will not happen quickly.

A second factor is the increased focus on education at all stakeholder levels. This has significantly increased the demands for credible education-related information. ADE is not only legislatively mandated to manage and steward Arizona's preK-12 education system; ADE is viewed as Arizona's education data clearinghouse and is continually asked to transform data into information by transforming the focused "siloed" stores into an enterprise view. The ADE IT division's migration to a service delivery entity has been fundamental in allowing ADE to view all initiatives with a systemic approach. The SLDS grant will further enable ADE to leverage the work completed by providing the infrastructure monitoring toolsets necessary to make that systemic approach actionable.

Additional factors contributing to Arizona's need for the SLDS grant stem from challenges recognized during the noted on-going foundational work. Now that ADE has demonstrated that the AEDW's proposed technology will work, existing limitations still challenge AEDW's critical path. The award of the SLDS will include the following objectives:

1. Supporting end-user training/on-going support, definition of policies, procedures, practices and materials relating to appropriate usage of ADE's rich data stores, the data visualization toolsets and performance measurement methodologies.
2. Integrating the AEDW into ADE's efforts to respond accurately and efficiently to Education Data Exchange Network (EDEN) federal data collection requirements.

3. Providing professional development for ADE's IT staff to assure the expanded AEDW's long term operational success and supportability.
4. Expanding IDEAL to develop an ADE managed, single sign-on, roles-based authentication engine that will include the option of multi-factor authentication for the roles requiring the most robust security. This objective would insure FERPA compliance while leveraging the standards associated with Lightweight Directory Access (network) Protocol (LDAP) over TCP/IP to achieve the security, flexibility, scalability and extensibility this type of application would require.
5. Maturing ADE's technical security policies and their implementation. This covers web based (OWASP), network (intrusion prevention systems (IPS), DMZ design, etc.), systems (secure passwords, configuration, architected layers of abstraction, virus protection, general hardening by limiting/monitoring access), transmission, incident management, logging/auditing and monitoring.
6. Developing and implementing new data quality assurance policies and procedures.
7. Developing an on-line, near-line and off-line data archiving strategy that uses analysis about how data is used to determine where data lies in the archival stack.
8. Upgrading our business continuity plan (BCP) and its associated disaster recovery (DR) plan to assure that as dependencies upon the accuracy and availability of AEDW and IDEAL expand, the risk of realizing a loss is minimized.
9. Enhancing the legacy data collection methodologies so that they do the following:
 - a. migrate to SIF data collection.
 - b. conform to ADE's new Service Oriented Architecture (SOA) xml data transport/transformation architectural standards.
 - c. are scalable and extensible.
 - d. leverage ADE's new web services roadmap.
 - e. can be monitored and audited through logs.
 - f. are atomic and flexible enough to adapt to ever changing security requirements.
 - g. maximize the opportunity for credible data at the source.
 - h. minimize the possibility of the data being compromised through secure transport.
10. Developing and executing an integration plan with existing and future application requirements. Over the next three years this would result in initially including 15 additional ADE data repositories not currently in scope that support educational programs delineated on the next page. This includes scaling ADE's infrastructure and controlled access data center to accommodate the power, bandwidth and environmental requirements of the increased AEDW's storage, servers and appliances.
11. Developing a data dictionary and knowledge base including traditional data definitions, a data element's source, legislative references and associated business rules. The dictionary and knowledge base would be managed by ADE Full Time Equivalents (FTE) and be accessible by all AEDW stakeholders including the public (with public access be limited to relevant sections of the knowledge base). The management would comply with IT's change management procedures related to versioning, check in/out controls and rollback procedures.
12. Expanding data collection efforts and utilize data analysts to organize and normalize the data (e.g. course codes) newly collected from the LEAs' multitudinous student information systems.

13. Implementing strategies to further align our data management strategies with the 10 Essential Elements for longitudinal data delineated in the Data Quality Campaign.
14. Work with remote, rural districts and extremely small schools to design a web based data collection application supporting the educational entities that do not currently collect needed data in electronic form.

The Statewide Longitudinal Data Systems Grant (SLDS) will provide the opportunity to address these identified limitations. It would also expand and accelerate the work currently being completed on our present data warehouse project to move beyond connecting funding and assessment data to include information needed by key Arizona educational programs like:

- student personalized learning plans
- migrant student data
- eLearning
- tutor funds
- child nutrition
- response to intervention
- teacher professional development
- benchmarking studies
- adult education
- teacher certification
- voucher for special education and foster children
- grants management
- career technical education
- distance learning and
- school safety incident reporting management.

There is a clear need for program performance measurement capabilities to determine the value of those programs. It is incumbent upon ADE to assure all education stakeholders that highly credible information will be available to respond to the need to know that every precious educational dollar is being invested in a manner that enriches every child's educational experience, and that every dollar translates either directly or indirectly into improved measurable student achievement. The old adage "if you cannot measure it you cannot manage it" applies to ADE's current situation. With many of these programs, quantifying their success relative to student achievement is problematic.

The SLDS would enable ADE to move ahead aggressively in completing the systems analysis, retaining the human resources and upgrading the infrastructure to link these data stores successfully to student achievement data. The SLDS grant would also provide ADE with the opportunity to construct a concrete plan to enhance our current AEDW initiative to one that has the integrated processes and technologies necessary to provide data-driven decision support system (DSS) capabilities.

ADE is fully aware that data warehousing cannot be all things to all people. But the extensive commitment and the work already completed by ADE in developing the technological standards, the processes, the organization and the culture to support such a large initiative provides the foundation for a broad AEDW vision. Assisting in keeping that vision from just being a dream, or worse yet a hallucination, the "how" part of the equation is made more

plausible by the fact that the applications supporting these programs have several key common attributes.

The first of the “how” part of the equation is common data threads. These applications and their supporting databases all currently use the student’s unique identification number, the teacher unique identification number, the unique district/school code or the elements necessary to map the records retained in these databases through SAIS to ADE’s assessment data. This assists in exercising the opportunities for program assessment based upon student achievement. Secondly, even though these applications have been developed over a number of years, they have a common technology stack. They all leverage a version of Microsoft SQL Server and a version of Microsoft’s integrated development environments (IDE). The grant would provide ADE IT with the ability to develop and implement a migration plan to assure that these applications and their data stores will provide secure utilitarian user interfaces (UI) and manage data that can be readily utilized in ADE’s DSS. Finally, the educational program leaders, whose programs benefit from these applications and data stores, are extremely dedicated to the concept of integrating their retained data to support their efforts to maximize their programs’ successes.

The SLDS grant is needed to supplement ADE efforts, not to supplant them. Accelerating and expanding AEDW’s current plan is needed to successfully respond to the many LEAs’ requests to have their requirements quickly incorporated into AEDW. ADE’s current inability to meet the LEAs’ needs in the timeframe they require has compelled many LEAs to construct roadmaps unilaterally to address their data warehousing requirements. This is resulting in LEAs spending a considerable amount of money to develop duplicate local data warehouse solutions. Accelerating our implementation with the assistance of the SLDS grant, will save the Arizona LEAs tens – even hundreds – of millions of dollars that can be invested elsewhere in the pursuit of increasing student learning. An expanded AEDW design that works with existing LEA data warehouses is critical to AEDW’s success.

Project Design

At a high level, the project design acknowledges the data warehouse is not one single entity but an integrated platform of applications (including utilities and agents) and data repositories that are comprehensive, secure, personalized and collaborative in nature and implemented with a keen eye on an efficient return on investment (ROI) to the taxpaying community. The project design also acknowledges AEDW is not just a technological solution but one of cooperative ownership, collaborative planning, communication, organization and culture. AEDW exists to serve its users! Fundamentally, user acceptance and engaged usage is the ultimate measure of its success.

AEDW exists to enhance the ability for Arizona to deliver a quality educational experience to all children by providing vital insights through data that accurately models the past, current and future state of Arizona’s educational experience. The project design also acknowledges that the delivery of an excellent user experience must be accomplished without compromising or interfering with the supporting on-line transactional processing (OLTP) systems such as SAIS. AEDW is being implemented as a central repository of consistent data and that will have the ability to efficiently and accurately answer a range of potentially complex questions. The SLDS project design includes the requirement that based upon user stratum, the appropriate performance measuring/data visualization toolset(s) will be available to the entire AEDW user community.

The following paragraphs summarize the status of ADE's systems based on the required components under the 2006 SLDS grant:

1. A unique, permanent student identifier.

Since 2002 through SAIS, ADE has successfully assigned and managed unique student identifiers for every one of the one million-plus students benefiting from Arizona educational public resources or services. ADE has plans to collect additional student level data through several separate initiatives that will require integration into AEDW.

2. Enterprise-wide data architecture.

A significant challenge to the AEDW's success is integrating the rich siloed data repositories into an enterprise-wide data architecture. As earlier noted, beyond technical and data analysis, data integration requires organizational and cultural support. ADE is continuing to make significant inroads in requisite cultural change.

The POC has demonstrated that technically mapping databases containing student and assessment data is achievable. This is partly due to the fact that beyond the unique student ID ADE assigns common unique identifiers for teachers, districts and schools. But much of the information desired for the expanded AEDW from program applications will require extensive analysis and work to relate the independent sources. In addition to connecting disparate data sources the expanded AEDW requires development of the previously noted data dictionary. Other pieces of the puzzle are ADE's enhanced technology standards evolving SOA application design and a distributed physical storage model.

ADE wants to respond cooperatively to the LEAs' requests and expand the scope of AEDW to integrate other educational programs' data and processes in the roadmap. With the SLDS, therefore, ADE will be focusing on the analysis and standardization necessary to include Arizona's key education programs (listed on page 5). In parallel, with the assistance of the AEDW Steering Committee and other stakeholders, creation of the data dictionary and knowledge base is a significant critical success factor.

3. Procedures for protecting the security, confidentiality, and integrity of data.

Securitization of ADE's data is not achievable without also committing to the standards, policies, procedures and best practices necessary to also secure the agency's applications and infrastructure. This is an important theme discussed throughout this SLDS application. The entire agency, from Superintendent Horne and through the rank and file of ADE, is in agreement that we can be good stewards of the information entrusted to ADE only if we have proper securitization.

Over the last year the security focus at ADE has assisted in our having made technical inroads in hardening several of the agency's key applications and infrastructure; but there is a long road to navigate in reaching the agencies goals. Using a risk management model, the quality assurance group has been supplied the tools and on-going training to execute security penetration evaluations and measure the agency's progress.

ADE has done analysis relating to data access policies. Even without the AEDW, many requests come to the agency and drive the need to formalize ADE's data access policies and procedures. Data access policies are evaluated and approved by the AEDW Steering Committee. Data request approval policies have been formalized, with some requests requiring the highest agency level authorization. Enforcement of the policies and the associated logging, lies with the newly created IT data management group. Auditable checks and balances have been put in place. ADE's security testing rigor demonstrates that from a technical and policy perspective,

the student level data of Arizona as managed at ADE is currently secure. ADE plans to institute even more rigor in securitizing data managed by the AEDW.

ADE believes that FERPA compliance and a verifiably secure environment go hand-in-hand. Whenever a data request is made of ADE it is incumbent upon the agency to verify with maximum certainty the requestor's identity and affiliation, (whether a group, an individual or another application) and the rights assigned to that requestor for resource and data provisioning. With the AEDW adhering to FERPA guidelines for appropriate and legal use of education data, it is vital that ADE maintain a robust SSO/identity management system; one that can verify with a high level of certainty, through the authentication process, who the requestor is. Coupled with that are the rigorous authorization requirements to verify what that requestor can do, and to what data those actions can be done. Beyond the identity management requirements, the increased demands of the expanded AEDW will require the increased resources and tools necessary to assure data security and confidentiality.

4. Automated reporting.

There are several factors contributing to ADE's ability to adequately respond to this requirement. One factor is the need to have a managed consolidated calendar of reporting timetables so conflicts, dependencies and resources can be aligned to assure automatic reports can be generated. ADE's newly formed IT Operations group is currently compiling intra-agency reporting time frames to construct an enterprise-wide calendar. This group is evolving to take on the responsibilities of executing all processes assigned to ADE's production assets. Another factor is the requirement for standards surrounding automatic report generation. ADE needs to standardize to and acquire the necessary products to generate and deliver automatic reports. The process of generating any specific report must be repeatable and predictable. The process also needs to be monitored and auditable. The IT Operations group is developing the documentation and skills required to centralize the execution of these important processes.

A strategic element of the expanded AEDW design is to consolidate many of the existing reports generated within ADE by migrating from their current data source to the AEDW. The consolidated source has many benefits. It will enable ADE to commit to generating all of the EDFacts data groups within the three year SLDS timeframe. It will also allow ADE to continue standardizing the format and delivery methods of the varied requirements associated with the agency's automatic reporting requirements. Attachment A is the latest EDFacts/EDEN submission plan delivered December 15th, 2006. Within weeks of completing this SLDS grant application, ADE will be delivering updated EDFacts/EDEN submission plans to include Highly Qualified Period and End period (school year) submissions

If Microsoft Reporting Service's capabilities align with the expanded AEDW's automatic report generation and delivery requirements, the initial licensing investment will be reduced; otherwise the licensing costs may be substantial. Either way, costs associated with planning, analysis, training, design, development, migration, and various automatic report testing would be an important allocation from the SLDS grant funds.

5. A data warehouse for managing longitudinal data.

The AEDW's POC, expanded vision, and current scope are discussed throughout this narrative. The ability to construct the SLDS-aided, expanded AEDW is critical to addressing the requirements of Arizona's education stakeholders in a professional and timely manner. Over the last 1.5 years ADE as an agency has done much of the difficult work necessary to prepare for a successful large-scale data warehousing project. Investments in training, IT reorganization,

agency cultural changes, process design and cultivation of stakeholder partnerships has laid a strong foundation to support such a large endeavor.

The SLDS grant is a vital piece of the puzzle that will make this considerable undertaking a success. As stated earlier investing in this project at the state level provides the economies of scale that can ultimately save millions in tax dollars allocated to education by removing the need for each LEA to accomplish this independently. The justification for the expanded AEDW is woven throughout this document. The bottom line is that this data warehouse, with all of its ancillary components, is a required step in using longitudinal information to measure the effectiveness of our educational processes in improving student achievement.

6. Capacity to exchange student data across institutions within Arizona and with institutions in other states, in conformance with FERPA.

As the attention placed on education of our children becomes more focused, the appropriate and legal sharing of student data will increase. This requirement depends upon the securitization of our enterprise, including data transmission, and our ability to complete the enterprise-wide migration. It is key to incorporate the ability and capacity to exchange student data bi-directionally. ADE is currently developing the standards and policies surrounding student data exchange with Arizona higher education institutions and recognizes the need to expand those requirements significantly to standardize these data exchanges for vertical integration with all authorized interested stakeholders.

It is critical that ADE's information data exchange methodologies mature. The existing system has been effective, but this custom system is not scalable. The increasing demand for student data requires ADE to upgrade our data transmission agents, integration zones, network bandwidth and the required hardware to support these loads. Additionally, to remain agile in responding to these needs, ADE must develop the agency's data exchange methodologies to SIF standards. Professional development in the areas of development, network, systems, database administration, training, and testing will be necessary to successfully deploy an integrated SIF-compliant data exchange solution.

7. Secure-access data marts, or comparable means for providing data, reports, and ad hoc analysis to inform decision-making of key stakeholders.

The expanded-scope AEDW provides an expanded, unified view of ADE managed data. That does not necessarily say that all data is retained in one large physical device. The range of users requiring data marts would cover the spectrum from high bandwidth "turbo-users" with high statistical abilities to users lacking the expertise or the basic infrastructure to persist an internet connection. Of course, the SSO/identity management initiative is imperative to securely managing the access, construction and refresh of any data mart. Our enterprise-wide design includes creating a data abstraction layer providing a secure gateway between any requesting object and a data repository. The creation and refresh of any data marts managed for users will be accomplished by objects exercising the data layer.

The expanded AEDW will significantly increase the scope of ADE's current data management requirements. It also continues to underscore the need to increase ADE's AEDW stakeholder outreach to ascertain which users have the requirement and the sophistication to utilize marded data. The potentially large record sets associated with data mart snap-shotting, creation or refreshing also supports the dialogues surrounding the needed infrastructure upgrade.

8. Ability to support analysis and research to evaluate the effectiveness of education related programs.

This entire SLDS application is directed at providing the tools, infrastructure and information necessary to evaluate accurately the effectiveness of ADE's varied programs, initiatives, and funding relative to student performance. ADE's rich data stores, when linked, will provide the foundation for this quality analysis. Beyond the challenges associated with technically linking the disparate data sources and the creation of complete metadata, ADE is committed to allocating the resources necessary to inform the AEDW consumers on how to use the data they are presented with. Additionally, ADE needs to continue to lead the dialogue on defining how Arizona measures success in education and student performance. With respect to the AEDW, ADE needs to design it with the native agility to adapt to the evolving definitions and measures of success.

Supporting the analytics to measure educational success is the measure of success for the AEDW. Training, analysis, definition, documentation and iterative reevaluation are keys requiring investment to answer this requirement successfully.

9. A Governance Plan.

There are existing governance authorities that share in the accountability and oversight of the AEDW initiative. At the state level the Arizona Government Information Technology Agency (GITA) has oversight responsibilities for the AEDW. ADE has monthly reporting requirements to GITA. There is also the AEDW Steering Committee comprised of AEDW stakeholders from ADE and LEAs. The current ADE contingent includes researchers, program directors, IT professionals, and education leaders while the current LEA representation includes district administration and district technology officers. The expanded AEDW will require the increased scope of the AEDW steering committee to include individuals representing the needs of the business community, higher education, students, parents, teachers, school administration, and the public. In addition to the Steering Committee, the expanded AEDW will utilize Joint Application Development (JAD) meetings and/or focus groups targeting six AEDW stakeholders' groupings:

- students and parents
- teachers
- schools and districts
- universities and researchers
- the business community and the public, and
- the federal reporting community.

Historically, with previous initiatives, governance and stakeholder involvement has been a challenge. The ADE cultural changes have included an openness to bring many more disciplines to share in the collaborative planning and cooperative working processes. Recognizing that governance done well is the process that supports the vision while simultaneously empowering and controlling, ADE IT governance has been a significant mandate accepted by ADE IT's organization. The lessons learned from IT governance are translating, through Janice McGoldrick's CIO leadership to the governance of AEDW.

10. A communication infrastructure.

Communications are intended to "spread the word" about governance decisions and processes. The communication infrastructure ADE has deployed includes SharePoint as its standard collaborative communication environment. Over the last two months, ADE has re-architected the configuration of its SharePoint deployment. The enhanced SharePoint environment is currently in use, supporting several initiatives requiring collaborative environments. AEDW will leverage ADE's enhanced SharePoint environment by placing it

behind IDEAL to serve as the AEDW collaborative and communication portal. SharePoint's ability to manage team documents and various forms of standard communication (email, mobile device, etc.) will be utilized in informing and working with the AEDW stakeholders. The communication infrastructure is fundamentally in place but enhancing the IDEAL portal with the updated SSO is needed to insure the projects success.

11. Facilitating rigorous analyses and providing access to system data for policy oriented research, in conformance with FERPA.

Many factors contribute to the expanded AEDW's ability to support and facilitate rigorous data analysis. One of the expanded AEDW's mandates is to provide the tools, infrastructure and information necessary to empower, support and facilitate the ability of authorized analysts to perform rigorous analyses. These factors include the following:

- the data dictionary with data definitions, associated business rules, legislative references and data sources;
- supplying analysts with robust Performance Measuring/toolset(s) and its requisite training;
- on-going communication with analysts to gather evolving requirements, level set expectations and realize collaborative planning;
- understand the specific data requirements of each analyst so the supplied data – whether in the form of a mart, extracts or on-line AEDW access – can support the varied latency, granularity, and detail/summarization levels of each community;
- design and deployment of a rigorous infrastructure so the computing resources are available to support the resource-intensive number crunching and large data sets generally associated with complex data analysis processes; and
- training on how to use the data, metadata, and associated toolsets.

All of these critical success factors are included in ADE's expanded AEDW SLDS needs assessment.

12. A program for ongoing training of all key users.

Training AEDW's users is planned to take three forms. First, ADE will establish an outreach training team that provides scheduled training opportunities for each AEDW end user stratum located at ADE and at the end user facility. Second, ADE is planning to organize state level conferences to enable all AEDW stakeholders the opportunity to learn, network and share AEDW experiences. Third, ADE is planning to provide on-line web casts and streamed/downloadable video classes for self-paced, reusable course content.

Creating successful training materials involves working with product vendors, the AEDW steering committee and ADE's curriculum creation subject matter experts (SMEs) to translate the requirements of AEDW's users into systematic, detailed processes. This will result in the generation of course content, course progression, and lesson plans. Amongst other tasks, ADE's Assessment group is engaged in this process to assist in generating this curriculum.

The project design includes development of the environments necessary to support the training requirements. Our communications strategy includes enveloping the requisite access to training materials and their administration. Acquisition of the hardware, network appliances and software required to support the sizable infrastructure demands of course streaming/downloading and web casts is a critical path component of ADE's project design. Currently ADE is in the process of evaluating Helix and Microsoft Media Services as products that will satisfy these requirements.

13. Ongoing, formative and summative evaluation procedures for determining whether the developed system meets reporting and decision-support needs.

How do we measure the AEDW's success? This question echoes the dialogues surrounding the need to measure educational programs relative to improved student achievement. ADE is committed to establishing the performance measures necessary to evaluate the AEDW's performance relative to user communities' reporting and DSS requirements.

The AEDW's assessment plan will leverage the analysis completed in generating these measures to complete both formative and summative assessments. The formative portion of the plan commences at the onset of the project and continues throughout the life of AEDW, providing immediate "scorecard" type evidence that the AEDW is on track or requires adjustment. The summative portion of the AEDW's assessment plan will collect the user data necessary to understand if it has achieved its objectives and goals. These comprehensive assessments are completed at significant project milestone markers and provide another level of accountability.

Several of these assessment objectives and several foundational objectives must be met. These would include the following:

- the creation of key performance indicators (kpi) that translate in a quality user experience;
- the creation of User Service Level Agreements (SLAs) to manage expectations of the AEDW user community;
- the creation of the ADE Operations group's Service Level Objectives (SLOs) providing real time detailed or summarized views of the AEDW system performance and its ability to successfully respond to the SLAs;
- installation of system monitoring applications like Microsoft Operations Monitor (MOM) providing multiple views into the health of the AEDW while logging all usage and performance measures for system auditability;
- exercising ADE's standardized survey application to survey periodically the AEDW user community and non-user educational stakeholders; and
- creating the AEDW with the native agile architecture to enable flexible adaptation to lessons learned from assessment activities.

14. A long term plan for sustaining the system over time.

The service delivery focus of the entire sixty-member ADE IT team has systems high securitization, availability, reliability, scalability, extensibility, operational viability and credibility as the highest priorities in designing all systems. In support of these goals, ADE IT has put the people, organization, and processes in place required to sustain the AEDW. The project design includes installing the tools and measures to support these system performance goals.

Long term funding for operating AEDW comes from the existing process of amortizing the costs of IT operations over all of the agency's divisions utilizing accounting chargebacks. Additionally, every program requiring appropriations that integrates with the AEDW will now request an on-going operational budget component that will be leveraged to support ADE's consolidated infrastructure.

15. Ability to meet NCLB and EDEN reporting requirements.

A primary object of the AEDW project design is to facilitate ADE's federal reporting compliance. Through the efforts of Jeff Stowe, an ADE educational program specialist, John Eickman, an ADE data analyst, and the entire ADE data management team, ADE has been active

in working with EDfacts/EDEN and NCLB sponsors to assure that ADE's data collection and reporting roadmap includes federal reporting compliance. Gaps have been identified between the existing data managed by ADE and the data necessary to support federal reporting compliance. ADE is working with Arizona's governor, legislature, LEA's and schools to develop legislation that will enable ADE to create a plan collaboratively to collect the data required to address these information gaps. The extended AEDW project design requires the AEDW be the point where all credible federal reporting data is managed and transmitted.

The following outlines ADE's mapping to the core elements of establishing Arizona's statewide longitudinal data system:

Objective 1. Analysis of business needs of key stakeholders.

In serving AEDW's users it is imperative that ADE continues its focus on collaborative planning. The project design will expand the existing AEDW Steering Committee to capture the needs and concerns of the wider user base reflected in the work being completed as a result of SLDS. The project design is to look at users from multiple perspectives.

- What role(s) does the user fill?
- What questions would this user ask of the information in his or her various roles?
- What is the user's level of sophistication relative to data manipulation and the associated toolset(s)?

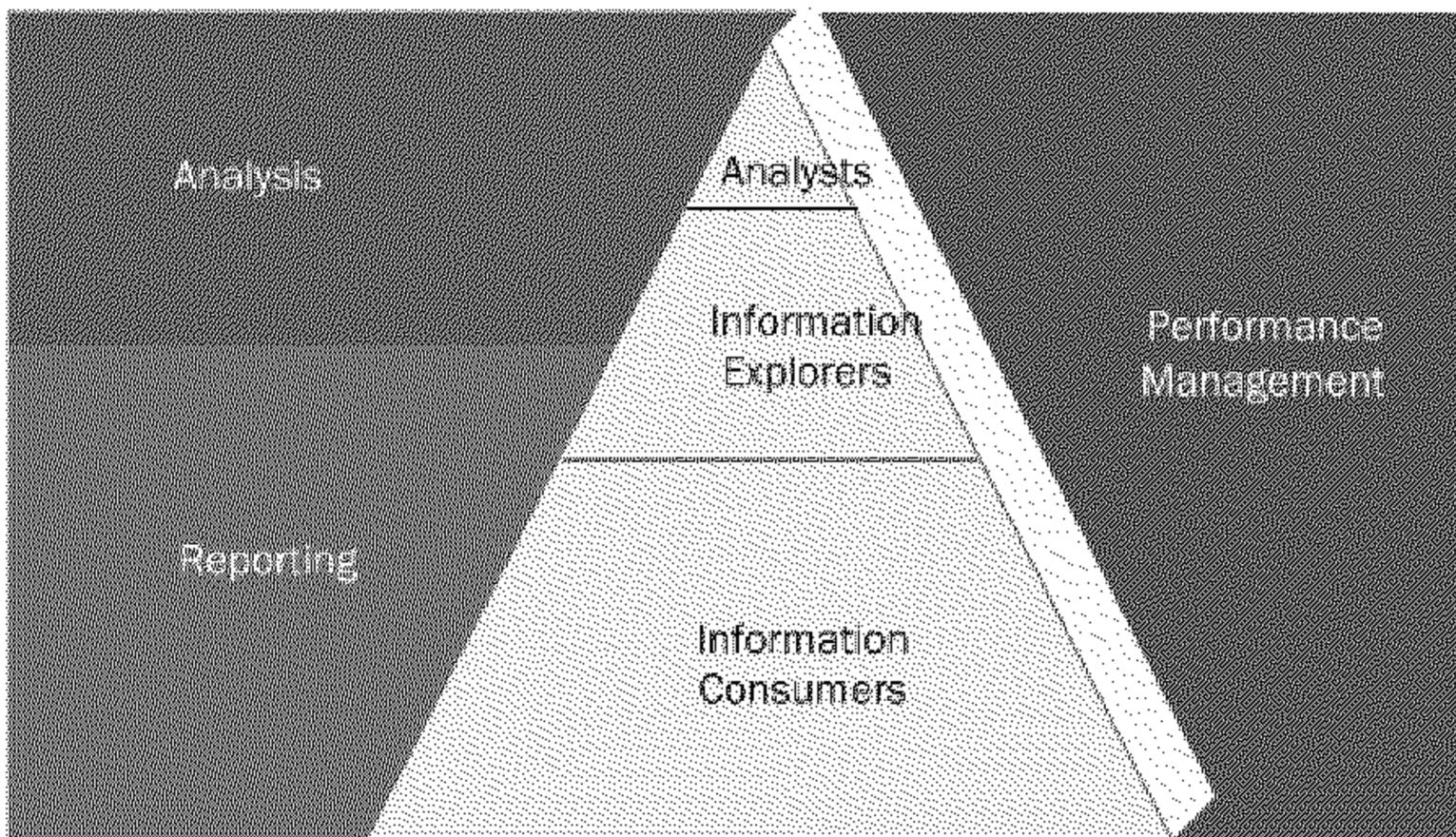
With the expanded scope ADE recognizes that for AEDW to be successful, the users must be empowered in to:

- Choose their data within the security context of their role. ADE is committed to enabling the AEDW user community to have significant input into the data retained within AEDW.
- Determine the timing requirements of the information. Refresh rates and data latency are key elements of those dialogues.
- Have input into performance Service Level Agreements (SLA). ADE is also committed to developing the dialogues necessary to level set expectations and understand the users' performance requirements with respect to AEDW.
- Have input in the determination of the functionality that will be provided through the AEDW toolset and, as importantly, what functionality will not be provided.
- Have input in their role in the AEDW project and what is expected of them. Some power users will have a key role in laying the framework for future AEDW initiatives.
- Have result sets from AEDW that are credible and trusted.

The AEDW steering committee meet bi-weekly empowering the AEDW users with the ability to partner in laying the framework for AEDW's future roadmap. Outside of ADE, Janice McGoldrick (ADE CIO) and her leadership team have made significant efforts to work with technical and business advisory groups. Specifically, Janice has been working with district CTO groups and other LEA consortia to build these partnerships and provide them opportunities to be significant contributors to this process. These types of proactive out reach initiatives are critical to incorporating all user involvement in the AEDW deployment process, which also means that these types of initiatives are critical to AEDW's overall success.

When selecting data structures and toolsets, the AEDW project team has instituted a process of user stratification. This enables the selection of appropriate data structure(s) and toolset(s) that address the distinctive requirements of each AEDW stakeholder's classification.

These high level user/consumer classifications include analysts, information explorers and information consumers.



The above graphic illustrates the analysis completed through our outreach programs and steering committee. The findings show the largest segment of AEDW users are identified as information consumers having requirements for standardized cached reports that are repetitive in nature and have little “what if” capabilities or requirements. Information consumers have requirements for data record sets that may have little strategic value but significant operational value and provides assistance in supporting informed day-to-day decision processing. The toolsets utilized by information consumers depends on their role, data access rights, local infrastructure attributes, and data analysis sophistication. These type of users include IT operations, some educators, some students, etc.

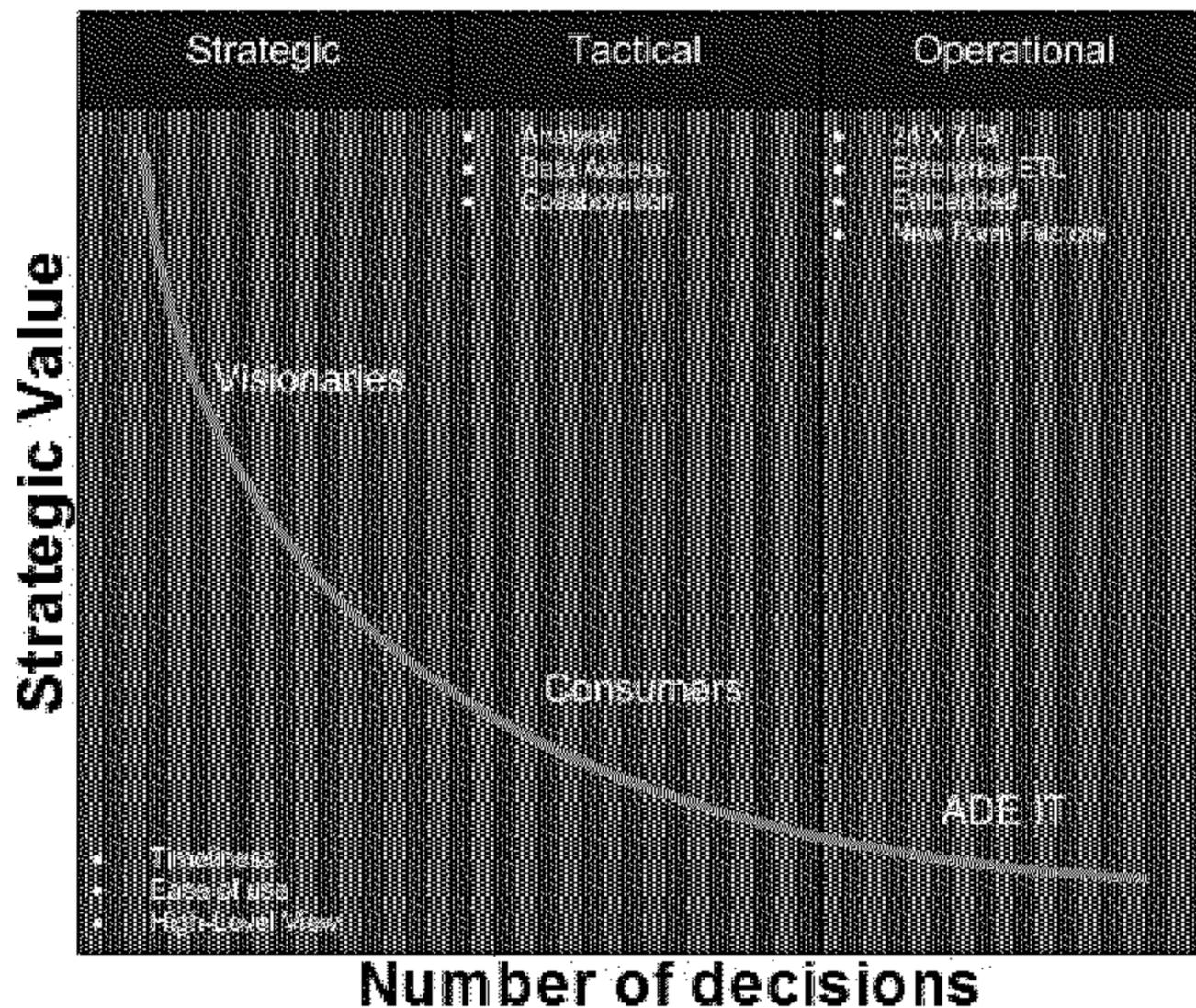
The next segment of AEDW users, characterized as information explorers (i.e. school finance, local education agencies (LEAs) or their student management systems (SMS)) have requirements for information downloads and parameterized reporting capabilities. Information explorers have a more balanced set of requirements between strategic and decision making data extract requirements. The ability to submit real time requests for reports/views/data downloads designed with and by the ADE staff and stakeholder groups provide assistance in improving student achievement by enabling a broad spectrum of educational analysis. Planned examples include the ability to examine school and program effectiveness, to identify promising educational practices, to meet federal and state reporting mandates, to set effective statewide educational policies, and to make the correct, most informed educational decisions for teachers and students alike. To realize those goals the AEDW design incorporates input from the LEA Data Advisory Council (DAC) and the LEA Chief Technology Officers (CTO) Advisory Group, detailing the type of data, the form of data and the toolsets needed to maximize the value of the AEDW initiatives to the LEA user community. Once again, the toolsets utilized by information

explorers depends on their role, data access rights, local infrastructure attributes and data analysis sophistication.

The final high-level segment of AEDW users, Analysts (i.e. researchers, legislators, educational power users, statisticians, psychometricians, etc.) require the toolsets and access to AEDW necessary to evaluate the complex “what if” scenarios. These users will be vested in presenting complex questions through ad-hoc queries and leverage the longitudinal reporting capabilities integrated into the expanded AEDW, such as that being funded through this SLDS grant. The analyst’s results may not produce a large volume of decision making findings, but will necessarily have significant strategic value. The capabilities associated with these types of users may vary between sophisticated multidimensional expression language (MDX) developers to experienced business intelligence (BI) tool users.

The AEDW’s project design also includes significant investments in training each user on how to use the supplied toolset(s) and, as importantly, how to use the available data. What is the metadata telling them? What are statistically significant measures? Ultimately, basing decisions or receiving guidance from the misuse of the data has inherently more risk than having no data at all.

Each user group may have their data “mated” for securitization purposes and to minimize the potential impact of any one user or process on the entire AEDW user community. In this context, the act of creating a data mart is characterized as the processes associated with exporting, at a predetermined refresh rate, a specific user or user group data into a unique logical and/or physical data mart designed to address their unique data requirements. The following graphic illustrates the distributed relationship between the strategic and decision making requirements of AEDW’s user communities.



It is clear that understanding the needs of the user community is fundamental to the success of AEDW. Understanding user categories assists ADE in understanding the range of data manipulation requirements. Taking that analysis and mapping it into user segmentation by role assists in defining appropriate user provisioning. With the SLDS grant the content and enterprise-wide architecture will be in place to support the federal, public, business community, universities, researchers, state, districts, schools, teachers, parents and students requirements for public education related information. Incorporating the data into AEDW to give value to all of these roles is a primary goal of the SLDS-enhanced AEDW.

Beyond retaining valuable data, the challenging management of these complex user rights is critical. In our expanded design, role-based access policies will be retained within the AEDW metadata and related to each data element. This provides the agility to remap data to role/data access changes without programmatic modifications. The IDEAL portal, in conjunction with the envisioned identity management system, will provide the management interface to assure appropriate access rights are maintained and insure sensitive information remains secure.

Objective 2. Catalogue current and planned local data collection methods and data structures.

Current ADE data collection methods and data structures through SAIS are documented with the associated legislative requirement mandating each data element's collection.

Objective 3. Designing Arizona's Statewide Longitudinal Data Systems architecture.

When discussing the design of an enterprise data warehouse it is common to focus on enterprise data integration and the requisite enterprise view of data definitions and data attributes. To that end the ADE project design includes siloed data store integration and the

development of a data dictionary and knowledge base that include schema definitions, each data element's source and its associated business rules.

Of equal importance is the requirement that the enterprise-wide project design include a roadmap toward AEDW's operational viability, predicable credibility and high availability/reliability. Without emphasis on these foundational tenets the efficacy of the AEDW will be at risk. The project design includes the development, support and operational efficiencies realized by technical component reuse and atomicity by standardizing to service oriented architecture (SOA) and service oriented network (SON) architectures. Additionally, the design includes creating a data abstraction layer providing a secure gateway between any requesting object and a data repository. It provides the unified access to ADE-managed data by eventually making all application/service data requests travel through the standardized data access layer.

A successful data warehousing implementation strategy requires a fundamental understanding of the range of questions that are to be answered by the data retained in AEDW and an understanding of the sources of the data supplying AEDW. SLDS project scope is to complete the analysis to define information gaps and initiate the necessary processes in place to begin to close those gaps. As a result of that knowledge, data gaps will be identified. In addressing these gaps, the AEDW project design provides analysis of all new and existing AEDW data sources. Each data source is being evaluated to elicit a variety of characteristics, include the following:

- its specific collection requirements, processes, methodologies and technologies,
- its relative credibility and actions for remedy,
- its transformation requirements with associated data type, normalization, and aggregation requirements,
- its refresh rates and latency requirements,
- its mapping requirements (uniquely keyed, composite multi-keyed or fuzzy logic),
- its mapping into the AEDW data dictionary,
- its metadata requirements for dimensional and fact translation,
- its ability to snapshot import or incrementally update through repeatable processes,
- sizes of data to be migrated (bandwidth and resource constraints),
- the complexity of extract and load (external data sources vs. internal data sources),
- the security contexts of the data to be extracted and its transmission,
- the form of the source data,
- the regulatory and/or legislative contexts of the data,
- the skill sets and capacities of the staff managing the data sources, and
- the related information from alternate sources that must be imported in parallel.

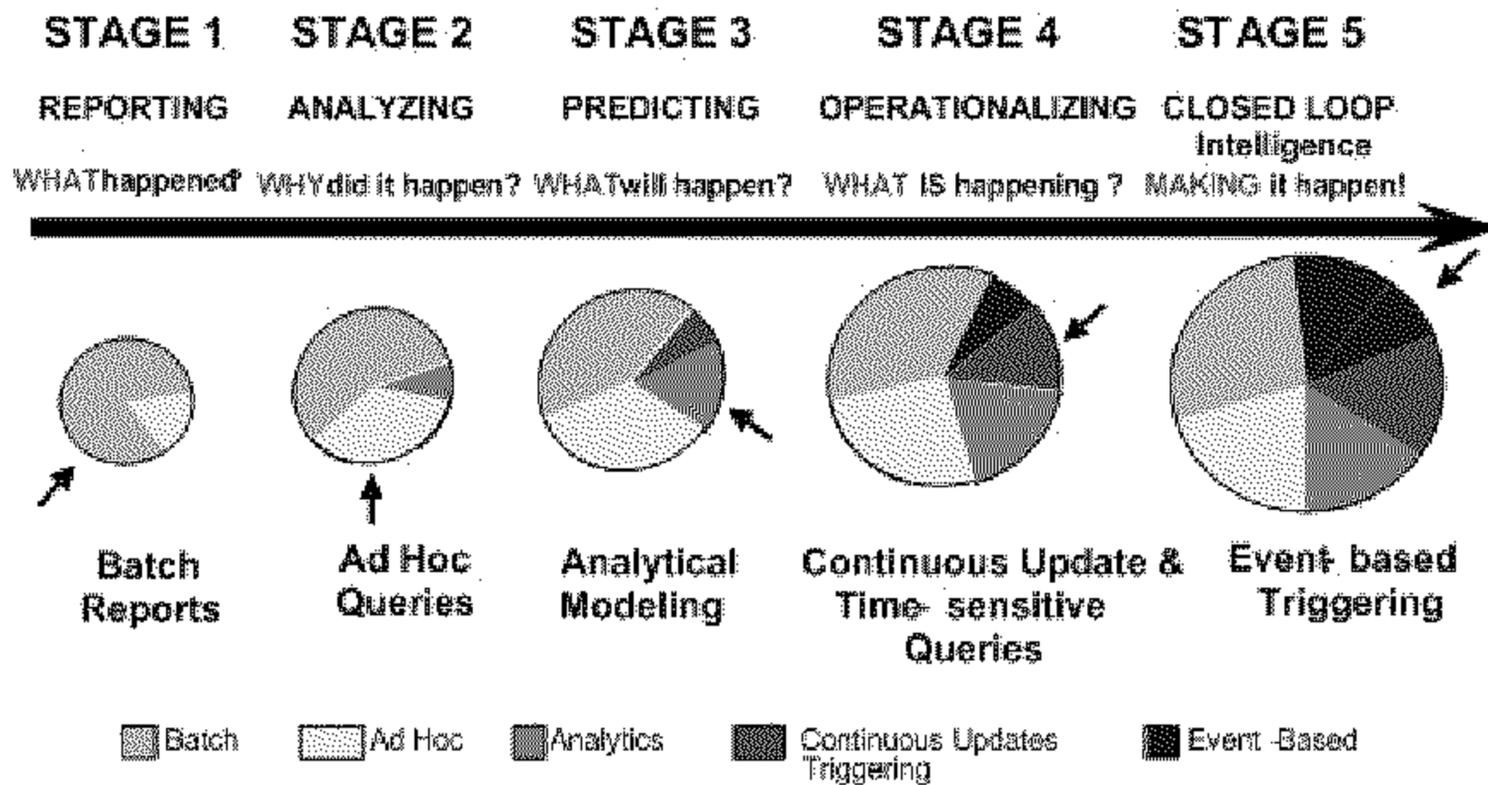
As the AEDW data sources are documented, the coalescing processes required to merge, cleanse, normalize and transform will be designed to ADE's technological and SIF standards.

Within each phase of data source analysis, the functionality roll-out will follow five prescribed stages of maturity and utility. Stage 1 supports static reporting which is, by definition, historical in nature with accountability being a primary objective. As the roll-out matures to address more forward thinking requirements, ADE will take advantage of the fine-grained data granularity and lowest possible latency rates to address requirements of all members of the AEDW user community. Fine-grained and low latency data is required to respond to questions linking targeted programs and instructional practices to assessment data. Aggregated

and higher latency data will support other levels of AEDW user roles. As the following graphic illustrates, the plan design is to have each AEDW phase rolled out to the various user classifications in a managed order commencing with the stages enumerated here.

1. Static reporting: answering the “What happened?” questions.
2. Analyzing: answering the “Why did it happen?” questions.
3. Predicting: answering the “What will happen?” questions.
4. Operationalizing: answering the “What is happening?” questions.
5. Closed-loop intelligence users: responding to questions targeted at asking “how to make it happen?”

In the world of data warehousing, business intelligence (BI) is defined as a set of technologies and techniques that support decision making. Stages 3, 4, and 5 of the AEDW vision bring business intelligence (BI) capabilities to its users and support many of the data-driven discussed DSS requirements.



The project design also requires that the AEDW logical data model must be based upon best practices of OLAP dimensional modeling. AEDW contains longitudinal data that will result in the ability to generate repeatable detailed and summarized result sets and reports.

The data transmission processes associated with extracting, transforming and loading (ETL) or extracting, loading and transforming (ELT data integration) data into AEDW requires the ability to assure data credibility, consistency, normalcy and balance. Transactional data denormalization and cleansing at the source are key requirements of project design to maximize performance and data credibility.

Since ADE has made significant investments in Microsoft technologies, both in software purchases and in staff development, the technology stack for the project design will be comprised of SQL Server 2005, Analysis Services, Reporting Services, Notification Services, Replication Services, SQL Server Integrated Services (SSIS), Service Broker and the .NET 2.0 IDE/framework. These technologies, in conjunction with Microsoft Vista and other packages,

align with ADE IT's roadmap for web, data and infrastructure securitization. A significant element of the project design is to expand the current plans to integrate an as-yet-unselected performance measurement/data visualization tool.

The project design also underscores the securitization requirements of AEDW's stored data, data/communication transmissions and authentication/ authorization as being critical path components to AEDW's success. The metadata associated with each data element retained by AEDW will include its security context. The security context of data will be assigned by evaluating risks associated with possible data compromise. Once that determination is made, data is categorized, logically/physically partitioned and secured based upon risk management principles. Some of the data context categories include the following:

- personal identity theft (i.e., data that – if compromised – could potentially result in a risk of personal identity theft like social security numbers, birthdates, etc.);
- personal privacy theft (i.e., address, telephone, email, etc.);
- student privacy theft (i.e., demographic information, test scores, grades, special programs participation, etc.); and
- agency or LEA sensitive information (i.e., employee rosters, organization, budgets, finance, etc.)

With respect to application authentication and roles-based authorization, the project design emphasizes the development of an ADE single sign-on, roles-based authentication engine. This is where requirements mandated by FERPA and securitization's best practices align. When designing data provisioning requirements, FERPA stipulates which individual (or service) can have access to what data (what can they do with that data) and security's best practices assure that the requesting user of AEDW information is actually the individual authorized to make the request.

To achieve this project design requirement ADE will continue to mature its technical security policies, procedures, and best practices. As mentioned earlier this objective targets the securitization of web/forms based applications, network, systems, transmission, incident management, logging/auditing and monitoring.

An important part of this objective of the SLDS project design includes username and password management. That includes enforcement policies relating to username/ password strength, password longevity, and password storage. Many organizations have created a policy to not retain usernames and passwords. But in the context of this project design the expanded AEDW will be extensible where the authentication engine may act as a proxy to forward credentials to gain access to a secondary application. As a result, storage of usernames and passwords will be a requirement. The passwords will be stored utilizing a Secure Hash Algorithm (SHA) so that passwords can never be retrieved from the system. If passwords are forgotten a process would be available to create and email a new password to a verified email account.

If any information other than retained information is deemed highly sensitive and requiring encryption and decryption capabilities, it will be encrypted using a Government accepted strong symmetric key encryption algorithm named Advanced Encryption Standard (AES). AES was approved for Government use by the National Institute of Standards and the Federal Information Processing Standards for protection of sensitive information.

Protecting AEDW's infrastructure and data transmission has ADE developing endpoint security point-to-point protocols (PPP) policies. With the expanded scope provided by SLDS ADE will be able to implement the best practice strategies in preventing "hostile threats" penetrating network traffic or applications. As the AEDW progresses to managing more and more data, the increased focus on security is a must.

Objective 4. Creating, assigning, and tracking a unique, permanent state level student identifier.

As noted earlier since 2002, as a result of the implementation of SAIS', Arizona has been assigning and managing permanent state level student identifiers.

Objective 5. Planning and implementing data collection.

The AEDW data collection and transmission considerations have been discussed throughout this application. The existing data collection efforts are based upon custom ETL methodologies and collects information that is aligned with NCES data standards. The expanded AEDW will build upon the existing analysis and infrastructure to create a data collection SIF migration roadmap.

The AEDW steering committee drives user requirements for data definition and usage standardization. Even though the AEDW vision is to continue to align with national data standards set by the National Center for Educational Statistics (NCES) and the xml guidelines presented by Postsecondary Electronics Standards Council (PESC), the steering committee is called upon to assist in aligning those standards with the AEDW's stakeholders.

Once collected, the logical and physical data structures of the stored elements will be based on the data context. An example is logically segmenting information that has a personal security context or physically distributing or federating data across multiple physical boundaries providing reliability benefits. The AEDW data model, as mentioned earlier, is based upon sound OLAP design best practices. Additionally, the AEDW data modeling process will include the logical grouping and physical deployment requirements of each data element.

Finally, data collection requirements will also be addressed in the AEDW Steering Committee. Whether the data collection is dynamic or static, a primary objective of the design will be to leverage our partnerships to implement a strategy that minimizes the impact upon LEAs; both large and small.

Element 6: Implementing Arizona's Statewide Longitudinal Data System.

The ability to design, development, test, deploy, change and operate the AEDW are all significant processes resulting from ADE IT's transition to a service management organization. Leveraging Information Technology Infrastructure Library (ITIL) best practices will maximize the probability of a successfully deployed and operating AEDW system. As mentioned throughout this application preparing for this significant initiative has required building the organization, culture, technical capabilities, infrastructure, executive support and stakeholder partnerships necessary to not only construct the AEDW, but to enable long term requirement to adapt to the ever changing landscape of education.

Element 7: Designing, using, and maintaining the business intelligence (BI) tools.

The discussion related to stratifying the AEDW user community conveyed that there a several data reporting and visualization toolsets required to answer the diverse needs and capabilities of the community. ADE has extensive experience in managing the deployment of

reporting (including data extracts) solutions. The performance measurement/data visualization tool selection process is underway and its selection leverages the collective knowledge and requirements of ADE's AEDW team, stakeholders and the steering committee. Whether the AEDW is responding to analysts or information explorers requirements, the complex BI requirements associated with analytical modeling, time sensitive queries, or event based triggering will be successfully addressed by completing:

- extensive design research
- thorough user needs assessments
- quality project management and
- meaningful project performance metrics

Regardless of the BI toolset in use, the SSO/identity management system will assure compliance with best practice security and FERPA mandates.

Beyond the rigors of deploying a highly available agile BI environment, the responsibility of on-going maintenance of the business intelligence toolsets lies primarily with IT's operations group and secondarily with the vendor. Because these toolsets are critical path to the success of the AEDW, ADE plans to acquire the training necessary to bring as much BI toolset system knowledge in house and document this knowledge by appending it to the expanded AEDW knowledge base. This enables ADE to triage and respond to BI toolset issues quickly and professionally. If an issue is beyond operation's ability to resolve, the issue will be managed through ADE's existing escalation policies and procedures, and documented, ticketed and tracked in ADE's existing incident tracking system.

Element 8: Establishing logistical capacity to create and maintain Arizona's Statewide Longitudinal Data System.

Over the last year ADE has been laying the logistical foundation to create and maintain the SLDS for the long term. These would include:

- The existing policies, procedures and processes associated with collecting, managing, and accessing credible data are documented and ADE is down-the-road towards implementation. Our policy is to design ETL objects so that data cleansing and transformation occurs at the source with integrity validations at the destination.
- The ability for the AEDW to support reliable dissemination of data and analyses results is native to the objectives relating to operational viability.
- The AEDW commitment to data security and confidentiality is underscored throughout this application. Socialization of ADE's security practices in messages that will not increase ADE's security risks will occur through the steering committee for dissemination to their constituents and through other communication portals like IDEAL.
- A long term operational funding model is now being constructed so IT's chargeback algorithm reflects the incremental amortized cost of maintaining a successful AEDW.
- ADE supports an IT department comprised of sixty FTE professionals and a state level Research and Evaluation division. ADE does retain consultants/contractors to support specific initiatives, and the AEDW project is not different. IT's practice on every project when using outside resources is to matrix them into the IT workflow and organization so when their contract ends ADE is in a position to continue any initiative.

- Arizona legislative partnerships are being nurtured. The common ground in our dialogues is that increased student achievement is the ultimate goal and can only result from defining quality measures of success.

Personnel

The AEDW project will be staffed with a combination of full-time employees and contractors.

Staff. The project will be directed by ADE's Chief Technology Officer and will be staffed mostly with full time staff. In order to leverage existing institutional knowledge and to maximize cross-pollination of new knowledge gained on this project with other ongoing project efforts (such as the State's existing data warehouse project), several existing full-time staff will work part time on this project and part time on other projects directly related to the AEDW. The smallest incremental split of time will be 50%, so that staff does not lose momentum by continually switching gears between assignments. ADE staff has depth of experience in a multitude of disciplines, technologies, and education space knowledge. The following individuals are typical of the key personnel who will be involved in the project; their resumes can be found in attachments to this proposal.

- Donald Houde, ADE Chief Technology Officer & Chief Security Officer, Deputy Associate Superintendent
- Ilana Licht, Ph.D., Project Management with exceptionally strong analytical skills
- Mary Hershner, Database Administration, MCSD, MCP+I, MCDBA, MCSE, PMP, Black Belt from IIL in MS Project and Project Server 2003
- Khalid Gharib, Database Administration, MCSD, MCSE, MCDBA, PMP
- Larry Lindain, Development, MCSD, PMP
- Yaw Bediako-Poku, Quality Assurance and Testing
- James Whelan, Business Analysis
- Myrna Johnson, Business Analysis
- Mary Mardy Cruz, Data Analysis
- John Eickman, Data Analysis, extensive and strong EDEN/federal reporting experience

Staff and resources serving in leadership and advisory capacities. In addition to the leadership roles, quite a few ADE staff members serve this project in an advisory capacity. While these staff members' time will not be charged to this project, their commitment is significant enough to merit a mention here. Some of these staff members will aide the project by directing and communicating at the Executive level; some will add great value by virtue of their vast subject matter knowledge and experience; others will contribute from their strong research perspective. The following individuals are typical of the key personnel who will serve the project in an advisory capacity; their resumes can be found in attachments to this proposal.

- Janice McGoldrick, ADE Chief Information Officer, Deputy Associate Superintendent
- Jeff Stowe, ADE Education Program Operations Specialist, NCES Forum member, Chair of NCES Technology Committee, Co-Chair NCES PK-12 Data Model Task Force member, EDEN / PBDMI Coordinator for Arizona since inception, Technical Lead for US Office of Migrant Education's Migrant Student Information Exchange project
- Robert Franciosi, Ph.D., ADE Deputy Associate Superintendent, Director of Research and Evaluation

- Anju Kuriakose, Ph.D., ADE Director of Accountability Systems and Reporting
- Samuel DiGangi, Ph.D., Executive Director, Arizona State University, Applied Learning Technologies Institute, University Technology Office
- Angel Jannasch-Pennel, Ph.D., Assistant Vice President, Arizona State University, University Technology Office

Advisory resources. In addition to the enthusiastic commitment of ADE staff members, many education-related organizations serve in an advisory capacity on the current AEDW development project, and will do so for this additional project as well. These particular types of groups can provide targeted input and assistance than the project can elicit well from large stakeholder groups, such as parents and teachers. Just a few of these organizations are:

- LEA special interest groups: these groups target specific areas or disciplines and include people a cross-section of the types of LEAs in Arizona (large and small, urban and rural, metropolitan and remote, district and charter, etc.). One such organization is AZTEA's CTO SIG (Arizona Technology in Education Alliance's Chief Technology Officers Special Interest Group)
- Arizona Business and Education Coalition (ABEC)
- Governor's P20 Council
- Teacher organizations such as AEA

Management Plan

Beyond working with education-related organizations ADE is planning to collaborate with the Maine and Connecticut Departments of Education in the development of a common comprehensive education Data Dictionary and SIF horizontal reporting pilot. The collaborative effort will allow each state to compare data elements and meta-libraries to define consistent definitions not only within the states and their respective LEAs but also between states. This will serve as a basis for testing sharing of data between states.

All three states share common application architectures based on Microsoft.NET and SQL Server databases. Each state is planning on developing SIF compliant data collection system. Connecticut has started the process utilizing their earlier LDS grant award and, similar to Arizona, Maine has completed a pilot with their MEDMS Financial System.

Specifically the areas of collaboration include:

- Common data elements for inter-state data sharing
- Construction of a common data dictionary
- Examine common FERPA issues in data sharing
- Development of SIF agents to pilot state-to-state reporting
- Development of SIF agents to pilot a reporting model capable of meeting Education Data Exchange Network (EDEN) reporting requirements.
- Creating common EDEN data models

Even with the efforts of external collaboration, the success of the AEDW development and implementation is founded on effective project management and the engagement of the quality team members. ADE's existing project management processes utilize a seven phase development cycle that ties into ADE's SDLC. These seven phases are:

- Planning – Project initiation, project team selection and the generation of project/management plan artifacts.

- Concepts & Requirements – Concepts of business operations in terms of current operation, requirements of the proposed business system solution, and the approach to be utilized in the development of the product and process to be instituted are documented. Emphasis is placed on definition of the overall concept of proposed operation
- Functional Specification – Specifications are prepared regarding the features and functions of the platform in terms of screen, form, and template presentations, user entry and data definition, output and report information, associated algorithms and formulas.
- Design Specification – Defines hardware platforms, devices and software processes and components to be designed, constructed, verified and implemented. Incorporates high and low level design of the software and identifies pre-existing core components, or core components for priority construction. The document acts as the system blueprint for the construction phase.
- Construction – Specific software components and procedures, in conjunction with concepts, requirements, specification and design of the product, are created and integrated. New and modified components are integrated with the core building blocks to provide the final product. This includes the generation of any necessary prototype.
- Verification – Product verification occurs in both the application and system environment. Quality Assurance (QA) verifies product operability as per concepts, requirements, and specification of the product. This includes security and user acceptance testing (UAT).
- Deployment & Evaluation – After a stakeholder “gate review” the solution is promoted from our QA environments across our network DMZ to the staging and production environments. This includes the opportunity for load testing and production system verification at the staging level and circling back to evaluate the success of the deployment and document any lessons learned.

Each component of AEDW will pass through these systematic process steps to gather the required requirements and to generate their associated artifacts. Even though each component will be managed as a sub-system, it is important to have the project manager clear on the enterprise vision of the AEDW solution. Each component does have it unique attributes, but the enterprise vision will identify the interdependencies of the sub-systems and create design specifications that leverage the opportunities of integrated reusable services. In support of those objects ADE IT’s project management team is chartered with:

- assuring that the project reaches a successful conclusion by meeting its objectives, on time and on budget.
- managing and level setting resources, tools, and equipment for the team, as well as for establishing and maintaining the sense of urgency and working pace for the team.
- regularly and reliably reporting/posting the status, and goals and objectives to management and the team on a weekly basis.
- identifying and variances to the plan so remedies may be quickly evaluated.
- working with the change control team (CCT) to plan any changes to existing functionality.
- performing joint application development (JAD) sessions with stakeholders to collect requirements.
- keeping the collaborative site and portal updated.

- organizing and facilitating the “gate review” meetings when any tested modification is ready for promotion to production.

Finally, the ADE management plan includes nurturing the sometimes fragile relationships with LEAs and other educational stakeholders involved in the process; Communication, Communication, Communication.

When working with educational stakeholders all have a common goal of efficiently using appropriated resources to deliver a quality education experience to our children. When done well, the expanded AEDW is a powerful tool in realizing those lofty aspirations.

Arizona Department of Education
Arizona Education Data Warehouse

Statewide Longitudinal Data System Grant
Round 2

March 2007

Resumes, Part 1 of 2
Key Project Staff

ResumesKeyProjectStaff-Cover.doc

Donald J. Houde

Senior IT and Business Consultant

Background Summary

Extensive experience with over thirty-five years in the management, design, development and implementation of business/operational processes and technical solutions that integrate transactional and multi-dimensional information systems to align business requirements with technical investments. Related areas of expertise include:

- Operations management; developing an organization that focuses on the efficient delivery of measurable unsurpassed customer service. This includes business continuity initiatives, metrics collection and analysis, workflow design/implementation, service delivery, application/tool release acceptance process, help desk, problem ticket/critical issue management and escalation process, etc.).
- Team building, mentoring, facilitation and leadership.
- Project development and management.
- SCM process design and deployment.
- Application/tool architectural design emphasizing a balance between ROI, high availability, scalability, operational excellence, code reuse, and reliability (i.e. SOA, clusters, web services, load balancers, geographic disparate sites, backup strategies).
- Operations management; developing an organization that focuses on the efficient delivery of measurable unsurpassed customer service. This includes business continuity initiatives, metrics collection and analysis, workflow design/implementation, service delivery, application/tool release acceptance process, help desk, problem ticket/critical issue management and escalation process, etc.).
- Physical storage model architectural design and implementation (i.e. SAN, NAS, etc.).
- Logical information architectural design and implementation (i.e. file, database, etc.).
- Securitization planning and implementation related to applications, infrastructure and critical information. (i.e. IDS, IPS, encryption, firewalls, virus, auditing, event logging/review etc.).
- Enterprise configuration management process design and implementation (QA, capacity planning, code/systems/network/database promotion and deployment, etc.).
- Disaster recovery planning, testing and review (hot and warm sites, off-site vault storage, geographically disparate DR facilities).
- MS SQL Server architecture, development, administration and optimization (DTS, OLTP, data warehousing, BI, data federation, etc.).

- Oracle database architecture, development, administration and optimization.
- DB2 database architecture, development, administration and optimization.
- Reporting services implementation and integration into application development strategies.
- Data ETL process engineering including architecture, development, administration and optimization (DTS and minimal informatica).
- Vendor relationship management including Microsoft and other key vendors (i.e. RDTap for SQL Server 2005).

Experience

Arizona Department of Education **2005 - present**

Chief Technology Officer, Chief Security Officer **2007**

State Level Education Data Warehouse/Business Intelligence Strategic Design and Implementation, Business Process Management, Operational Process, Data Management and Engineering Services Consultant **2005 - 2006**

- Responsible for designing measurable IT business, technical and operational processes/standards to support longitudinal data warehousing initiatives. Additionally responsible for designing IT organization, strategic planning, governance policies development of an OLAP environment, measurable resource management, updated balanced prioritization on operational excellence with time-to-market development requirements.

ISAGENIX Inc **2006**

Multi-Level Marketing Web Application Design, Operational Process Development

- Responsible for initial design of upgraded multi-level marketing management system. Included was business process management design and implementation.

MiniCo Inc. **2006**

Oracle Systems Upgrade and Migration, Off-shore Development Team Relationship Facilitator and Operational Process Design

- Responsible for assisting in Oracle 8i to 10g migration with off-shore development staff.

BENTEK Energy, LLC **2005**

Operational Process, Data Management and Engineering Services Consultant

- Responsible for designing, managing, implementing and monitoring a plan surrounding BENTEK's technical organizational maturation and the development of BENTEK's technical strategic vision to manage the real time commoditization of information detailing natural gas flow rates and supply/demand metrics. To that

end, development of an OLAP environment, measurable resource management, updated balanced prioritization on operational excellence with time-to-market development requirements, staff development and skill set inventory are a subset of the requirements associated with BENTEK's IT transformation.

Diagnostic Cardiology Products (DCP), LLC

2005

Process and Engineering Services Consultant

- Accountable for designing, managing, implementing and monitoring the creation of required infrastructure to support the national sales requirements of products utilized in the operating theatre. Included was the requirement to manage a co-development integration process with EKG, ultrasound and other cardiovascular monitoring process vendors.

Total System Services, Inc.

2004-2005

Operational Process and Engineering Services Consultant

- Directly accountable for the organizational, resource, process and budgetary consolidation of the production operations, help desk, critical issue management, infrastructure (systems and network), and the operations data management teams. Managed planned staff reduction process and cultural transformation from a silo-ed organizational structure to a more matrixed cross-discipline organization.

Aurora Mental Health Center Consultative Assignment

2004-2005

Data Management and Infrastructure Consultant

- Retained through Statera Consultants for two months to participate on a consultative team to review Aurora Mental Health Center's existing MS SQL Server data marts, applications and infrastructure. Ultimately served as a key contributor in the generation of a comprehensive report detailing recommendations.

Total System Services, Inc

2003-2004

Data Management and Engineering Services Consultant

- Tasked with the creation of an engineering group focused on the data management (DM) discipline. Additionally I was tasked with the integration of this newly created DM group into a matrix-ed cross discipline group with existing engineers focused on the systems and network disciplines. Finally, directed a feasibility analysis surrounding 64 bit database servers.

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Qualifications:

- Extensive expertise in assessment, development and deployment of Information Technology in complex organizational environments across a variety of industries and Information Technology infrastructures
- Comprehensive planning skills and timely delivery record
- Outstanding thought leadership and communication skills
- Excellent business and technical analysis skills and solution acumen
- Adeptness at forming partnerships and building work teams

Major areas of expertise:

- Strategic Planning, Enterprise Integration
- Architecture, Re-engineering, Optimization of Processes, Systems, Data
- Enterprise Scale Program/Project Management
- Quantitative Analysis and Modeling
- Data Warehousing, Data Mining
- Parallel and Distributive Processing
- Methodologies, Tools, Metrics

Education:

University of California Los Angeles: Ph.D., Management Science - 1988

Concentration in optimization of data processing systems.

University of Miami, Miami, Florida: MSc Management Science - 1978

Hebrew University of Jerusalem, Israel: BA, English Literature and Political Science - 1972

Professional Experience:

Arizona Department of Education (ADE) 2006 – Current

Project Manager Project planning and management for projects

Arizona State Retirement System (ASRS) 2002

Consultant

- Developed a Strategic System Plan for Automated Customer Center, Customer Document Imaging and Financial System, including project budgets, project investment justifications and timetables. The plan was approved by ASRS Board of Directors.

Arizona Department of Education (Microsoft/Internet Environment) 1997 - 2001
Child Nutrition Services 2001

Advisor

- Audited all systems and processes for compliance with 10 USDA Nutrition Programs (e.g National School Lunch Program) and operational efficiency. Recommended corrective and improvement measures.
- Designed an interactive Web tutorial to assist schools in selecting the USDA program most appropriate to their circumstances

Project Director - Student Accountability Information System (SAIS) 1997-2001

Defined requirements, project scope and plan for new school funding and reporting systems. Established and managed a project team of 20 consultants. Project constructed as 2-phase delivery: New School Funding System in first phase delivered in summer 1999 and a Statewide Student Tracking System in the second phase delivered in summer 2001.

- The project encompassed: system development at ADE; enhancements to 10 Student Management Software products by the product vendors; pilot with selected districts; deployment across 1800 schools and 200 school districts educating 850,000 students.
- Provided extensive presentations, discussions and status reports on new systems concepts, processes, plans and progress to various organizations within Arizona education system, including the State Superintendent of Education, Arizona Government Information Technology Agency, Legislative Committees, County & School District Superintendents and Administrators, Teacher Union, State Auditor General, ADE Units, Student Management Software Vendors.
- The new School Funding System includes 6 distinct Student Counts; Funds Apportionment & Payment; School Budgets; a statewide Local Education Agencies (LEA's) Database. All subsystems follow a 3 tier design where authorized staff of LEA's upload mandated data files to ADE web site, triggering a chain of Object Processing that culminates in placing PDF reports at the LEA's Directories in the ADE Web site. Some reports are accessible to the public. To satisfy Arizona law, all subsystems designed to maintain data and particular processing rules for each of the latest 3 fiscal years, enabling retroactive changes in funding.
- The Statewide Student Tracking System tracks students from preschool to graduation maintaining state standard tests achievements and data that pertain to state and federal funding. Data are submitted electronically, via the Internet, by LEA's Student Management Systems, and on CD's by the external testing agencies. The system calculates Student Counts for all LEA's for funds apportionment and mandated reports. The system supports automation of federal funds appropriation and reports and research and policy analysis of academic progress, student mobility, cost of education and ad hoc issues.

Consultant

- Led the development of a comprehensive Information Model that integrated PCS pharmaceutical benefit management with managed care services for insured people suffering from chronic diseases/conditions. The model was used as baseline for assessing what system enhancements and changes were needed to enable PCS entrance into managed care.
- Designed an Electronically Facilitated Business Review Process for the model, using Ventana Group System software.

American Express, TRS Technologies (Multi IBM mainframe Environment)1985-1995**Director - Productivity and Quality, Phoenix, AZ.****1992-1995**

- Established and managed Productivity and Quality Goals and Measurement Program, in an IT organization of 1100 employees that supported the card and travel business systems. The major Metrics of the program were: Function Points based Productivity, Time to Market, Resource Utilization, Project Estimation Variance; McCabe Code complexity; Release Accuracy; Production Failures; Customer Satisfaction.
- Built and deployed a Client/Server platform for Metrics consisting of a IBM AS Project Tracking System, Metric Tools, Applications Repository, Executive Information System.
- Provided on-going education to all levels of the organization, focused on results analysis and potential ways for improvement, using the framework of SEI Capability Maturity Model.
- Identified process deficiencies through continuous quantitative and root-cause analyses.
- Recommended and supported process re-engineering initiatives: methodology (METHOD1) implementation, project prioritization, scheduling techniques, dedicated maintenance teams, upgrade of the Client/Server Development Environment, roll-out of automated release process, roll-out of Computer Assisted JAD, Usability testing, migration to COBOL/370.
- Results of 1994 over 1993 showed 60% improvement in average Time to Market and 37% improvement in average Effort Productivity.
- Advised the Data Warehouse project on performance assessment of parallel processing platforms (IBM SP/2, AT&T 3600, Encore, HP 9000, Sequent, TMC-CM5).

Director - MIS, Phoenix, AZ**1988 - 1992**

- Directed the development and implementation of Credit risk MIS, in partnership with the Credit risk business units. System consisted of: a Data Warehouse with a segmented database of 20 million accounts maintaining rolling 25 months of data on financial activity and delinquency, 1% sample database, a time-series multidimensional database (MDD) of business metrics for on-line analysis processing (OLAP) maintained on mainframe and replicated on PC's, executive information system (EIS) of time-series

multidimensional numerical and graphical performance reports. Data segmentation design enabled parallel processing of updates, analysis and queries. Application provided daily updated data for analysis performed by 80 business analysts. Application enabled adaptive collection policies and minimization of reserve for losses.

- Implemented the natural language query tool INTELLECT for Marketing Research analysts.
- Led the design of a worldwide Service Establishment MIS.
- Member of a joint AMEX-IBM work group that designed an MVS parallel processing facility for very large data retrieval applications (Marketing System). Contributed process flow model to the system design.
- Performed a comparative capacity analysis of parallel processing platforms for querying massive data repositories (100 million accounts Marketing Database). Due to findings, the intended \$20MM investment was shifted from a SIMD Connection Machine to the subsequent MIMD computer.

Director - Development Tools, Ft. Lauderdale, FL. 1985 - 1988

- Conducted studies on CPU consumption by development activities and by decision support activities. Recommended consolidation of each area on a dedicated machine.
- Directed the consolidation of two development environments servicing 500 technicians into one dedicated machine.
- Rolled-out application development/maintenance tools: Performance Analysis (Strobe), Testing (Xpeditor) and Design Analysis (PMSS).
- Led the development and roll-out of a mainframe Programmer Workbench- an ISPF facility that integrated access to compilers, development and testing tools, home grown utilities and associated user guides.

Burger King Corporation Miami FL. (IBM mainframe Environment 1983 - 1985)
Director - Financial System,

- Stabilized failing systems. Selected MSA accounting software. Installed hardware and accounting software in the European operation center. Implemented financial analysis software (IFPS Mainframe/PC).

UCLA School Of Management 1978 - 1983

Ph.D. student in Management Science - Operation Research.

University Of Miami 1976 - 1978

Graduate student in Management Science - Operation Research

Mary Hershner

PROFESSIONAL SUMMARY

- Certified Project Management Professional, PMP
- Proven track record in Project Management and completion of projects within schedule and budget
- Over 8 years of experience in Project Management, scheduling, software design and development
- Black Belt from IIL in Microsoft Project and Project Server 2003
- Trainer in Microsoft Project Technologies and scheduling theory
- Microsoft certifications include MCSD, MCP+I, MCDBA, and MCSE
- Strong business analysis and system requirements skills
- Excellent interpersonal, written and communication skills
- Experience in coordination of International Teams for Project Development, 30/70 Model
- Active Participant in local chapter of Project Management Institute
- Microsoft Project Association Phoenix Chapter President

TECHNICAL SKILLS

Methodology: Object Oriented Programming / Design and Database Design

Technologies: COM, COM+, DCOM, MTS, ActiveX Data Objects (ADO), Active Server Pages (ASP), AS, .Net C#

Web/Application Servers: Microsoft Internet Information Server (IIS)

Operating Systems: Windows NT 4.0, 2000, 2003, XP Pro, Vista, and DOS

Databases: SQL Server 6.5, 7.0, 2000, Dbase and Access

Source Code Control: Visual Source Safe (VSS)

Applications/Tools: Visual Studio, Erwin, FileNet, Visio, MS Excel, Word, PowerPoint, Project and Outlook, FrontPage, ArcIMS, ArcView 8.2 (ESRI Products Mapping Products);

Enterprise Project Management - MS Project and Project Server 2002, 2003 and 2007.

Portfolio Server

Scheduling: MS Project Expert

PROFESSIONAL EXPERIENCE

Statera

JUN 2006-Current

Senior Consultant

Program Manager Senior Consultant, Work with Business Partners on business solutions, customsoftware applications, e-commerce solutions, SharePoint, EPM Solutions, PMO strategy, PortfolioManagement. Work closely with the local Microsoft Office on EPM Solutions and Technology. Author and Provide Training for Project Server and Project Professional, 2003 and 2007. PetSmart – Implemented Project Server 2007, Authored and Provided Training for ProjectManagers on Scheduling Theory, Dynamic Schedules. Training for Team Members, ResourceManagers, Project Server Administrator and Executives for Project Server 2007

TBC/TSC

FEB 2004 –JUN 2006

Program Manager

Program Manager for TBC Current Projects, Work with Business Partners on business solutions. Manage staff of 10 developers, business analysis, office coordinator. Installed and configured Project Server 2003 for the Army National Guard, Department of Environmental

Services. Work with National Guard Bureau as a liaison and project facilitator coordinating the contractors for the Clean up of the Camp Navajo OB/OD area. Training for Dynamic Scheduling and Project Server 2003.

IMMEDIANT CORPORATION

APR 2003 – JAN 2004

Project Manager

Project Manager for Enterprise Project Management Solutions and Mobility projects. Work closely with local Microsoft office and project team implementing Project Server 2002 Six Sigma pilots for a fortune 500 company. The solutions are customized per the business requirements gathered. The engagements ran from 4 weeks to several months depending on the complexity of the customizations.

TBC/TSC

FEB 2002 – APR 2003

Senior Consultant, Project Manager

Project Management of Current Projects. Work with Business Partners on RFP's and solutions. Manage current in-house staff, programming and networking. . Work with the owner on business strategy and current/future client relationships. Requirement gathering, Business Analysis, Programming. Set up and maintain development and staging networks.

Projects:

AZ State Army Core of Engineers Technical – ongoing

Intranet, Extranet Secure Website. Website supplies a portal to applications for the public and private sectors, Document Management System, Access to Data Warehouse, reporting on soil and well data, charting of data, website administration, upload of laboratory data into the Data Warehouse, website is built using C# and ASP Dot.Net, SQL 7.0 using Stored Procs. ArcIMS is used to supply the mapping capabilities to review data based on well and soil locations on military sites. ArcView 8.0 is used to produce the military site maps. Analyzed and designed an elaborate database gathering business requirements from several independent laboratories and contractors. The data warehouse provides a housing facility for gathering historical data on soil and well data for military reserves.

- o Worked closely with client in preparing functional requirements detail design documents.

- o Project Manager and Technical Lead for a team of 3.

- o Successfully developed and implemented the solution using ASP.Net, C#, DHTML,

HTML, ArcIMS and Graphing Software.

Arizona Business Bank Networking – ongoing

Support network, set up and network new offices, troubleshoot, on call 24x7.

Southwest Mapping Network and GIS Solutions – ongoing

Setup network, fileserver, print server, ftp server, troubleshoot, on call 24X7. Work with client and GIS solutions for web presentation using ESRI products.

INTEGRATED INFORMATION SYSTEMS, INC.

JUN 1999 – FEB 2002

Senior Consultant

Projects:

Membership Banking, American Express Project Manager - 2 month project

American Express requested a solution that allowed 24x7 offshore support for the membership banking website. A solution was put in place at a substantially lower cost than an onshore support team would have been.

- o Derived overall requirements for the 24x7 offshore production support model

- o Managed team (5) consultants and full time American Express employees

- o Managed communications with India Offshore team

- o Implemented the support model
- o Support and coordinate continued enhancement of production support model.

E-Application Tier Three, American Express, Canada Project Manager - 4 month project
 Enhancement to an existing object oriented based high-end e-commerce application.
 Enhancement would allow instant decision of credit card applicants. Several third party vendors were included in the overall solution.

- o Project Manager for detailed design of the project, managed a team of 5, 1 BSA, 1 Tech Lead and 3 Developers.
- o Worked closely with client to obtain work objectives for project.
- o Prepared functional requirements and detailed design document and use cases.

International Financial Services, American Express Project Manager - 3 month project
 E-Commerce Trading site for International Brokerage. This was an object oriented based high-end e-commerce application. Several third party vendors were included in the overall solution package.

- o Project Manager of Functional Design, Detailed Design.
- o Managed a team of 7, 1 BSA, 1 Tech Lead, and 5 Developers.

International Financial Services, American Express Project Manager - 1 month project
 Envisioned Project for a new customer service web interface. This was an object oriented based high-end e-commerce application. Several third party vendors were included in the overall solution package.

- o Project Manager of Functional Design, Detailed Design. Managed a team of 3.
- o Worked closely with client to obtain work objectives for project.
- o Prepared functional requirements and detailed design document and use cases.

PartsAmerica.com Consultant – 5 month project

E-commerce web site for auto parts. Worked on a team of four developers. Visual Interdev project utilizing n-tier architecture with Visual Basic 6.0, ADO, COM/COM+ objects, SQL Server 2000, JavaScript, ASP.

- o Responsible for the product, customer info, and promotion COM/COM+ objects using ADO and SQL.
- o Successfully developed and implemented the ASP pages using DHTML, HTML, CSS, and include files.
- o Performed code reviews of management application development.
- o Worked with Quality Assurance team to build test cases and fix project bugs.
- o Site received Microsoft's 2001 Microsoft Retail Application Developer (R.A.D.) Award in

their Supply Chain Execution category.

Donor Network of Arizona Consultant – 1 month project

A physician referral and recovery web based application for recovery, tracking and distribution matching of donor organs, ocular and tissue. The project utilized n-tier architecture with Visual Basic 6.0, COM/MTS objects, ADO, SQL Server 7.0, Javascript, HTML, DHTML and ASP.

- o Worked with client on enhancements and bug fixes for site.

Vision Auto Glass – Phase II Consultant – 1 month project
 Intranet web site utilizing Microsoft technology including HTML/ASP, COM and SQL Server, transformed daily business activities to electronic means. Site included backend accounting as well as scheduling of customer appointments for glass repairs. Site also consisted of field workers

utilizing Windows CE wireless devices via a CDPD connection to order vehicle parts for repair via the VIN number, schedule appointments for a later time and collect insurance information. All data entered by the field worker was real-time and stored within a central repository.

- o Worked closely with the client to develop Phase II enhancements for existing web site.
- o Analyzed customer needs, database requirements, system interfaces and faster connectivity solutions.
- o Developed functional design requirements document.

Maricopa County Attorney's Office (MCAO) Consultant – 6 month project

Create client/server application utilizing Powerbuilder. The application was criminal booking software and allowed the county to track criminal's history, court dates and sentencing online.

Integrated with an Informix database.

- o Work with the quality assurance team of three (3) and MCAO to acquire knowledge on users interaction with system.
- o Authored Users Manual and testing scripts for software.

JACOBS ENGINEERING GROUP

AUG 1996 – MAY 1999

Procurement Specialist

Procurement Specialist for the Materials Management System, worked with buyers and contract administrators to develop site-specific requirements for MMS systems. Traveled to construction sites to implement and train team to use system throughout the procurement cycle. System was used to track material to assure projects materials and labor coordinated with the master project schedule. Worked on proposal to replace a legacy Materials Management Database System with an Oracle Database. Developed best business practices and conducted training sessions to implement.

- o Buyer for specialized equipment used in semi conductor industries.
- o Developed procurement templates, contracts, purchase orders and request for proposals.
- o Implemented system to reduce redundant data entry.
- o Exported data to a cost control system interfacing with accounts payable.

EDUCATION

UNIVERSITY OF PHOENIX

B.S.B.A., Business Information Technology

LANDMARK EDUCATION

Curriculum for Living Aug 2004 - Dec 2004

CERTIFICATIONS

Black Belt Certification from IIL in Microsoft Project and Project Server 2003

Certificate Project Management Professional

Microsoft Certified Professional plus Internet (MCP+I)

Microsoft Certified Solution Developer (MCSD)

Microsoft Certified Database Administrator (MCDBA)

Microsoft Certified Systems Engineer (MCSE)

Professional Affiliations

MPA Phoenix Chapter President

Member of Phoenix Project Management Institute

Construction Management Association

Khalid Gharib, MBA/TM, PMP, MCP

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Office 602.340.8500 - Fax 602.265.6110

Summary of Qualifications

Over 15 years of experience and demonstrated expertise in implementation and project management information technology solution architecture with an innovative, results-oriented problem-solving style. Proven track record implementing effective technology strategies directed at meeting business goals and objectives. Capable of leading information technology functions from application development to enterprise infrastructure to telecommunications for an enterprise by utilizing the following skills:

- Aligning and leveraging technology for the advantage of the enterprise.
- Communicating and presenting complex subject matters to executive team.
- Developing, retaining and recruiting high-quality information technology professionals.
- Utilizing management and relationship skills to create and manage highly effective teams.
- Creating and managing change across multiple enterprise functions and divisions.
- Effective time, cost and quality management skills.

Key Accomplishments

- Accomplished great success in two major turn-around projects by use of technical and management skills.
- Managed a quality assurance development project using primarily procured outside resources.
- Trained employees and students on the intricate details of several Microsoft technologies.
- Architect, designed and mentored a group of developers in the construction of an enterprise-scale full business process solution for the title escrow settlement services industry.
- Developed a solution offering aimed at utilizing information technology to implement a customer-centric marketing strategy.
- Designed and architected a mission-critical software application using multiple technology platforms.
- Architect a data warehousing and mining project for the distribution of marketing knowledge to key decision makers.
- Managed a team of software developers in the design and implementation of a PeopleSoft 8.2 upgrade.
- Completed and received approval for proposals which included costs, timelines, quality guidelines and benefit analysis.
- Implemented a custom-developed CRM application.

Professional Experience

Millenia Consulting, Inc. Phoenix, Arizona 9/2006 – Present
Principle Consultant

Project Management/Application Development

Managed and worked with a team of highly skilled and motivated software developers to build a custom CRM application. The technologies used in this effort included Visual Studio 2005 with .NET Framework 3.0, Windows Workflow Foundation, SQL Server 2005, Asterisk and NUnit.

Application Migration

Wrote and tested many complex SQL queries that migrated and cleansed application data to accommodate an upgrade of the software.

USA Digital Solutions, Inc. Phoenix, Arizona 8/2004 – 9/2006
Senior Project Manager / Software Architect

Application Messaging & Integration

Designed and developed an integrated solution which allows management and collaboration of several vendors throughout the mortgage lifecycle. This enterprise class application automated the process of including new vendors into the escrow & title settlement services workflow. The assignment required a thorough understanding of software architecture and design as well as mortgage industry and line of business acumen. Lessons learned include the MISMO standard, deep understanding of RESPA and HUD regulations, Sarbanes-Oxley governance impact and title insurance.

Product Management

Managed a team of developers, database designers, business analysts and provided mentoring as well as architecture, project management and overall guidance and direction in the development of a major software product development project. My responsibilities covered the entire gamut of tasks usually recognized as the full lifecycle of software development including vision, design, implementation, testing and support. Product specifications were completed with the aid of UML documents including use case specifications, class diagrams, sequence diagrams, state diagrams and entity relationship diagrams (ERD) as well conformance to the Rational Unified Process (RUP). The technologies included in this project include Visual Studio 2005, .NET framework 2.0, SQL Server 2005, various 3rd party controls, Project Office Server and SharePoint server.

Core Class Library

Architecture and design of a core component class library that provides common software functionality such as email, cryptography, exception handling, etc and is to be used across the entire organization for all future application development.

Millenia Consulting, Inc. Phoenix, Arizona 8/2002 – 8/2004

Principle Consultant

Business Intelligence

Developed a comprehensive business intelligence solution with the use of SQL Server Analysis Services, DTS packages and MDX to build a large data cube used for mining marketing information. The development effort include the development of an ASP.NET application which served as a business intelligence portal to the data cube as well as ad-hoc reporting using SQL Reporting Services.

Solution Offering Development

Developed a series of solution offerings for the implementation of a customer-centric marketing strategy that fully utilizes an enterprise's information technology investment for the gathering and disseminating of customer information for customized product offering. The purpose of this offering is to increase customer loyalty and retention, leading to increased margin and revenue growth.

.NET Technologies

Designed, architected and developed a large-scale software solution for a hazardous waste recycling firm. Worked in a consulting capacity to complete the full life-cycle of the software development project. In addition to my technical responsibilities, I am responsible for client relationship development and ensuring that all solutions meet client needs including the planning and management of overall project. Technologies used in this project include C#, XML, SQL Server, ASP .NET and the AS/400.

Paradise Valley Community College Phoenix, Arizona 8/2001 – 6/2003

Adjunct Faculty (part-time)

Training Others

Trained students on several Microsoft technologies including SQL Server, Access, Visual Basic, database design, object-oriented programming and the .NET Framework. Students attending these courses gave very high marks on my ability to train, mentor and develop an exceptional learning environment.

Best Western, International Phoenix, Arizona 7/2001 – 7/2002

I/S Manager

Data Warehousing & Mining

Managed the creation of a data warehousing initiative from start to finish. The project required extensive cross-organizational functions to arrive at an acceptable set of specifications. The functions included executive management teams, marketing, sales and information technology.

PeopleSoft 8.2 Upgrade

Managed a team of software developers through a PeopleSoft 7.0 to 8.2 upgrade.

Responsibilities included project planning, technical architecture, hardware procurement and client communication. This project was successfully completed on budget and schedule.

Project Management

Managed a team of software developers, systems administrators and business analysts to implement several internationalized information systems initiatives. Several skills were required to complete these projects including technical knowledge, developing staff, project management and International business acumen.

Procurement/Vendor Management

Sought, negotiated, and managed various projects that required the use of third-party vendor involvement. These projects included migration of an internal application to an application service provider as well as the purchase of various software products used within the company. My involvement in these projects proved valuable since they came in on budget and on time.

Mentoring Staff

Created a nurturing environment where staff members could develop and enhance their software development skills. My employees are aware of the positive results that can be had when they take calculated risks. Additionally, my extensive experience in software development serves me well as a staff mentor.

Avanade, Inc. Seattle, Washington 5/2000 – 5/2001

Solutions Architect

Knowledge Management

Managed a group of software developers, systems administrators and business analysts to implement an information system solution that allowed our client to provide knowledge management and collaborative functionality to the end-users. A cost-benefit analysis of this solution indicated a 150% ROI in the first two years of use.

Government Portal

Led team of developers and architects on the use of Commerce Server 2000 that is used by a big-six consulting firm as a service-offering framework to the government sector. The framework produced new business in the state of Florida.

.NET Framework

Interviewed Microsoft product managers resulting in an in-depth understanding of the architecture and intent of the .NET framework. Provided training sessions for employees wanting to learn about .NET technologies including ASP, ADO and C#.

Service Offering Development

Managed team of software developers and technical writers tasked with creating a software development environment offering based on the Microsoft Solution Framework and associated software development methodology.

Millenia Consulting, Inc. Phoenix, Arizona 3/1997 – 4/2000

Principle Consultant

Data Warehousing & Mining

Designed, planned and managed the data warehousing and data mining strategy resulting in a 150% reduction in loan defaults over 2 years.

Intranet Site Development

Designed and implemented an Intranet employee survey resulting in the design of internal programs which improved employee morale and reduced turnover.

Imaging Software Development

Developed document management imaging system that was in alignment with company strategy to create a paperless office and reduce costly incidents of lost documents.

Technical Project Leadership

Led a team of software developers to redesign an online hotel reservation system to reduce costs.

Total Quality Management

Interviewed employees and studied business practice to develop detailed design of a quality assurance system that led to improvements in product quality.

Order Processing

Analyzed business process to design functional specification for an order processing application that reduced order entry time by 400%.

Human Resource System

Turned around high-profile Human Resources software development project by provided technical leadership to system developers.

Education

- **MBA/TM**, Master of Business Administration/Technology Management
University of Phoenix Phoenix, Arizona 10/1997 – 10/1999
- **BSEE**, Bachelor of Science in Engineering, Electrical & Computer Engineering
Arizona State University Tempe, Arizona 8/1987 – 6/1992

Certification

- **PMP**, Project Management Professional Project Management Institute 9/2003
- **MCSD**, Microsoft Certified Solution Developer 12/1999
- **MCSE**, Microsoft Certified Solution Engineer 6/2001
- **MCDBA**, Microsoft Certified Database Administrator 8/2001

Laurento Lindain, PMP

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Highly accomplished, innovative, and goal-oriented Software Development Director with 11+ years' experience in the field of Information Technology and Software Development. Managed the development, implementation, maintenance, and support of software applications using Microsoft based technologies that increase business productivity, expand customer base, and promote centralized data management. Successful track record in leading IT groups to achieve business objectives and operational efficiency. Demonstrated strengths in creating IT development strategies to meet and exceed customer expectations.

CORE QUALIFICATIONS

- Software Application Development
- Project Stakeholder Contract Negotiation
- Outsourcing & Staffing Optimization
- Infrastructure Improvement
- Operations and Support Management
- Budgeting & Cost Containment
- Functional Organization Management
- Enterprise Architecture

PROFESSIONAL EXPERIENCE

ARIZONA DEPARTMENT OF EDUCATION – Phoenix, Arizona **2002-Present**

Provides services to approximately 1430 schools in 237 districts, 459 charter schools, and more than 1 million students. Implements state academic standards, administers statewide assessments, manages and allocates \$900M per year of federal funds and \$3B per year of state funds, and provides program improvement assistance to schools and districts.

Director of Software Development, Information Technology (2005-Present)

Planned, established, directed, and maintained the overall policies and procedures for the Software Development group. Developed systems architecture plans, estimated costs, and ensured projects meet strategic needs. Managed priorities for feasibility studies, systems design, and implementation to develop new and/or modify current software applications. Coordinated, interacted, and negotiated with the different IT function units. Supervised four direct reports (Project Technical Leads) with a total of 25 FTEs and consultants.

Performance Milestones:

- Initiated and executed SDLC methodologies that ultimately led to an overall process improvement and achieved more than 20% increase in productivity right in the first year of implementation.
- Introduced and implemented FogBugz, a project management and ticket-tracking system which helped manage software development and maintenance, subsequently improving the overall IT operations and technical support.

- Achieved key initiative of CIO and CTO by creating a .NET standards development program, including reusable and extensible components, to improve developer productivity and increase reliability and configurability of enterprise solutions.
- Facilitated development process and human resources management resulting in 100% developer retention thus far.

Software Development Lead (2002-2005)

Managed teams of software developers to architect, design, implement, and maintain applications. Successfully implemented tight project development deadlines while working with limited resources. Responsible for maintaining the integrity and scalability of the underlying architecture of the enterprise system. Handled complex application features and technical designs.

Performance Milestones:

- Led the re-architecture of a major system component that resulted in more than 200% increase in processing performance.
- Successfully implemented annual changes to a statewide information system as mandated by state and federal legislatures.
- Provided an alternative solution using an online application that extends the functionality of a statewide information system for small schools who cannot afford to purchase 3rd party software.

SPHERION CORPORATION – Scottsdale, Arizona

1999-2002

Provides integrated solutions to meet the evolving needs and priorities of companies and job candidates through recruitment and staffing. With approximately 375,000 employees in more than 8,000 clients, including 85% of the Fortune 100, making it one of the top employers in North America.

Consultant - Assigned on-site at the Arizona Department of Education (1999-2002)

Software Maintenance Lead (2002)

Managed and supervised a team of software developers and operators to implement, monitor, maintain, and support applications. Successfully managed priorities, schedules, and resources for change requests, bug fixes, and data requests.

Performance Milestones:

- Achieved more than 10% increase in productivity by creating effective processes and procedures for software maintenance, operations, and support .
- Created more than 20 data exports and custom reports to business units and legislatures to provide support decisions on legislative changes and budget allocations.

Analyst/Programmer (1999-2002)

Analyzed, designed, developed, tested, implemented, and maintained software, including web, middle-tier, and desktop applications. Provided technical support and training to other developers and team members.

Performance Milestones:

- Developed and maintained 3 major components of a multi-tier application.

- Re-designed database schema that optimized report generation performance by up to 200%.

EQUITABLE DATA CENTER INCORPORATED – Manila, Philippines

1997-1999

Provides IT-related activities for Equitable PCI Bank's automation requirements to deliver products and services. A wholly-owned subsidiary of the bank which is presently the Philippines' third largest banking group.

Systems Analyst/Lead Programmer (1997-1999)

Led a team of programmers responsible for the development, implementation, and support of multi-tier banking applications. Assisted the Development Manager in targeting initiatives for future development projects.

- Created and implemented ahead of schedule 2 new wholesale banking applications.
- Built the structure and logic of a major mathematical model, the Black-Scholes algorithm, and converted to a single component function.
- Developed a custom security component specifically designed for a highly critical application.

IBM SOLUTIONS DELIVERY, INC. (formerly ACI SYSTEMS, INC.) – Quezon City, Philippines

1996-1997

A wholly-owned subsidiary of IBM Philippines, Inc., provides systems integration and technology consulting. Offers services in such areas as systems development, data storage, and infrastructure management.

Consultant/Programmer - Assigned on-site at the PDCP Bank (1996-1997)

Analyzed, developed, tested, implemented, and maintained client-server banking applications. Provided technical support and training to other programmers and team members.

- Enhanced and revised several programming modules.
- Developed, maintained, and supported existing retail banking applications.

IBM PHILIPPINES, INCORPORATED – Quezon City, Philippines

1995-1996

Develops and manufactures advanced information technologies including computer systems, software, storage systems, and microelectronic. Also provides infrastructure, hosting, and consulting services. IBM is the largest IT company in the world with almost 330,000 employees worldwide and 2005 revenues of \$91 billion.

Consultant/Programmer - Assigned on-site at the Union Bank of the Philippines (1995-1996)

Analyzed, developed, tested, implemented, and maintained client-server banking applications. Provided technical support and training to other programmers and team members.

- Developed and implemented several main functions and key transaction components of a retail banking application.
- Designed various graphical user interfaces and screen layouts.

EDUCATIONAL BACKGROUND

UNIVERSITY OF SANTO TOMAS – Manila, Philippines
BS in Mathematics Major in Computer Science

CERTIFICATIONS

Project Management Professional (PMP) - 2006

Microsoft Certified Software Developer (MCSD) - 2002

Yaw Bediako-Poku

(b)(6)

SUMMARY:

Quality Assurance Analyst with over 3yrs experience implementing and improving the quality validation process of software, web including security

EDUCATION:

DePaul University, Chicago, ILL

Master of Science in Computer Science-Database Systems/Data Analysis June 2003

Moody Aviation, Tennessee

Bachelor of Science in Aviation July 1997

University of Ghana, Ghana

Bachelor of Science in Physics/Mathematics Sept 1986

COMPUTER SKILLS:

Programming Languages:

Java, Html, Cascading Style Sheets, Visual Basic, XML DTD/Schema,
Extensible Markup Language (XML), SQL

Other Skills:

System Administration, Data Modeling, Project Testing

Applications:

Microsoft Office Suite, Visual Studio, Microsoft Project

Databases:

SQL, Oracle, PL/SQL, SQLJ

Operating Systems:

Microsoft WINDOWS/Microsoft DOS

UNIX: Redhat Linux

EXPERIENCE:

Acting Quality Assurance Lead January 2007-present

Arizona Department of Education, Phoenix, AZ

- Reviewed and assigned QA projects to Analysts
- Assigned and scheduled projects for QA personnel
- Helped to promote the acceptance of unit testing by software development
- Assigned and provided supervision on SAIS projects to team members

Quality Assurance Analyst August 2004-present

Arizona Department of Education, Phoenix, AZ

- Wrote test plans, test cases and tested Web applications
- Provided training on ADE's SAIS application to QA team and other business units
- Presented new SAIS transactions to Business units
- Assigned and provided supervision on SAIS projects to team members
- Performed Analysis and Troubleshooting on SAIS Issues
- Analyzed and assessed Web applications for security vulnerabilities
- Tested both Windows and web-based applications developed in ASP, .NET, Java, etc..
- Created and performed Beta/Regression testing
- Performed Security and Functional testing of Web Applications
- Performed database testing and validation using Microsoft SQL server

Motorola Electronics Technician 2000 2001

Motorola, Schaumburg IL

- Tested and Certified Power Amplifiers
- Troubleshooted electronic circuit boards
- Inspected and tested transmitters

Electronics Technician 1999-2000

Baxter (Dade Behring), Mundelein IL

- Tested and Operated Hospital Infusion Pumps to Specification
- Assembled electronic components for Pump Heads
- Fabrication and Soldering of Air-Line circuit boards Assisted in the development of an accounting

Avionics Technician July 2003-August 2003

Waukegan Avionics, Waukegan, WI

- Developed database software to customize client info. retrieved from the internet
- Received training in the rudiments of financial planning, insurance, and mutual funds
- Shadowed financial advisers in their daily activities
- Researched and reported findings on issues pertaining to investments of clients

PROFESSIONAL AFFILIATION:
American Society for Quality (ASQ)

(b)(6)

James R. Whelan

Experience

2005-present

AZ Dept. of Education

Phoenix, AZ

Business Analyst Lead (late 2005-present) / Business Analyst (2005-late 2005)

- Perform Business Analysis for IT projects at the AZ Department of Education.
- Promoted to manage all Business Analysis projects and personnel in late 2005.
- Manage various IT professionals in the Business Analysis group as well as provide guidance and support for QA and Project Management teams as needed.
- Specifically assumed and perform the role of Project Manager, in addition to Business Analyst, the last year to the Early Childhood, Exceptional Student Services, and English Acquisition divisions of the ADE.
- Lead team effort to standardize Business Analysis methodologies, customer service focus (internal and external to IT), and documentation standards.
- Lead team Business Analysis effort in releasing the new fiscal year's version of the SAIS software program earlier each of the past 2 fiscal years.
- Contribute to the Business Analyst definition and integration into ADE-IT's software development life cycle methodology (SDLC).
- Member and contributor to the IT Services Management Team.
- Participated in the ADE's Student Detail's Stakeholder meeting to promote IT's goals and objectives.
- Held training sessions for SAIS users and software vendors for technical and practical knowledge of enhancements to ADE systems.
- Intimate institutional knowledge of SAIS and of the ADE. Multi task many responsibilities simultaneously; from advising and providing internal customer service to other AZ Department of Education departments, to providing external customer service to software vendors, etc.

2002-2004 Spherion Technology Architects Scottsdale, AZ
2004-2005 AZ Dept. of Education Phoenix, AZ
(Consultant through Spherion through 6/27/2004 on location at the AZ Department of Education. After 6/27/2004, direct state employee of the ADE)

QA/Software Tester

- Software Tester for the SAIS project at the AZ Department of Education.
- Write/execute test plans/cases focusing on User Acceptance Testing.
- Write/execute test plans/cases on the system and component levels.
- Identify time critical Production problems and initiate course of corrective actions.
- Handle all vendor communications including vendor support, vendor SAIS training, and vendor compliance testing.
- Perform GUI testing for all divisions of the AZ Department. of Education.
- Execute SQL database queries as part of testing procedures.
- Use Footprints bug tracking system to report all levels of progress on any system bug or AZ Department of Education IT issue.
- Multi task many responsibilities simultaneously; from various stages of different tests at the same time, to advising and providing internal customer service to other AZ Department of Education departments, to providing external customer service to vendors and school liaisons, etc.

2000-2001 Zany Brainy, Inc. Scottsdale, AZ

Associate General Manager-QA/Trainer

- Handled all aspects of internal and external customer service, including policy and procedure training, both individually and in groups.
- Trainer for all aspects of Arizona operations, including JDA, Microsoft Back Office software and customer service policy and procedures.
- Beta tested JDA software and Microsoft Back Office applications.
- Television spokesperson for company in Arizona.

2000 Independent Contractor Scottsdale, AZ

Flex Solutions, Inc. – Election.com Project

- Assisted in the setup, testing, and implementation of the first ever legally binding Internet-based voting program for the Arizona Democratic Presidential Primary.
- Project Manager responsible for site surveys, software installation, and software testing for voting locations throughout Southern and Southwestern AZ.
- Communication liaison between management and end user.
- Technical support for the Election Day Command Center.

1997-2000 Frontier Airlines Phoenix, AZ

Station Auditor/Trainer/Associate City Manager

- Project developer and manager of agent training program. Wrote training materials and training coursework/manuals.
- Senior weight and balance agent and trainer.
- Trained employees on Shares computer software application.
- Extensive travel to help open stations in new cities and train new employees.
- Direct manager of 23 employees.
- General computer work with MS Office.

1996-1997 Alaska Airlines Tempe, AZ

Sales Agent/Lead Customer Support

- Lead Customer Service Agent and peer advisor for sales agent group.
- Computer experience with IMAGE (mask program for Sabre).
- Helped trained employees on IMAGE software application.

1994-1996 Warner Bros. Studio Stores Denver, CO

Store Manager – Gallery Quality Control Manager

- Management position in charge of animation gallery, sales, training and customer service.
- Created training materials and classes for employees and customers.
- Project Manager for the West Coast region's effort to install and test computer touch screen program for sales presentations.
- Traveled extensively throughout the U.S. to train and run special events.
- Doubled sales in Palm Desert, CA before promotion to Denver, CO.

1987-1994 Whelan Photoboards, Inc. Chicago, IL

Operations, Project Manager, QA

- Managed work force of ten in a post-production advertising company.
- Project manager/designer of television media monitoring division.
- Handled all aspects of business operations including training, scheduling, customer service, A/P, A/R, and quality assurance.

Education

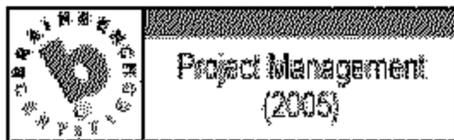
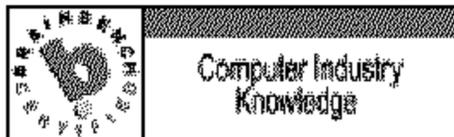
Oakton C.C. DesPlaines, IL - 1989

Valparaiso University IN - 1991

Additional courses taken in Microsoft Office and Cisco Networking.

Certifications

Professional IT Certifications:



Myrna Rae Johnson

(b)(6)

Strengths

- Outstanding self-motivation and self-initiation of projects for targeted areas
- Extensive experience and training in project management
- An unusual mix of business and technical analytical skills and experience at both strategic and tactical levels
- Process and workflow design expertise

Consultant, Spherion, Phoenix, 2005-Present

2006 to Present, At Arizona Department of Education: Business analysis for standardized state testing technology projects and associated statistical analysis of test results, state NCLB ratings programs, and the highly qualified teacher development. Process improvement and re-engineering for Research & Evaluation and Assessment business functions, including productivity, data, and statistical analyses to support improvement options, along with process decomposition and documentation of IT supporting functions. Project management for annual state testing and NCLB rating and reporting activities. Ad hoc analyses and operations support as needed.

2006, At American Express: Verified test script accuracy against system as developed, provided mentoring and support to testing team, created new scripts for enhancement and regression testing using the Mercury test center software.

2006, At Arizona State Retirement Systems: Business analysis for retirement system development project transformation from manual process, including cross-platform development (Java web, Oracle forms and database, Filenet workflow), using UML/RUP methodology and Enterprise Architect modeling tools. Created requirements for existing undocumented business functions, via a variety of techniques such as JAD sessions, process mapping, database research, and research for financial, legal, federal, and state regulatory compliance.

2005, At American Express: Created QA test scripts for enhancement and regression testing using the Mercury test center software, in support of new global sales prospecting system implementation.

Independent Consultant, Phoenix, 2002-2005

2005, For a security equipment start-up: Created technical product literature, including specifically targeted homeland and local security-market sales presentations.

Coordinated website design, developed web site navigation flow, and wrote page content.

2004, At Wells Fargo Bank: Analyzed transactional risks in support of Sarbanes-Oxley Act, including research into undocumented business processes, development of auto dealer floorplan transaction process flows, risk identification and analysis, scope definition, and risk resolution recommendations.

2004, At American Express: Created process flows, work flows, and technical user documentation for an enterprise financial reporting system implementation, using Hyperion Financial Management, Razza (metadata), reporting software, and other supporting financial reporting software.

2003-4, On behalf of a software development company: Provided on-site analytical and project management services for the British Nuclear Fuels' Oracle-based nuclear waste tracking system on the Coring team. Duties included integration analysis between conveyor, data, and equipment software; requirements tracing and collaboration with end users and other SME groups to meet NRC, Federal and state regulatory and project operational needs; module scope definition; requirements change control tracking; and end user forms prototyping. Created and monitored project milestone targets and implementation tradeoffs to match overall project plans. Also created process workflows based on researched business rules and equipment operation; analyzed and identified subsequent gaps; developed recommendations for system efficiencies and corrective actions. Conducted system test and project scope reviews, as well as business requirement and JAD sessions.

2002-3, For a private consulting company: Performed strategic and tactical analyses on emergency management business continuity plans for the U.S. Senate and General Services Administration, including: organizational readiness assessments; cross-organization and interoperability dependencies; risk mitigation analyses; creating final recommendation report deliverables. Created plan tests with catastrophic disaster scenarios based on potential threat placement within targeted facilities, backup facilities routes of travel, business ingress/egress points, and specific continuity plan stated responses.

Consulting Analyst, AdvancePCS, Scottsdale, AZ, 1995-2002

1998-2002: Performed project management, human factor studies, and process re-engineering for automated mail service pharmacy system operations in Texas, resulting in reduced costs and streamlined activities. Was corporate construction liaison and internal corporate project manager for the creation of a 112K SF automated mail service pharmacy in Birmingham, including operational analysis, integration of conveyor, data entry, and equipment software. Also monitored compliance and implemented corrective measures to meet physical security considerations, DEA, other Federal and state regulations, mail, and OSHA standards. Performed a variety of studies and self-initiated projects involving operations or business process re-engineering and cost benefit analyses, including bin box improvements, outbound mail prep, packaging, manifesting, and loss recovery, as well as initiating an outsourced carrier trial study.

1995-1998: System development project manager for a variety of internal and external client projects. Documented and structured waterfall step-based methodology based on existing development processes. Created group facilitation room, trained as a Ventana group system facilitator, implemented services, and trained six other facilitators. Facilitated company business sessions for business and systems requirement gathering, JAD requirements, re-engineering, organizational alignment, and corporate marketing strategy development. Created system process flows for undocumented primary company software and business use cases, based on software functions and programmer interviews.

For several development systems, performed systems analysis, helped develop logical data models, and wrote technical specifications.

Independent Consultant, Phoenix, AZ, 1994-1995

On behalf of a quality software assessment company: Developed corporate quality and employee satisfaction surveys. Performed survey results analysis and created management recommendation reports for increased employee effectiveness, risk mitigation, and process quality improvements.

At USWest: Provided project management for a new Yellow Pages enterprise terradata database conversion. Developed user requirements, logical data models, and data dictionary definitions for. Performed statistical analysis on advertising data. Created test plans and performed QA on implemented data structures.

Sr. Analyst, American Express, Phoenix, AZ, 1990-1994

1992-1994: Performed strategic and tactical planning for the worldwide technology division. Performed special projects for international IT management, including evaluating best in class practices, researching and teaching a workshop on the company structure, goals, and drivers of major corporate entities. Researched and wrote ad hoc white papers on a variety of technical topics for the CIO and senior management, including statistical analyses on operational topics. Self-initiated a strategic intellectual capital project, including obtaining corporate R&D funding and representing the company at the international think tank sessions. Contributed technical and organizational articles to the global IT magazine.

1990-1992: Provided project management for a \$250 million international system development, including budget estimates, scheduling, senior leadership status meeting coordination, and strategic project change control monitoring. Created personal project and budget analyses for the senior corporate executive in charge.

Consultant, CTG Consulting, Phoenix, AZ, 1988-1990

At American Express: Provided project management for the requirements documentation team on a global point of sales system implementation project with an extremely aggressive deliverable timeline.

For the Arizona State AHCCCS (Medicaid/Medicare) system re-engineering: Performed project management, analysis and systems development. Responsible for the central patient module, including design and development of user interfaces. Performed unit, system, and integration testing on completed components. Created system test data for enterprise system testing. Led JAR and JAD sessions to capture undocumented business use cases and cross-system issues. Created technical documentation, logical data flows, scope and requirement tracking documents, business use flows, and user instructions.

Sr. Technical Editor, Intermountain Healthcare ASI, Salt Lake City, UT, 1985-1988

For multi-hospital chains: Managed technical publication projects, sales materials, and other written materials to support patient care, financial, and hospital administration system developments. Provided project management for system development projects and supporting implementation needs. Analyzed hospital business uses, gathered user requirements, and matched GUI design to hospital user functions. Performed unit,

system, and integration testing on completed AS/400 systems. Performed human factor studies with client users, created and administered client quality surveys, and proposed new product developments.

Community Volunteer, Future City Competition, 1996-present

Executive committee and Board of Directors member for the Phoenix Region Future City Competition charity. Developed project timeline standards for the competition. Provide print materials, participant communications, awards and recognition programs, logistics, etc. for the annual competition program serving approximately 1200 students and 300 adult volunteers.

Intelligence Analyst, US Army Reserve, 1975-1977

San Jose State University, 1982-1984, Journalism major

Mission College, 1982, A.A. degree

MARY MARDY P. CRUZ

IT SPECIALIST IV

Over 10 years of professional experience in the IT industry performing a variety of functions, including MIS Supervisor, QA Supervisor, Lead/Senior Programmer, Business/Systems Analyst, Quality Assurance Analyst and documentation specialist. Has been responsible for the management, development, maintenance, enhancement, implementation and full life cycle testing of various business applications in various environments including Oracle, SQL Server and Progress. Industry experience includes State Education, Human Resources, Insurance, Utility, Manufacturing and Financial applications specializing in client/server applications such as Oracle 7.0/8.0, VB.NET and Progress 4GL/RDBMS 7.0.

TECHNICAL EXPERIENCE

Hardware:

- IBM RISC/6000
- IBM AS/400
- HP/9000 MODEL 816S
- PS/2
- SUN

Operating System:

- SUNOS 5.5.1
- AIX v.3.2.5
- HP-UX A.09.04 B
- SVR4
- OS/400
- UNIX
- WINDOWS NT
- MICROSOFT WINDOWS 95 /98 / 2K / XP / SERVER 2003
- WFW 3.11
- MS-DOS

Languages / Utilities

- DATA TRANSFORMATION SERVICES (IMPORT/EXPORT)
- VB.NET
- C#.NET
- ORACLE FORMS 3.0,4.5, 6I
- ORACLE REPORTS 2.5
- ORACLE GRAPHICS 2.5
- ORACLE SQL*PLUS 3.2, 8.0
- ORACLE PL/SQL 2.2
- ORACLE SQL*LOADER
- SQL*REPORTWRITER
- VISUAL C++ 6.0
- VB.NET/VB6
- SQL*DBA
- SAP/R3-HUMAN RESOURCES
- VISUAL SOURCESAFE 6.0
- BRIOQUERY EXPLORER 6.0
- MAGIC POST 4GL/RDBMS
- PROGRESS 4GL/RDBMS VER 6.2L03, 7.0
- RPG

Databases:

- ORACLE VER 8.0 / 7.2
- SQL SERVER 7.0 / 8.0
- PROGRESS v.7.0
- DBASE III & IV

Testing Tools:

- QUICKTEST FOR SAP/R3 6.0
- ASTRA QUICKTEST 5.0
- TESTDIRECTOR 6.02
- WINRUNNER 6.0

PROFESSIONAL EXPERIENCE

Arizona Department of Education (ADE)

5/03 – present

1. Data Analyst / Information Technology Specialist IV (IT-Data Management Team) (September 2006 – present)

- Reviews and provide analysis on requirements for data and execute queries to generate data results.
- Participates in the creation of database objects with DBAs

2730 E. Fremont Rd., Phoenix, AZ 85042 Tel: (602) 268-7491 Mobile: (602) 327-1655
Email: mpenaga@hotmail.com

- Generates scripts and build packages using SQL Server and DTS
- Administers database objects, including tables, indexes, user-defined functions and stored procedures
- Documents business rules applied for each query utilized in the data requests.

**2. Business Analyst / Information Technology Specialist IV
(December 2005 – September 2006)**

- Performs analysis and document requirements
- Communicates with business partner regarding requirements
- Creates scripts and perform data mining for requirements of data

**3. Technical Analyst / Information Technology Specialist IV
(September 2004 – October 2005)**

- Responsible for analyzing, investigating and documenting all issues and requirements escalated to the Student Detail Team. Determining where and show should any follow up work be allocated to.
- Administers change control process for zero defect software development
- Interacts with users, both internal and external to investigate and resolve issues
- Manage all Footprints Tickets related to Student Details
- Performs ad hoc requests for data queries

**4. Quality Assurance Supervisor / Information Technology Specialist IV
(May 2003 – September 2004)**

Student Accountability Information System (SAIS) is built to capture process and report information with regards to student data and school financial system.

Student Details Team – consists of software developers, quality assurance analysts, production monitoring staff, business analysts and supervisory staff that deal with SAIS-Student Details software. The team's mission is to deliver SAIS software that is zero defects and in accordance to Arizona Department of Education's requirements.

Spearheaded the Quality Assurance Team, where responsibilities include:

- Assign software testing and analysis tasks to individual QA staff
- Monitor the progress of the various software projects and reports status to SAIS Manager
- Coordinate with Software Development Supervisors and Business Analysts to determine design and testing requirements
- Ensure that software testing meets and exceeds defined standards
- Execute Data mining through creation and utilization of dynamic SQL scripts, ensuring data are stored and computed correctly within the database. Utilized Query Analyzer for creation and execution of stored procedures.

Environment:

SQL Server 7.0, Query Analyzer, Visual Basic 6.0, VB.NET, Access, WINDOWS XP, Server 2003, Footprints, Microsoft Sharepoint, Microsoft Project 2000

Spherion

5/99 – 5/03

Programmer/Analyst

A global leader in providing IT solutions to premiere companies, Spherion offers project support and business solutions through specialized practices that include Software Quality Management, E-Commerce and Web Development and Emerging Technology. **Client and Project involvement are as follow:**

1. Arizona Department of Education

Quality Assurance Analyst (February 2002 to May 2003)

Student Accountability Information System (SAIS) is built to capture, process and report information with regards to student data and school financial system.

Responsibilities include:

- Worked primarily as a conduit between the School Finance users and MIS group, gathering business requirements and ensuring quality deliverables and implementation, particularly with the Student Counts subsystem.
- Execute Data mining through creation and utilization of dynamic SQL scripts, ensuring data are stored and computed correctly within the database. Utilized Query Analyzer for creation and execution of stored procedures.
- Ensure programs and reports are functioning accordingly and displaying accurate information. Reports are critical as they are the basis of State's funding for Arizona schools.
- Analyze, troubleshoot and report any issues resulted from established business requirements and programs.

Environment:

SQL Server 7.0/8.0, SQL Query Analyzer, DTS/Import & Export, Visual Basic 6.0, Access, WINDOWS 2000.

2. Motorola Global Human Resources

Technical Tester (January, 2000 to May, 2001)

Global SAP/R3 Human Resources Information System (Global SAP-HRIS) SAP HR is a transaction system. The system captures relevant employee information including location, salary, educational background, work schedule, etc. in a single database. Its goal is to implement SAP HR worldwide and include all Motorola employees in one system.

Global Data Warehouse is the central repository for HR data relative to Motorola employees worldwide. Global data warehouse architecture has been proposed to support the data and reporting needs (SAP implementation and several other systems) of the HR organization in Motorola.

Online Applicant Staffing Integrated System (OASIS) is a web-based Motorola application for creating staffing and Contractor requisitions, maintaining a candidate database, and matching candidates and contractors to requisitions

Responsibilities include:

- Worked independently to develop and utilize scripts that will assess accuracy of data flow and storage within data warehouse using Oracle SQL*Plus, PL/SQL and SQL*Loader.
- Solely responsible for maintenance of Oracle test database, which includes creation, and modification of test tables.
- Assist with the System Test Scenario creation, Test Script Development and Verification, Test Data Identification and Entry/Exit criteria review.
- Execute automated/manual scripts and procedures for SAP/R3 and Oracle Web Apps.

Environment:

Oracle 8.0, Forms 6i, PL/SQL, SQL*Plus, Unix-SVR4, SAP-HRIS rel.4.0, WinRunner 6.0, Quicktest for SAP/R3 v6.0, TestDirector v6.02, BrioQuery Explorer 6.0, Hummingbird FTP, Lotus Notes 4.6, Astra Quicktest 5.0, WINDOWS 2000.

3. Spherion Internal (Human Resources) Project

Programmer/Analyst (May, 1999 to January, 2000)

- Assigned to an internal project designed for integrating Human Resources and Marketing Department. Development was on a Pentium-based PC running Windows 95 or Windows NT using MS Outlook, VBA and Office 2000.
- Analyzed and defined requirements for automating internal business processes.
- Customized MS Outlook forms per the defined requirements using VBScripts.

Environment:

MS Outlook, VBScripts, Pentium-Based PCs, Windows 95, Windows NT

Pioneer Insurance & Surety Corporation

5/97 – 5/99

Programmer/Analyst/MIS Supervisor

Pioneer Insurance has consistently gained top market performance among over 100 non-life insurance in the Philippines. To further strengthen their market position, we have developed 'Non-Life Insurance Information System (NIIS)' a client/server application that would handle the processing of policy issuance, distribution, claims and accounting entry generation. It is built using Oracle v.7.0 as database and Developer 2000 and Oracle Forms 3.0 as front-end applications.

Spearheaded the NIIS project, where responsibilities include:

- Programming of a more complex designed programs using Oracle Developer 2000 and Forms 3.0 under HP9000 and SunSparc servers. Utilization of Oracle tools such as SQL*Plus, PL/SQL, Oracle ReportWriter and SQL Loader.
- Development was on a Pentium-based PC running Windows 95 and NT using Oracle Developer/2000, SQL*Plus, Forms 3.0; Oracle 7.0 and 8.0 stored in HP, SUN & SCO servers, running HP-UX, UX-SVR4, and Sun-OS.
- Quality unit and systems test every program before applying/migrating to live servers and databases.
- Conversion, Control and Clean-up of Data in Oracle 7.0 during upgrade or enhancement of system in preparation for Y2K.
- Presentation, User Training and Support tasks during pre-implementation of enhanced system.
- Management or Supervisory responsibilities include delegating or distribution of some programs for coding, assessment or evaluation of new hires and annual review of lower level analysts and programmers and monthly status reporting and presentation to upper level management and owners.

Environment:

PENTIUM-BASED PCs, WINDOWS 95, ORACLE 4GL/RDBMS, ORACLE DEVELOPER 2000 (UNDER AN HP), SUN & SCO – RUNNING HP-UX, UX-SVR4, SON-S, MICROSOFT PRODUCTS, VISIO, SQL*PLUS

EDUCATION

Lyceum of the Philippines

Bachelor of Science, 1991

Foreign Service

John Eickman
Information Technology Specialist IV
Arizona Department of Education, IT Unit
john.eickman@azed.gov
(602) 542-4442

Experience at Arizona Department of Education in two offices:

MIS / Information Technology Office, 2000 – 2007

- Data Management, 1 year: Work on EDEN project including reading and interpretation of requirements documentation and file specs, creation of ETL for several EDEN submissions. Work on data requests including interpretation of requirements and creation of data set for requestor. Consulting on requests involving Enterprise database and application, and ADESecurity database and application. Work done using SQL Server tools and Microsoft Office products.
- Project Management / Analyst 1.5 years. Work on data requests involving Enterprise and ADESecurity databases. Work on security push in specifying implementation to improve security in ADESecurity and Enterprise databases. Worked on EDEN project. Created project plans for some small IT projects. Work done using SQL Server tools, MS Office and MS Project.
- Development, 4 years. Worked on projects and also supervised several developers for part of this time period. Worked using SQL Server tools, Microsoft Office and Visual Studio.

School Finance, 1990 - 2000

Worked as data analyst and business analyst for School Finance programs. Calculated cost estimates for many proposed legislative changes to Arizona school finance law. Fulfilled many data requests both internal and external to ADE for data collected by School Finance unit. Produced Superintendent's Annual Report. Produced Common Core of Data Fiscal report.

Education

M.S. Arizona State University, College of Business, Quantitative Systems, 1985

B.A. Augustana College, Sioux Falls South Dakota, Economics 1976

Previous Professional Experience

Instructor, Arizona State University, College of Business, 1985 – 1986

Instructor in statistics courses in business school. Assisted in some research conducted in business school.

Data Analyst, South Dakota State Department of Health, Pierre, S.D. 1978-1984

Created required state and federal reports on state health data. Work using mainframe statistical packages and programming languages.

Arizona Department of Education
Arizona Education Data Warehouse

Statewide Longitudinal Data System Grant
Round 2

March 2007

Resumes, Part 2 of 2
Leadership and Advisory Resources

ResumesAdvisors-Cover.doc

Janice McGoldrick

(b)(6)

Janice McGoldrick has twenty-nine years experience in information technology, including C-level management, project management, system analysis and design, construction, implementation, system integration, and migration planning. Janice specializes in designing, implementing, and/or managing large, complex systems; her work has covered a wide range of platforms for various industries, private businesses, and national and regional government agencies in the United States and abroad. Industries include education, financial services, telecommunications, and health care. Extensive use of structured development methodologies, conceptual modeling, functional design, and Rapid Application Development.

PROFESSIONAL EXPERIENCE

Arizona Department of Education, Phoenix, Arizona 2002 to present

Chief Information Officer, 2005 to present

Managed the transformation of the technology division from a MIS production shop to a fully functional Information Technology service organization. Re-focused the agency's technology strategy to a long-term customer-, service-, and security-centric IT vision; instituted standard policies, procedures, and practices; guided the division through an extended development moratorium during which robust securitization strategies were instituted to protect the agency's electronic assets. Member of the agency's Executive Team and Management Team. Drives the agency's technology strategy. Provide technological and managerial expertise during the budgeting and legislative process. Member of Arizona's Government Information Technology Agency (GITA) CIO Council. Currently directed the design and deployment of the first full phase of the Arizona Education Data Warehouse.

Project Director, Arizona Education Data Warehouse, 2005

Directed the overall design and initial "proof of concept" delivery of Arizona's statewide P20 education data warehouse, now named the Arizona Education Data Warehouse. Coordinates closely with the agency's sister project, Integrated Database to Enhance Arizona's Learning (IDEAL), being developed with Arizona State University and ASSET. Extensive liaison duties with internal agency divisions and with external clients including district and charter local education agencies and schools, teachers, parent groups; the Arizona legislature, the Governor's advisory council on education data issues; other states' technology initiative representatives; and the US Department of Education.

JMcGoldrick 200703.doc

Assistant MIS Director, 2002 to 2004

Managed the Project Management Office and all development for ADE. Six development teams with a total staff of 27.

Spherion Technology Architects: Managing Consultant 1997 to 2002

Arizona Department of Education, Phoenix, Arizona.

Child Nutrition Programs. System design, data analysis. Wrote user and technical specifications for systems for reimbursement of \$200 million in US Department of Agriculture program funds. Technical design utilized a SQL Server based n-tier architecture. Windows NT4 & clustered Windows 2000 servers; SQL Server 7.0; Internet pages served from Microsoft Internet Information Server versions 4.0 & 5.0; support IE 4.0 and Netscape 4.01 browsers; XML. Client base is about 5000.

Student Accountability Information System. System design, data analysis and design. Redesigned all existing systems for port from Honeywell DPS6 mainframe to client/server architecture. Liaison to ADE departments, federal agencies, software vendors, and users from school districts and schools across Arizona. Generated work products consisting of thousands of pages of business requirements, technical specifications, logical database design, crude data dictionary. Technical design utilizes a SQL Server-based n-tier architecture, as above. Client base is 3000+.

Independent Consultant 1996-97

Grand Canyon Association, Grand Canyon, Arizona. Performed systems audit and work flow analysis for non-profit fundraising, educational, and publishing organization. Advised on organizational structure, personnel management, and computer systems expansion issues.

Computer Horizons Corporation: Senior Consultant 1993-96

Headquarters, New York, New York: Designed technical solutions and managed responses for Requests For Proposal for various services from system development to resource provisioning. Industries include banking, financial services, telecommunications, and health care.

Prudential, Morristown, New Jersey. Managed team to assess enterprise Y2K exposure. Project converted all system software to millenium compliance.

NYNEX, Telesector Resources Group, New York, New York. Co-designed a decision support system for management, scheduling, and evaluation of the installation and maintenance organizations. Managed teams responsible for hardware, software, and network design, procurement and installation; project management; tracking multiple site budgets; and statistical reporting. Mentored client project managers. Application employs client/server technology; RISC processors, OS/2 satellite-enabled laptops, WIN/OS2 workstations. Client base is 1000+.

Janice McGoldrick

jmccgoldrick@usa.net

Securities Industry Automation Corporation (SIAC), Brooklyn, New York: Designed a customized metrics program for the information systems provider to the New York Stock Exchange; integrated SEI/CMM practices with existing methodology, CASE, and project management tools. Mentored management team in redefining existing estimating, development practices to facilitate the rapid acceptance and practice of the new metrics program.

Independent Consultant

1990-93

Telecom Australia, Melbourne, Australia. Collaborated on design of new Australian mobile telephone network's dealer network message queuing facility, serving over 700 dealers nationwide. Constructed and delivered this facility to acceptance testing. IEF v5.1 and COBOL.

AUSTRAC, Chatswood, NSW, Australia: Restructured the operations area of a mid-size government agency. Established multi-level controls, streamlined operations procedures, including job scheduling, site support, disaster contingency planning, and capacity management. Resulted in 20% improvement in productivity and brought systems operations into full regulatory compliance.

SSIMC, Sydney, Australia. Large-scale IEF development effort to redesign a government retirement plan with a portfolio of over \$A150 million. IEF Central Encyclopedia under MVS; target environment VM with SQL/DS database; local development with IEF v4.2 and 5.1.

Project Leader. Managed two application development teams of 10 developers and DBAs; resource requirements and utilization, employee appraisals, overall project management.

IEF Support Leader and DBA. Tested and installed IEF system software, managed development environment synchronization, and managed liaison functions among Texas Instruments, the IEF development teams, and the host systems development teams.

Technical Advisor to applications development and project office. Assessed proposed system enhancements and changes, and provided systems expertise for strategic planning activities.

Optus, Sydney, NSW, Australia: Managed technical solution and sales proposal for telecommunications network support. Awarded \$4.2 million project and follow-on business.

Computer Power Group, Lane Cove, NSW, Australia: Designed an investment management system with bureau service capability for commercial release. Managed senior consulting group of 15. COBOL and Presentation Manager; DB2; OS/MVS.

American Express: Senior Programmer Analyst 1986-90

Genesis Project: Managed three development groups of a global system redesign, working with initial target markets in US, UK, and Germany. Project management duties: technical and design reviews, resource utilization, product design and development, technical interviews. Developed a detailed integration plan for worldwide roll out of all new systems, working closely with senior management of worldwide systems, operations, finance, marketing, and sales to identify requirements for a massively large-scale roll out of all new core applications. IEF v3.2 through 4.1. DB2 in an IMS environment. Reporting: Easytrieve Plus.

Accounts Receivable Group: Participated in design, development, installation, and maintenance of credit scoring subsystem. Member of a team to design, develop, and install all systems in accelerated launch of new Optima card; delivered on time, within budget, and surpassing specifications. Systems support for four operating centers servicing the USA, Canada, and Latin America, billing 10 million cards monthly, and meeting a 98% service level agreement. COBOL with IMS DB, SAS, TAMS, OS JCL, FORTRAN, Easytrieve Plus.

Boca Raton Community Hospital: Programmer Analyst 1978-86

Managed design, development, and testing of billing system for new Medicare reimbursement plan; delivered on time and within budget. Installed, customized, and maintained D&B General Ledger Plus; participated in international user conferences. Initiated formal design reviews and project management philosophies, resulting in a marked improvement in productivity, system compatibility, and user acceptance of new systems.

Community Psychiatric Clinic, Wheaton, Maryland 1977-78

Office Manager

Kelly Services, Washington, D.C. 1975-77

Administrative specialist

Central Intelligence Agency, Roslyn, Virginia

U.S. State Department, Washington, D.C. Interagency Task Force: Operation Baby Lift, Operation New Life (Saigon airlift).

EDUCATION

Arizona State University, MBA partially completed

Florida Atlantic University, BS, Corporate Management

University of Maryland, undergraduate coursework

Jeff Stowe

Arizona Department of Education (Exceptional Student Services, School Finance, Career, Technical Education, Information Technology, and Academic Achievement)..... 1987 - Present

Responsibilities – Assignments – Functions

IT Division liaison for data collection and reporting needs of various Federal programs
Coordination of automation of unit data collection and reporting
Heavy involvement with SAIS and other ADE production database systems
Remain current on Federal program reporting requirements
Participate in U.S. Dept of Education conferences for each ADE program unit assignment
Participated in NCES Forum meetings and Conferences since 1988
Arizona SEA Forum representative since 2001
Data Warehouse Task Force member
Web Security Task Force member
Decision Support Systems Task Force member
PK – 12 Data Model Task Force member
Chair of Forum Technology Committee
Co-chair of PK – 12 Data Model Task Force
Member of EIMAC Longitudinal Student Data System Task Force
EDEN / PBDMI Coordinator for Arizona since 2003inception
Arizona Technical Lead for Migrant Student Information Exchange project (U.S. Office of Migrant Education and Deloitte Consulting)

Activity Description

Consolidated State Performance Report (CSPR)

Coordination of data submission across all ADE divisions responsible for reporting data on Federal Programs Titles I through VI, and Homeless education.
Created a numerous Access data queries to summarize CSPR data collected via the Form Builder web application.
Part I was submitted by the Dec. 1, 2006 due date. Part II was submitted by the Feb. 1, 2007 due date.

EDEN (Education Data Exchange Network)

EDEN Coordinator for Arizona.
Liaison with IT and other ADE divisions to integrate the following reports into EDEN:
School Finance Common Core Data (CCD) Report;
Exceptional Student Services IDEA Reports;
English Acquisition Services Title III Biennial Report;
Consolidated State Performance Report (CSPR).
Coordination between IT and other ADE divisions in identification of data sources for required EDEN data groups and estimation of EDEN submission dates

Assistance with IT updating of EDEN Data Submission Plan

Working with IT to transition away from use of Form Builder aggregate data and toward the use of formal IT production databases (e.g., SAIS, Certification, Grants, AIMS databases) as sources for reporting CSPR and EDEN data.

Migrant Student Information Exchange (MSIX)

Assigned as Arizona's MSIX Technical Lead to work with the MSIX Deloitte Project Team.

The US Office of Migrant Education in November 2006 awarded a contract to Deloitte Consulting to work with states in developing a national system by which to electronically transmit Migrant transcript and other Migrant student data between schools, districts, and states, to provide greater continuity in Migrant student education as they move from school to school.

Arizona, Texas, and Arkansas have been selected to pilot the MSIX system this March.

Coordination of IT staff and vendors to maintain ADE Migrant student database, named COEStar, to work together to extract, merge, and format data from COEStar, SAIS, and AIMS for submission to the MSIX pilot system.

NCES (National Center for Education Statistics)

Arizona NCES Forum representative.

Chairman of the Technical Committee and will conduct those meetings.

Co-chair of a Data Model Task Force, to design a national Logical Data Model structure for school, district, and state education data that can be used to develop school, district, or state education data systems.

**ROBERT J. FRANCIOSI
VITA**

<div data-bbox="312 431 803 525" style="border: 1px solid black; padding: 2px;">(b)(6)</div>	<p>(602) 364-1994(direct office) (602) 542-5151 (general office) (602) 364-0887(fax) <div data-bbox="1111 559 1515 608" style="border: 1px solid black; padding: 2px;">(b)(6)</div> <u>rfranci@ade.az.gov</u> <div data-bbox="1111 716 1485 765" style="border: 1px solid black; padding: 2px;">(b)(6)</div></p>
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EDUCATION

B.S. geophysics, California Institute of Technology, 1986.

M.A. economics, University of Arizona, 1993.

Ph.D. economics, University of Arizona, 1994; emphases in industrial organization and experimental economics.

Dissertation: "The Nonprofit Firm in a Market Setting." Advisor: R. Mark Isaac.

PROFESSIONAL SKILLS

Experience with Public Policy. Worked on staff of Arizona Congressman; participated in hearings and workshops at Arizona Corporation Commission; assisted in drafting testimony and legislation.

Research and Analytical Ability. Over ten years of experience in conducting research including obtaining information from government agencies and documents, statistical analysis, and reviews of policy reports and academic literature.

Communications Skills. Have written scholarly articles; reports and memos for laypersons; and op-eds for newspapers. Have spoken before numerous groups ranging from academic conferences to Lions Club luncheons. Have built relationships with reporters including members of editorial boards.

Languages

Spanish

Computer Skills

SAS, STATA, SPSS, Microsoft office.

POSITIONS

Deputy Associate Superintendent, Research and Evaluation. August 2004-present.

Leads group to implement the school accountability systems required by the Arizona Learns and No Child Left Behind laws. Specific duties are working with state and federal officials to implement accountability laws, developing operational policies and statistical analyses to put laws into effect, meeting with school officials to explain laws, ensuring school compliance, and modeling the impact of various policy decisions.

Director of Accountability and Reporting Systems, Arizona Department of Education. February 2003-July 2004.

Director of Urban Growth and Economic Development Studies, Goldwater Institute, Phoenix, Arizona. October 1996-January 2003.

Analyzed public policy and conducted research on growth, environmental, and regulatory issues in Arizona. Presented findings before policymakers and the general public through written reports, presentations, newspaper op-eds, and appearances on radio and television.

Arizona Advisory Council on Environmental Education. July 2001-July 2002.

Reviewed grant applications submitted by Arizona public schools and universities for funding for environmental education activities.

Legislative Assistant to Congressman John Shadegg (R-AZ). March 1995-October 1996.

Carried out all duties relating to the Congressman's position on the Budget Committee including briefings on current developments in the budget process, preparation for hearings and mark-ups; formulating proposals for the Budget Resolution and drafting report language. Tracked legislation and advised the Congressman on issues related to the budget, economics, trade, transportation, foreign affairs, health care and Social Security.

Research Consultant, Instituto Libertad y Democracia, Lima, Peru. May 1994-March 1995.

Supervised a team of researchers on several projects examining the economic and social effects of securing property rights and administrative simplification of government procedures. Studies included:

- The economic and social consequences of the break-up of a collective farm;
- The effect of land titling in urban shanty towns on land values, credit, quality of life, political life, and education;
- The impact of lowering the regulatory burden on small businesses.

Fellow, Political Economy Research Center, Bozeman, Montana. August 1993-November 1993.

PROFESSIONAL AWARDS, ACTIVITIES, AND MEMBERSHIPS

Member of the American Economic Association

Member of the American Educational Research Association

Referee for *Economic Inquiry*, *Journal of Economic Behavior and Organization*, *Research in Experimental Economics*, *Scandinavian Journal of Economics*.

PUBLICATIONS

“Experiments with the Pivot Process for Providing Public Goods,” (2000) with Greg Attiyeh and R. Mark Isaac, *Public Choice*, **102**: 95-114.

“Experimental Research on the EPA’s ‘Two Tier’ System for Marketable Emissions Permits,” (1999) with R. Mark Isaac and Stanley S. Reynolds, in C. Holt and R. M. Isaac eds., *Research in Experimental Economics, Volume 7*, JAI Press, Greenwich, CT.

“Experimental Tests of the Endowment Effect,” (1996) with Gang Deng, Praveen Kujal, Roland Michelitsch and Vernon L. Smith, August, *Journal of Economic Behavior and Organization*, **30**: 213-227

“Fairness: Effect on Temporary and Equilibrium Prices in Posted Offer Markets,” (1995) with Gang Deng, Praveen Kujal, Roland Michelitsch and Vernon L. Smith, *Economic Journal*, July, **105** (431): 938-950.

"An Experimental Investigation of the Hahn-Noll Revenue Neutral Auction for Emissions Licenses," (1993) with R.M. Isaac, David E. Pingry, and Stanley S. Reynolds, *Journal of Environmental Economics and Management*, January, p. 1-24.

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ANJU SUSAN KURIAKOSE

Email: anju@asu.edu

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EDUCATION:

Ph. D in Education.
Jul 2000 to present
Arizona State University, AZ, USA.
Master of Arts in English.
Arizona State University, AZ, USA.
Master of Arts in English
University of Bangalore, India
Bachelor of Arts in English
University of Kerala, India

Major: Language and Literacy
Cognate – Measurement
GPA: 4.00
Major: Applied Linguistics
GPA: 4.00
Major: Language and Literature

Major: Language and Literature

WORK EXPERIENCE:

Director of Accountability Systems and Reporting (Arizona Department of Education)
Responsible for Federal and State Accountability system in the state. Oversee Adequate yearly progress calculations and AZ LEARNS profiles. Facilitate the appeals meeting. Do presentations across the state about the reporting requirements and the statistical computations involved in the accountability systems.

Feb 2005 – present

Research Associate (Arizona Department of Education)

Data analysis and reporting to different units inside and outside the department.

Sep 2004 – Feb 2005

Faculty Associate (College of Education, Arizona State University Main)

Teaching BLE 598 which deals with issues in the assessment of bilingual children. Topics covered include reliability and validity of the instruments used today in our schools.
Teach BLE 409 which deals with second language learning and teaching.
Teach BLE 335 which deals with Language Variation in our schools.

Jan 2002 – present

Adjunct Faculty (College of Liberal Arts and Science, Gateway Community College)

Teaching ENG 107 and ENG 108 which are writing classes for Non-native speakers of English.

Spring 2004

Graduate assistant (College of Education, Arizona State University)

Develop and maintain web pages for a conference that was held at ASU.

May 2001 to Dec 2003

Instructional Designer (College of Education, Arizona State University)

Designing and developing training modules using Hyperfolio, Dreamweaver, Authorware and Inspiration at Technology Based Learning and Research, eLearning Project.

Oct 2000 to May 2001

Teaching Associate (Department of English, Arizona State University)

Instructing ENG 101, 102, 107 & 108 (Computer mediated classroom).

Jul 1999 to May 2001

Graduate Research Assistant (College of Education, Arizona State University)

Data management and statistical analysis using SPSS and EXCEL. Collect testing data from bilingual children. Score and analyze language testing data.

Jul 1999 to May 2001

Faculty (Department of English, Christ College, University of Bangalore)

Instructing Graduate and Undergraduate English courses. Overseeing the programs and instructing international students in ESL. *Aug 1997 to May 1999*

RESEARCH/PROJECTS:

Language Support and Dropout Status of Hispanic Children Using NELS Database:

The relationship between language support at school, native language support at home and dropout status of Hispanic students (N = 3171) was examined using the National Education Longitudinal Study of 1988 (NELS 88:92) data set. Logistic regression analysis was conducted to examine whether dropout status could be predicted from native language support at home and language support at school controlling for socioeconomic status (SES).

Pilot Study on Prop 203 Implementation: This was a qualitative study and was done using interview data about the support given to English Language Learners in the schools and the students and teachers' reactions to the implementation. Data was also collected from classroom observations. Worked with two immigrant students who were new to the country and interviewed them about the support they got from school.

Survey on Teacher's perception of ESL students in the classroom and the training: The survey was given to pre-service and in-service teachers. It was developed as a likert type scale (1-4) and comments were collected about the items. We are still in the process of collecting data for this study.

Study on how English language Learners behave while taking the standardized test:

Data was collected from teachers who have administered a standardized achievement test. This survey was designed as a likert type scale (1-3) and teachers were also asked to comment on the statements. Analysis was done computing descriptive statistics and factor analysis.

Factor Analysis on an Opinion Survey: The data was gathered from three hundred and ninety graduate students and was about potential barriers to graduate school. Factor analysis was conducted on this survey data and maximum likelihood extraction was used to look for communalities in this 14 -item survey

Study on Language testing: Data was gathered from English Language Learners on the Language test BSM II (Bilingual Syntax Measure) and was analyzed for items with low and high p-values. Also looked at its reliability and validity in testing English Language Learners.

Study on the syntax of code-switching: Collected data from bilingual speakers of Malayalam and English and analyzed it for where the speakers switched from one language to the other and the syntactical explanations for this phenomenon. Data was collected through questionnaires and interviews.

Study on the use of technology in the classroom: Qualitative data was collected from teachers who were identified as exemplary were observed and interviewed about how they used different forms of technology in the classroom and how the students benefited from the practice.

CONFERENCE PRESENTATIONS:

Arizona Language Minority Rights Roundtable (LMERRA) 2005: How teachers perceive validity in achievement test score for English Language Learners

American Educational Research Organization, Seventeenth Annual Conference 2004: Language proficiency and achievement: the relationship still a mystery.

American Educational Research Organization, Sixteenth Annual Conference 2003: Secondary Analysis of Large Data Sets: Perks and Pitfalls for Educational Researchers.

The 4th International Symposium on Bilingualism 2003: Session Chair for the Symposium session titled "Assessment of Bilinguals"

ASU student symposium on Linguistics 2002: Is there a "pure linguistic" measure of second language acquisition? An analysis of the Bilingual Syntax Measure.

COURSE WORK IN RESEARCH AND MEASUREMENT:

COE 503	Introduction to Qualitative Research
COE 502	Introduction to Quantitative methods
EDP 552	Multiple Regression and Correlation Methods
EDP 651	Methods and practices in Qualitative research
EDP 554	Analysis of Variance
LIN 575	Advanced Studies in Teaching ESL-Issues in Language Testing
EDP 550	Introduction to measurement in education
PSY 534	Psychometric methods
EDP 691	Statistical Analysis of Large Data sets
EDP 652	Multivariate procedures in Data Analysis

COMPUTER PROFICIENCY:

Languages: SQL, Visual Basic, and Java.

Applications: SPSS, Nudist, MS Word, MS Excel, MS Power Point, MS Access, Dreamweaver, Filemaker Pro, Authorware

Samuel A. DiGangi, Ph.D.
Arizona State University
Tempe, AZ 85287-0101
Office: 480.965.2047
Fax: 480.727.6767
E-mail: sam@asu.edu

Educational Background:

Ph.D., Special Education Technology integration Arizona State University	May 1990
M.Ed., Special Education Cross-categorical teacher certification Arizona State University	May 1988
B.S., Psychology Computer science University of Pittsburgh	December 1985
Professional Experience:	
Associate Vice President University Technology Office Arizona State University Tempe, AZ	2006-present
Associate Professor Special Education Program Arizona State University	1994-present
Executive Director Applied Learning Technologies Institute University Technology Office Arizona State University	2006-present
Assistant Vice Provost Digital Media and Instructional Technologies Information Technology Arizona State University	2004-2006
Manager, Instruction Support Information Technology Arizona State University	1996-2004

Grants and Sponsored Projects

Student Performance Data Project: Paradise Valley Unified School District

Principal Investigator

2005 - 2007

Paradise Valley Unified School District

\$1,500,000

Integrated Data to Enhance Arizona's Learning

Principal Investigator

2005 - Present

Arizona Department of Education

\$5,000,000

Positive Behavioral Intervention Supports in Arizona

Principal Investigator

2005 Present

Arizona Department of Education

(<http://abi.ed.asu.edu>)

\$350,000

Conexiones: Enhancing Education Through Technology

Co-Principal Investigator

2005 - Present

Migrant Child Education Program, Arizona Department of Education

\$175,000

(<http://conexiones.asu.edu>)

Meeting Demands for 21st Century Nurse Educators

Co-Principal Investigator

2004- Present

Health Resources and Services Administration

\$1,000,000

Publications:

Yu, C.H., Jannasch-Pennell, A.K., DiGangi, S.A., Stay, V., Kim, C. & Kilic, Z. (Accepted). Multi-Sensory Cognitive Learning as Facilitated in a Multimedia Tutorial for Item Response Theory. *Journal of Systemics, Cybernetics and Informatics*.

Yu, C. H., Jannasch-Pennell, A., DiGangi, S., Kim, C., & Andrews, S. (in press). A data visualization and data mining approach to response and non-response analysis in survey research. *Practical Assessment, Research and Evaluation*.

DiGangi, S.A., Kilic, Z., Yu, C.H., Jannasch-Pennell, A.K., Long, L., Kim, C., Stay, V., Kang, S. (in press). 1 to 1 Computing in Higher Education: A Survey of Technology Practices and Needs. *Association for the Advancement of Computing in Education*.

- Yu, C. H., Jannasch-Pennell, A., Stay, V., DiGangi, S., Kim, C., Long L., Lo, W. J., Kilic, Z., Kang, S., & Freeman, R. (2006). Multi-sensory cognitive learning as facilitated in a FLASH tutorial for Item Response Theory. *Proceedings of 4th International Conference on Education and Information Systems, Technologies and Applications*, Orlando, FL.
- Yu, C. H., DiGangi, S., & Jannasch-Pennell, A. (2006). Between automation and exploration: SAS graphing techniques for visualization of survey data. *Proceedings of Western Users of SAS Software Conference*, Irvine, CA.
- Yu, C. H., Jannasch-Pennell, A., DiGangi, S., Lo, W.J., Kim, C., Stay, V. & Long, L. (2006). Interactive animation for learning Item Response Theory and misfit identification. *Proceedings of the 2006 Joint Statistical Meeting, Statistical Education Section* [CD-ROM]. Alexandria, VA: American Statistical Association
- Yu, C. H., DiGangi, S., & Jannasch-Pennell, A. (2006). Between automation and exploration: SAS graphing techniques for visualization of survey data. *Proceedings of Western Users of SAS Software Conference* [CD-ROM], Irvine, CA.
- Kilic, Z., Yu, C. H., Jannasch-Pennell, A., & DiGangi, S. (2006). Accessing our research bibliographies online: Better or just different? *Proceedings of 2006 Educause SouthWest Conference*.
- Andrews, S., DiGangi, S. & Jannasch-Pennell, A. (2004). The Digital Divide: Focused research results on peer mentoring, scalability and occupational self efficacy in a homebased technology integration program. *21st Annual Proceedings of the Association for Educational Communications and Technology Research and Theory Division: Selected Research and Development Papers*. Chicago, IL: AECT.

Presentations

- Yu, C. H., Jannasch-Pennell, A., DiGangi, S., Andrews, S., & Kim, C. (2007, August). *Nonresponse analysis in survey research*. Paper accepted for the 2007 Joint Statistical Meeting, Salt Lake City, UT.
- Digangi, S., Kilip, Z., Andrews, S., Jannasch-Pennell, A., Flores, Y., Cohn, S., Yu, C.H. & Dorsett, L. (2007, April). *Representations of immigrant identity in a technology education outreach program*. Paper accepted for the 2007 Annual Meeting of the American Educational Research Association, Chicago, IL.
- Jannasch-Pennell, A., Digangi, S., Kilip, Z. & Andrews, S., (2007, April). *Visual ethnography and identity in an outreach program for children of migrant workers*. Paper accepted for the 2007 Annual Meeting of the American Educational Research Association, Chicago, IL.
- Andrews, S., Jannasch-Pennell, A. & Digangi, S. (2007, April). *Perceptions of the United States: Ethics and influences in a digital video program for new immigrant children*. Paper

accepted for the 2007 Annual Meeting of the American Educational Research Association, Chicago, IL.

- DiGangi, S.A., Jannasch-Pennell, A.K., Flores, Y., & Zucker, S. (2007, February). *Role of school-family collaboration in schoolwide positive behavior interventions and supports for students with developmental disabilities*. Paper presented at the 10th International Division on Developmental Disabilities Conference, Kona, Hawaii
- DiGangi, S.A., Jannasch-Pennell, A.K. & Yu, C.H. (2007, February). *A Data-Mining Approach to Differentiate Predictors of Retention Between Online and Traditional Student*. Educause Southwest Conference, Austin, TX.
- DiGangi, S.A & Jannasch-Pennell, A.K. (2007, January). *Integrated Data to Enhance Arizona's Learning*. Presentation made at the 2007 Westnet Conference, Phoenix, AZ.
- Kimerer, K., Middleton, J., DiGangi, S. A., Artiles, A., & Rutherford, R. B. (2006, November). *Arizona State University Latin American student teaching initiative*. 30th Annual Teacher Educators for Children with Behavior Disorders National Conference, Tempe, AZ.
- Sullivan, A., Flores, Y., DiGangi, S.A., & Jannasch-Pennell, A.K. (2006, November). *Reducing Suspensions through School-wide Positive Behavioral Support*. 30th Annual Teacher Educators for Children with Behavior Disorders National Conference, Tempe, AZ
- DiGangi, S.A. & Jannasch-Pennell, A.K. (2006, November). *Integrated Data to Enhance Arizona's Learning*. Presentation made at the Western Cooperative for Educational Telecommunications Conference, Portland, OR.
- Yu, C. H., Killic, Z., DiGangi, S.A, & Jannasch-Pennell, A.K. (2006 October). *Introduction to IRT and Item Banking*. Paper presented at the 19th Annual Conference of Arizona Educational Research Organization, Tempe, AZ.
- Yu, C. H., DiGangi, S.A, & Jannasch-Pennell, A.K. (2006, October). *Between automation and exploration: SAS graphing techniques for visualization of survey data*. Western Users of SAS Software Conference, Irvine, CA.
- Rutherford, R. B., Bimrose, J., Kimerer, K., Maclauchlan, S., DiGangi, S.A., & Lamb, E. (2006). *Arizona State University Central American student teaching initiatives*. Conference of the Association of the American Schools of Central America, Colombia, Caribbean, and Mexico, Bogotá, Colombia.
- Yu, C.H., Freeman, R., Jannasch-Pennell, A.K., DiGangi, S.A., Kim, C., Stay, V., Lo, W., & Long, L. (2006, August). *Interactive Animation for Learning IRT and Misfit Identification in Item Response Theory*. Paper accepted for presentation at the 2006 Joint Statistical Meetings conference, Seattle, WA.

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Arizona State University
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Tempe, AZ 85287-0101
v. 480/965.3906, f. 480/727.6767
angel@asu.edu

Educational Background

Ph.D., Curriculum and Instruction

Special Education/ Technology Integration

Arizona State University

Dissertation: An Investigation of Learner Control and Navigation
in a Hypertext-Based Instructional Environment

May 1996

Master of Arts, Special Education/ Technology Integration

Arizona State University

Thesis: Impact of Instructional Grouping and Presentation Type
on Student Decision Making in a Computer-Mediated Environment

December 1994

Bachelor of Science, Sociology

Arizona State University

December 1991

Professional Experience

Assistant Vice President

University Technology Office

Arizona State University

2006- Present

Director of Research

Applied Learning Technologies Institute

Arizona State University

2006 - Present

Director

Technology Enhanced Learning and Research

Digital Media and Instructional Technologies

Information Technology

Arizona State University

2005-2006

Manager

Technology Enhanced Learning and Research

Digital Media and Instructional Technologies

Information Technology

Arizona State University

2004- 2005

Research Specialist

Instruction and Research Support

Information Technology

Arizona State University

1996 2004

Tempe, AZ

Faculty Associate
College of Education
Special Education Program

1996 - Present

Grants and Sponsored Projects

Student Performance Data Project: Paradise Valley Unified School District

Principal Investigator

2005 - 2007

Paradise Valley Unified School District

\$1,500,000

Integrated Data to Enhance Arizona's Learning

Principal Investigator

2005 - Present

Arizona Department of Education

\$5,000,000

Positive Behavioral Intervention Supports in Arizona

Principal Investigator

2005 - Present

Arizona Department of Education

(<http://abi.ed.asu.edu>)

\$350,000

Conexiones: Enhancing Education Through Technology

Co-Principal Investigator

2005 - Present

Migrant Child Education Program, Arizona Department of Education

\$175,000

(<http://conexiones.asu.edu>)

Meeting Demands for 21st Century Nurse Educators

Co-Principal Investigator

2004- Present

Health Resources and Services Administration

\$1,000,000

Publications:

Yu, C.H., Jannasch-Pennell, A.K., DiGangi, S.A., Stay, V., Kim, C. & Kilic, Z. (Accepted).

Multi-Sensory Cognitive Learning as Facilitated in a Multimedia Tutorial for Item Response Theory. *Journal of Systemics, Cybernetics and Informatics*.

- Yu, C. H., Jannasch-Pennell, A., DiGangi, S., Kim, C., & Andrews, S. (in press). A data visualization and data mining approach to response and non-response analysis in survey research. *Practical Assessment, Research and Evaluation*.
- DiGangi, S.A., Kilic, Z., Yu, C.H., Jannasch-Pennell, A.K., Long, L., Kim, C., Stay, V., Kang, S. (in press). 1 to 1 Computing in Higher Education: A Survey of Technology Practices and Needs. *Association for the Advancement of Computing in Education*.
- Yu, C. H., Jannasch-Pennell, A., Stay, V., DiGangi, S., Kim, C., Long L., Lo, W. J., Kilic, Z., Kang, S., & Freeman, R. (2006). Multi-sensory cognitive learning as facilitated in a FLASH tutorial for Item Response Theory. *Proceedings of 4th International Conference on Education and Information Systems, Technologies and Applications*, Orlando, FL.
- Yu, C. H., DiGangi, S., & Jannasch-Pennell, A. (2006). Between automation and exploration: SAS graphing techniques for visualization of survey data. *Proceedings of Western Users of SAS Software Conference*, Irvine, CA.
- Yu, C. H., Jannasch-Pennell, A., DiGangi, S., Lo, W.J., Kim, C., Stay, V. & Long, L. (2006). Interactive animation for learning Item Response Theory and misfit identification. *Proceedings of the 2006 Joint Statistical Meeting, Statistical Education Section* [CD-ROM]. Alexandria, VA: American Statistical Association
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Presentations

- Yu, C. H., Jannasch-Pennell, A., DiGangi, S., Andrews, S., & Kim, C. (2007, August). *Nonresponse analysis in survey research*. Paper accepted for the 2007 Joint Statistical Meeting, Salt Lake City, UT.
- DiGangi, S., Kilip, Z., Andrews, S., Jannasch-Pennell, A., Flores, Y., Cohn, S., Yu, C.H. & Dorsett, L. (2007, April). *Representations of immigrant identity in a technology education outreach program*. Paper accepted for the 2007 Annual Meeting of the American Educational Research Association, Chicago, IL.

- Jannasch-Pennell, A., DiGangi, S., Kilip, Z. & Andrews, S., (2007, April). *Visual ethnography and identity in an outreach program for children of migrant workers*. Paper accepted for the 2007 Annual Meeting of the American Educational Research Association, Chicago, IL.
- Andrews, S., Jannasch-Pennell, A. & DiGangi, S. (2007, April). *Perceptions of the United States: Ethics and influences in a digital video program for new immigrant children*. Paper accepted for the 2007 Annual Meeting of the American Educational Research Association, Chicago, IL.
- DiGangi, S.A., Jannasch-Pennell, A.K., Flores, Y., & Zucker, S. (2007, February). *Role of school-family collaboration in schoolwide positive behavior interventions and supports for students with developmental disabilities*. Paper presented at the 10th International Division on Developmental Disabilities Conference, Kona, Hawaii
- DiGangi, S.A., Jannasch-Pennell, A.K. & Yu, C.H. (2007, February). *A Data-Mining Approach to Differentiate Predictors of Retention Between Online and Traditional Student*. Educause Southwest Conference, Austin, TX.
- DiGangi, S.A & Jannasch-Pennell, A.K. (2007, January). *Integrated Data to Enhance Arizona's Learning*. Presentation made at the 2007 Westnet Conference, Phoenix, AZ.
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- DiGangi, S.A. & Jannasch-Pennell, A.K. (2006, November). *Integrated Data to Enhance Arizona's Learning*. Presentation made at the Western Cooperative for Educational Telecommunications Conference, Portland, OR.
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- Yu, C. H., DiGangi, S.A, & Jannasch-Pennell, A.K. (2006, October). *Between automation and exploration: SAS graphing techniques for visualization of survey data*. Western Users of SAS Software Conference, Irvine, CA.

JOHN SHADEGG
3rd DISTRICT, ARIZONA

WASHINGTON, DC OFFICE:
508 CANNON HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-3381
FAX: (202) 225-3482

ARIZONA OFFICE:
301 EAST BETHANY HOME ROAD
SUITE C-7E
PHOENIX, AZ 85012
(602) 283-6900
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<http://johnshadegg.house.gov>



Congress of the United States
House of Representatives
Washington, DC 20515-0304

ENERGY AND COMMERCE
SUBCOMMITTEES:
ENERGY AND AIR QUALITY
HEALTH
ENVIRONMENT AND
HAZARDOUS MATERIALS
REPUBLICAN STUDY COMMITTEE

March 13, 2007

Ms. Margaret Spellings
Secretary
US Department of Education
400 Maryland Ave. SW
Washington, D.C. 20202-0001

Re: Statewide Longitudinal Data Systems CFDA 84.372A

Dear Secretary Spellings:

The Arizona Department of Education (ADE) has submitted a grant application to your office to fund its Statewide Longitudinal Data Systems program.

As you are aware, educational agencies are increasingly reliant upon data to assess student academic progress and measure accountability methods in a timely and accurate manner. The Arizona Department of Education intends to use this grant to expand and accelerate the scope and timeframe of its investment in data systems through the Arizona Educational Data Warehouse and to enhance data collection efforts associated with cleansed data collection.

In addition, the data collection protocols envisioned under this program would utilize existing unique student and teacher identifiers to collate, centralize, report, and map data for the ADE. This program would also develop and execute an integration plan for the Data Warehouse in order for the state education agency to efficiently respond to the Education Data Exchange Network for accountability purposes as mandated under No Child Left Behind. The grant would also allow for the development and implementation of plans to further align the data collection system with the 10 essential elements of the data quality campaign.

Further, this grant would support user-end education on how to use performance measuring data and data visualization toolsets and develop data dictionary and a knowledge base including comprehensive business rules and data source documentation. Attention will also be paid to developing and executing a plan to create a web-based application supporting rural districts and Bureau of Indian Affairs schools to allow data entry with minimal district resource requirements.

Finally, the project will enhance technical security policies and their implementation.

Ms. Margaret Spellings
page 2

Arizona is a rapidly-growing state with a burgeoning school-age population. The successful application of this grant will greatly assist the state in ensuring that up-to-date data is utilized at all levels for academic assessment and accountability. I urge your thoughtful consideration of this application.

Sincerely,



John Shadegg

Congressman

Arizona 3rd District

U.S. House of Representatives

JBS:br

GABRIELLE GIFFORDS
8TH DISTRICT, ARIZONA
WASHINGTON OFFICE
502 CANNON HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-2542

DISTRICT OFFICES:
TUCSON OFFICE
1881 NORTH SWAN, SUITE 112
TUCSON, AZ 85712
(520) 881-3588

COCHISE COUNTY OFFICE
77 CALLE PORTAL, SUITE B-100
SIERRA VISTA, AZ 85635
(520) 459-3115



Congress of the United States
House of Representatives
Washington, DC 20515-0308

COMMITTEES:
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AND ENVIRONMENT
FOREIGN AFFAIRS
SUBCOMMITTEE ON
THE WESTERN HEMISPHERE

March 13, 2007

The Honorable Margaret Spellings
Secretary of Education
United States Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

Re: Statewide Longitudinal Data Systems CFDA 84.372A

Dear Secretary Spellings:

I am writing in support of a competitive grant application submitted to your department by the Arizona Department of Education for the Statewide Longitudinal Data Systems grant.

As you are aware, educational agencies are increasingly reliant upon data to assess student academic progress and measure accountability methods in a timely and accurate manner. The Arizona Department of Education (ADE) intends to utilize these grant monies to expand and accelerate the scope and timeframe associated with state investment in data systems through the Arizona Educational Data Warehouse and will enhance data collection efforts associated with cleansed data collection.

In addition, the data collection protocols envisioned under this program would utilize existing unique student and teacher identifiers to collate, centralize, report and map data for the ADE. This program would also develop and execute an integration plan for the Data Warehouse in order for the state education agency to efficiently respond to the Education Data Exchange Network for accountability purposes as mandated under No Child Left Behind. The grant would also allow for the development and implementation of plans to further align the data collection system with the 10 essential elements of the data quality campaign.

Further, the dollars used for this grant would support user-end education on how to use performance measuring data and data visualization toolsets and develop data dictionary and a knowledge base including comprehensive business rules and data source documentation. Attention will also be paid to developing and executing a plan to create a

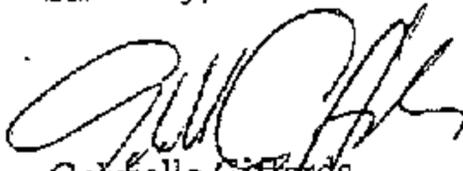
web-based application supporting rural districts and Bureau of Indian Affairs schools to allow data entry with minimal district resource requirements.

Finally, the project will enhance technical security policies and their implementation.

Arizona is a rapidly-growing state with a burgeoning school-age population. The successful application of this grant will greatly assist the state in ensuring that up-to-date data is utilized at all levels for academic assessment and accountability.

I urge your thoughtful consideration of this application.

Sincerely,



Gabrielle Giffords
Member of Congress

HARRY E. MITCHELL
5TH DISTRICT, ARIZONA

2434 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-2190

7201 EAST CAMELEACK ROAD STE 335
SCOTTSDALE, ARIZONA 85251
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OVERSIGHT & INVESTIGATION

SCIENCE AND TECHNOLOGY
SCIENCE & INNOVATION

Congress of the United States
House of Representatives

March 9, 2007

The Honorable Margaret Spellings
Secretary of Education
United States Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Spellings:

I am writing in support of a competitive grant application submitted to your department by the Arizona Department of Education for the Statewide Longitudinal Data Systems grant.

The Arizona Department of Education (ADE) intends to use the grant monies to expand and accelerate the scope and timeframe associated with state investment in data systems through the Arizona Educational Data Warehouse.

This program would develop and execute an integration plan for the Data Warehouse in order for ADE to efficiently respond to the Education Data Exchange Network for accountability purposes as mandated under No Child Left Behind. The grant would allow for the development and implementation of plans to further align the data collection system with the ten essential elements of the data quality campaign.

I am also pleased to know that if the ADE receives these grant monies attention will be paid to developing and executing a plan to create a web-based application supporting rural districts and Bureau of Indian Affairs schools to allow data entry and minimal district resource requirements.

Arizona is a rapidly growing state with a burgeoning school-age population. The successful application of this grant will greatly assist the Arizona Department of Education in ensuring that up-to-date data is utilized at all levels for academic assessment and accountability.

I urge your thoughtful consideration of this application.

Sincerely,

A handwritten signature in cursive script that reads "Harry E. Mitchell".

Harry E. Mitchell
MEMBER OF CONGRESS

HEM/at



State of Arizona
Department of Education

Tom Horne
Superintendent of
Public Instruction

March 8, 2007

The Honorable Margaret Spellings
Secretary of Education
United States Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

Re: Statewide Longitudinal Data Systems CFDA 84.372A

Dear Secretary Spellings:

I am writing as Arizona's schools chief in support of a competitive grant application submitted to your department by the Arizona Department of Education for the Statewide Longitudinal Data Systems grant (CFDA 84.372A).

As you are aware, educational agencies are increasingly reliant upon data to assess student academic progress and measure accountability methods in a timely and accurate manner. The Arizona Department of Education (ADE) intends to utilize these grant monies to expand and accelerate the scope and timeframe associated with state investment in data systems through the Arizona Educational Data Warehouse and will enhance data collection efforts associated with cleansed data collection.

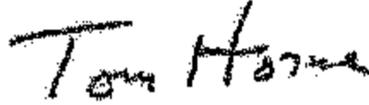
In addition, the data collection protocols envisioned under this program would utilize existing unique student and teacher identifiers to collate, centralize, report and map data for the ADE. This program would also develop and execute an integration plan for the Data Warehouse in order for the state education agency to efficiently respond to the Education Data Exchange Network for accountability purposes as mandated under No Child Left Behind. The grant would also allow for the development and implementation of plans to further align the data collection system with the 10 essential elements of the data quality campaign.

Further, the dollars used for this grant would support user-end education on how to use performance measuring data and data visualization toolsets and develop data dictionary and a knowledge base including comprehensive business rules and data source documentation. Attention will also be paid to developing and executing a plan to create a web-based application supporting rural districts and Bureau of Indian Affairs schools to allow data entry with minimal district resource requirements.

Finally, the project will enhance technical security policies and their implementation.

Arizona is a rapidly-growing state with a burgeoning school-age population. The successful application of this grant will greatly assist the state in ensuring that up-to-date data is utilized at all levels for academic assessment and accountability.

Best regards,

A handwritten signature in black ink that reads "Tom Horne". The signature is written in a cursive style with a prominent initial "T".

Tom Horne
Superintendent of Public Instruction

Project Timeline

The Arizona Education Data Warehouse’s (AEDW), at its current scope, is being developed and implemented over a two year period. The extended AEDW supported by the Student Longitudinal Data Systems (SLDS) grant will extend the period to three years to accommodate the expanded scope. Objectives, milestones, deliverables and artifacts will be evaluated on a quarterly basis to measure the project’s progress, identify challenges and adapt accordingly. To make the highest and best use of the monies appropriated in SLDS, ADE will develop a plan that level sets all resources across the varied project’s objectives so mission critical resources are available when needed.

As noted in the project narrative, the AEDW is being managed utilizing ADE’s existing project management processes. The three year AEDW development plan exercises IT’s seven phase development cycle to provide process, oversight and accountability to the project. These phases include the:

1. Planning phase
2. Concepts & Requirements gathering phase
3. Functional Specifications generation phase
4. Design Specifications generation phase
5. Construction phase
6. Verification phase
7. Deployment & Evaluation

Each component and deliverable of the AEDW will be realized through this process.

The following table delineates the milestones and deliverables include in the initial AEDW project plan. More detailed tasks, measures and milestones will be documented once the detailed project plan is created.

Milestones	Project Year	Quarter
Create project initiation artifacts	1	Q1
Create detailed project plan		
Identify and regularly assemble expanded steering committee membership to include students and parents, teachers, schools and districts, universities and researchers, the business community and the public		
Gather stakeholder communications requirements		
Create communications requirements artifacts.		
Schedule and convene IT staff member team meeting for project presentation		
Gather requirements for IDEAL portal expansion and other required communication methods (JAD sessions)		
Identify members of new candidate interview teams		
Complete the AEDW team organizational model		
Commence collaboration with Maine and Connecticut on data		

dictionary, SIF components and federal reporting standards alignment.		
Review existing relevant policies and identify gaps for AEDW.		
Schedule and convene AEDW security policy and procedures team.		
Collaboratively gather requirements for data dictionary and knowledge base solutions		
Construct and convene AEDW systems and network team		
Gather requirements for data visualization/ performance measure toolset(s).		
Work with ADE research and evaluation (R&E) and state higher education institutions to solicit the more detailed analysts requirements of data usage		
Gather requirements for additional data quality policies and methodologies		
Gather requirements for long range scope of AEDW with respect to exactly which data stores will be included		
Gather requirement for staff professional development		
Create security requirements document	1	Q2
Create data quality processes and policies artifacts.		
Create data dictionary and knowledge base solution(s) requirements		
Review and complete due diligence on data dictionary and knowledge base solution providers.		
Purchase data dictionary solution		
Purchase knowledge base management solution		
Install and configure Microsoft operations manager (MOM) in infrastructure to collect systems performance metrics.		
Perform capacity, storage, bandwidth, environmental, ports, etc. requirements		
Create and execute hardware purchase plan		
Gather requirements for single sign-on solution (SSO)		
Finalize requirements collaboratively with Maine and Connecticut for the upgraded data transport SIF standards.		
Create data transport design artifacts.		
Pilot funding and access data integration		
Start staff professional development training		
Gather requirements for reporting engine		
Gather requirements for data promotion and archival strategy	1	Q3
Create SSO requirements artifacts.		
Purchase hardware for AEDW data storage and infrastructure.		
Gather requirements for data promotion and archival		
Install hardware		
Create data promotion and archival artifacts.		
Pilot data dictionary and knowledge base software		
Gather requirements for web based data collection application for		

remote rural schools with limited resources		
Gather requirements for the AEDW integration into ADE's DR/BCP strategies.		
Create DR/BCP artifacts.		
Gather requirements for web based data collection solution for small and rural schools	1	Q4
Purchase, install and configure data visualization/performance monitoring toolset(s)		
Hire additional trainer resource		
Design curriculum for the varied AEDW user groups		
Gather requirements for training materials and technical application support including streaming servers.		
Commence and continue development of SIF data transfer agents.		
Work with stakeholders to assure the plans for a sustainable revenue source is executed		
Test and deliver end user training classes	2	Q1
Gather requirements regarding service level agreements (SLAs) and internal (SLOs)		
Deploy data visualization/performance measurement toolset to limited stakeholders		
Integrate selected reporting engine		
Begin roll-out AEDW to limited stakeholders	2	Q2
Gather requirement for public and student access		
Roll out training		
Work with legislature to assure funding support		
Implement new SSO solution testing environment	2	Q3
Deploy new SSO		
Annual project reevaluation exercise		
Expand IDEAL to include selected SSO solution	2	Q4
Rollout AEDW to student and public pilot team		
Continue integration of ADE managed data stores based upon detailed plan	3	Q1
Full roll-out of AEDW to all stakeholders	3	Q2
On-going reevaluation of operations and expansion		
Finalize project documentation	3	Q3
Annual project evaluation exercise		

Project closure	3	Q4

Project Narrative

Other Narrative

Attachment 1:

Title: Pages: Uploaded File: **2629-Mandatory_AZ-SLDS-Round2-Budget_Justification_FINAL.pdf**

Attachment 2:

Title: Pages: Uploaded File: **1527-AZ_Indirect_Cost_Rate_Agreement_2005-210.pdf**

Attachment 3:

Title: Pages: Uploaded File: **9889-AZ_EDEN_State_Submission_Plan_2006-07_Dec2006.pdf**

Arizona Department of Education (ADE)
Statewide Longitudinal Data System Grant, Round 2
"Arizona Education Data Warehouse"
March 2007
Appendix B – Budget Justification

1. Personnel

Personnel costs include a 2.5% annual Cost Of Living Adjustment (COLA) for years 2 and 3.

This project will be staffed with a combination of full-time employees and contractors.

Existing FTE staff. In order to leverage existing institutional knowledge and to maximize cross-pollination of new knowledge gained on this project with other ongoing project efforts (such as the State's existing data warehouse project), many full-time staff will work part time on this project and part time on other related projects. The smallest incremental split of time will be 50%, so that staff does not lose momentum by continually switching gears between assignments. At the termination of this project funded by this SLDS grant, those full-time staff will revert to working on other projects full time.

2. Fringe Benefits

ADE calculates fringe benefits at a flat rate for FTEs. The current rate is (b)(4). No fringe benefits are included for staff hired on a contractual basis.

3. Travel

ADE's travel budget has two general components.

Information sharing with grantee and collaboration states. Several trips are budgeted for information sharing not only about this grant opportunity itself, but also about education data in general. Each year two people from the project team will travel to the summer NCES Data Conference, to the winter NCES MIS Conference, to collaboration states (Maine and Connecticut), and to Washington, DC, grantee state conference (a noted Special Requirement for this grant).

Stakeholder professional development and training. Based on feedback from prior grantee states, a successful SLDS project contains a heavy professional development and training component. This resonates particularly with Arizona, which covers a large geographic territory. New system deployment and training always poses a difficult and often insurmountable challenge to LEAs that are in remote, rural locations. More often than not, this distance and the expense of travel makes it impossible for these LEAs to avail themselves of centrally offered training. Just one case that illustrates Arizona's travel-related idiosyncrasies is Palominas Elementary District in Arizona's Cochise

County. While Palominas isn't the most remote district in Arizona, it is expansive and distant. It is located in the southeastern corner of Arizona, sharing a border with Mexico. Palominas covers 192 square miles and has only three schools. Traveling is a constant drain on their budget and it continually vies with other equally crucial demands on their staffs' time.

In order for this project to succeed, it will involve considerable travel by staff, so this component is large. The stakeholder professional development and training travel component lists two types of trips: same-day trips and overnight trips.

- Two trips per month in each year of the grant (early on for information gathering, later on for training).
- Travel is via state vehicle, with a cost of \$28 per day.
- State vehicle fuel cost is \$3 per gallon, calculated at 15 miles per gallon.
- Sixteen of the twenty-four trips each year will be single-day trips averaging 200 miles per trip.
- Eight trips each year (two trips to each of the four remotest areas of the state) will be three-day trips so that we can most economically serve multiple stakeholders. The state per diem rate (\$47.66) and average hotel rate (\$91.22) apply to these trips.

4. Equipment

"One-time setup costs for new staff" include the desktop or laptop computer and associated hardware for new staff only. The Arizona standard cost at this time is \$2700. These positions will not require a charge for desk, modular furniture, or chair, as these items already exist in the new space where the IT team is about to relocate.

5. Supplies

"Supplies" covers print shop printing and copying supplies, mailing costs, and other miscellaneous costs associated with supporting a major implementation project. This is set at \$4000 per year for the project.

6. Contractual

Budget for contractual labor assumes an 8-hour work day, and a 5-day work week.

Contractual rates include a 2.5% annual Cost Of Living Adjustment (COLA).

Contractual services include use of a Project Manager and a Business Analyst, both of whom have solid experience working with ADE in these respective capacities.

The services of a Data Warehouse Designer/Architect will also be engaged for this project. Just as this hot skill set is desirable at ADE it is also desirable in the general marketplace as well, and our experience has shown that it is a tough position to fill with

an FTE. For the limited duration of this project, ADE will seek to utilize consultant services and to bring our FTE staff up to speed on these skills.

7. Construction

There is no construction component to this grant.

8. Other

Software Licenses

Software licenses are required for the 9 additional staff members being added for this project. These licenses are the standard suite of tools used by the existing AEDW project and are costed out at \$2500.

Operating Expenses

Operating Expenses per staff headcount includes is an Arizona agency standard. ADE costs include IT services charge, risk management, telecommunications, internal printer/copier, and rent. Current Arizona "Other" expense cost points are noted in the table below.

Risk Management	\$	836
MIS	\$	925
Telecom	\$	1,500
Internal Printer/Copier	\$	250
Rent	\$	<u>1,240</u>
Total	\$	4,751

10. Indirect Costs

Arizona calculates Indirect Costs at 14.4% of Direct Costs. Only the first \$25,000 of each **Contracted Services** is subject to Indirect Cost according to Arizona Department of Education policy.

11. Training Stipends

There is no training stipend component to this proposal.



UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE CHIEF FINANCIAL OFFICER

JUN 22 2007

Ms. Vicki G. Salazar
Deputy Associate Superintendent
of Finance
Arizona Department of Education (ADE)
1535 West Jefferson
Phoenix, Arizona 85007

Reference: Indirect Cost Rate Agreement No. 2005-210

Dear Ms. Salazar:

Enclosed please find an original and one copy of the referenced Indirect Cost Rate Agreement. The rate(s) contained therein may be used to recover indirect costs on Federal grants, contracts, and other agreements allowing reimbursement of indirect costs at variable rates.

Please have the original copy of the Agreement signed by an authorized official of ADE and returned within thirty (30) calendar days of receipt to the following address:

Richard T. Mueller, Director
Indirect Cost Group, OCFO
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202-4450

The enclosed copy of the Agreement should be retained for your files.

Your proposal for a Predetermined Rate based on actual costs for the year ending June 30, 2007, is due in this office by December 31, 2007. Please send the proposal, and supporting schedules and documentation, to the above address.

Please refer questions in this matter to Alan Shumard at (202) 377-3841 or by e-mail at alan.shumard@ed.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Mueller".

Richard T. Mueller
Director, Indirect Cost Group
Office of the Chief Financial
Officer

Enclosures

400 MARYLAND AVE., S.W., WASHINGTON, DC 20202
www.ed.gov

Our mission is to ensure equal access to education and to promote educational excellence throughout the nation.

Y900

COPY

INDIRECT COST RATE AGREEMENT
STATE EDUCATION AGENCY

ORGANIZATION:

Arizona Department of Education
1535 West Jefferson
Phoenix, Arizona 85007

DATE: JUN 22 2007AGREEMENT NO. 2005-210

FILING REFERENCE: This replaces
previous Agreement No. 2004-118
dated August 12, 2004

The purpose of this Agreement is to establish indirect cost rates for use in award and management of Federal contracts, grants, and other assistance arrangements to which Office of Management and Budget (OMB) Circular A-87 applies. The U.S. Department of Education negotiated the rates pursuant to the authority cited in Attachment A of OMB Circular A-87.

This Agreement consists of four parts: Section I - Rates and Bases; Section II - Particulars; Section III - Special Remarks; and Section IV - Approvals.

Section I - Rate(s) and Base(s)

TYPE	Effective Period		Rate	Base	Coverage	
	From	To			Location	Applicability
Fixed *	07-01-2003	06-30-2004	13.9%	(1)	All	(2)
Fixed *	07-01-2004	06-30-2005	9.0%	(1)	All	(2)
Predetermined	07-01-2005	06-30-2008	14.4%	(1)	All	(2)

* Fixed With Carry forward.

(1) Total direct costs less items of equipment, alterations and renovations, the portion of each subaward in excess of \$25,000, and flow-through funds.

(2) All federal projects.

Treatment of Fringe Benefits: Generally, the Organization treats fringe benefits applicable to direct salaries and wages as direct costs. As required by OMB Circular A-87, Attachment B (11)(d)(3), it treats payments to separating employees for unused leave as indirect costs.

Capitalization Policy: Non-expendable items with a unit cost of \$1,000 or more, and an estimated useful life of over three years, are classified as Equipment.

COPY

ORGANIZATION: ARIZONA DEPARTMENT OF EDUCATION

Page 03

Section III - Special Remarks

1. This Agreement is effective on the date of approval by the Federal Government.
2. Questions regarding this Agreement should be directed to the Negotiator.
3. Approval of the rate(s) contained herein does not establish acceptance of the State Education Agency's total methodology for the computation of indirect cost rates for years other than the year(s) herein cited.
4. Federal programs currently reimbursing indirect costs to this State Education Agency by means other than the rate(s) cited in this Agreement shall be credited for such costs, and the applicable rate cited herein applied to the appropriate base to identify the proper amount of indirect costs allocable to the program(s).

Section IV - Approvals

For the State Education Agency:

For the Federal Government:

Arizona Department of Education
1535 West Jefferson
Phoenix, Arizona 85007

U.S. Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202-4450

Vicki G. Salazar
Signature

[Signature]
Signature

Vicki Salazar
Name

Richard T. Mueller
Name

Associate Supt. Business
Title
Information and Finance

Director, Indirect Cost Group
Title

10-28-05
Date

JUN 22 2005
Date

Alan R. Shumard
Negotiator

(202) 377-3841
Telephone Number

State: **Arizona**
Active LEAs: **610**
Active schools: **2050**

File #	File Name	Included Data Groups	SEA How many states will you submit?	LEA How many LEAs will you submit?	School How many schools will you submit?	Month The File Will Be Provided	Notes	For SEA Use **	
N002/X002	Children with Disabilities	74	1	610	2050	Feb-07		Sean	
N028/X028	IDEAL School Age School Computer	525				MMYYYY	Will not be submitting this		
N029/X029	Directory	1, 4, 5, 7, 8, 9, 10, 11, 12, 16, 18 (xml only), 21, 27, 453, 458, 529, 551, 559, 570, 571, 531	1	610	2050	Jan-07		John	
N039	Grades Offered	18		610	2050	Feb-07		John	
N047/X047	LEP	116	1	610	2050	Mar-07			
N052/X052	Membership	39	1	610	2050	Feb-07	This will need to be submitted at least once more later in the year.	John	
N058/X058	Paraprofessionals	412		230	1460	Mar-07		Diganta	
N059/X059	Staff FTE	528	1	230		Mar-07		Diganta	
N061/X061	Teachers New to District This Year	410				MMYYYY	Will not be submitting this.		
N063/X063	Elementary Classes Taught by Teacher Qualification	381	1	610	2050	MMYYYY	We are starting a new application this year to collect this data. At this point we are not certain when we will be able to provide this data. We will be doing another update of this plan in late February and we will know more		
N064/X064	Secondary Classes in Core Academic Subjects Taught by Teacher Qualification	383	1	610	2050	MMYYYY	We are starting a new application this year to collect this data. At this point we are not certain when we will be able to provide this data. We will be doing another update of this plan in late February and we will know more		
N067/X067	Title III Teachers	422				MMYYYY	Will not be submitting this.		
N070/X070	Special Education Teachers	486	1	610		Nov-07	We don't collect this data until the end of the school year.	Sean	
N089/X089	Children with Disabilities	613	1	610		Feb-07		Sean	
N099/X099	IDEAL Early Childhood Special Education Personnel	609	1	610		Nov-07	We don't collect this data until the end of the school year.		

Early Submission Files
January 2007 - March 2007

[Worksheet Instructions](#)
[Support](#)

State: Arizona
Active LEAs: 610
Active schools: 2050

File #	File Name	Included Data Groups	SEA		LEA		School		Month The File Will Be Provided**	Notes	For SEA Use**	
			How many states will you submit?	How many LEAs will you submit?	How many LEAs will you submit?	How many schools will you submit?						
M101X101	NCLB Start of School Year Status	22, 31, 33, 34, 36, 454, 460, 524, 573, 604, 644, 662, 665 (New)	1	610	610	2050	Mar-07		John and TBD			
M112X112 (New)	Special Education Paraprofessionals	647	1	610			Nov-07	We don't collect this data until the end of the school year.				

* If no data is entered into the field "Month the File Will be Provided", it will default to Jan-2007.

** The last three columns are available for SEA use. This data will not be loaded into EDEN.

Budget Narrative

Budget Narrative

Attachment 1:

Title: Pages: Uploaded File: **7211-Mandatory_AZ-SLDS-Round2-Budget_Narrative_FINAL.pdf**

Attachment 2:

Title: Pages: Uploaded File: **9995-AZ-SLDS-Round2-Budget_Justification_FINAL.pdf**

Arizona Department of Education, "Arizona Education Data Warehouse" Statewide Longitudinal Data System Grant, Round 2						
Budget Narrative						
Non-Construction Programs						
	No. of people	Annual Salary	FTE	Year 1	Year 2	Year 3
1. Personnel						Total
<i>Personnel costs include a 2.5% annual Cost Of Living Adjustment (COLA)</i>		2.50%				
Business Analysis, Data Analysis, and Documentation						
Data Analyst (unnamed)	3	65,000		97,500.00	99,937.50	102,435.94
Data Analyst (unnamed)	1	55,000		55,000.00	56,375.00	57,784.38
Business Analyst (unnamed)	1	63,000		63,000.00	64,575.00	66,189.38
						299,873.44
						169,159.38
						193,764.38
Database Administration						
Database Administrator (unnamed)	2	65,000		65,000.00	66,625.00	68,290.63
						199,915.63
Development						
Developers (unnamed)	2	70,000		140,000.00	143,500.00	147,087.50
						430,587.50
Operations						
Operations Analyst (unnamed)	1	32,000		16,000.00	16,400.00	16,810.00
Project Coordinator (unnamed)	1	40,000		40,000.00	41,000.00	42,025.00
						49,210.00
						123,025.00
Training						
Trainer, years 1-3 (unnamed)	1	40,000		40,000.00	41,000.00	42,025.00
Trainers, years 2-3 (unnamed)	1	40,000		40,000.00	40,000.00	41,000.00
						81,000.00

Quality Assurance and Testing												
Quality Analyst/Tester (unnamed)	1	43,000				21,500.00	22,037.50	22,588.44	66,125.94			
QA Analyst/Testers (unnamed)	1	40,000				40,000.00	41,000.00	42,025.00	123,025.00			
Total Personnel	15.00					578,000.00	632,450.00	648,261.25	1,858,711.25			
2. Fringe Benefits	Percent											
Total Fringe Benefits						144,500.00	158,112.50	162,065.31	464,677.81			
3. Travel	Per unit cost	No. of Units	No. of People			Year 1	Year 2	Year 3	Total			
Required Travel: Annual NCES Data Conference-- Washington, D.C. (2 people over basic federal allotment)												
Airfare (unit = round-trip flight)	500	1	2			1,000.00	1,000.00	1,000.00	3,000.00			
Hotel (unit = night)	150	3	2			900.00	900.00	900.00	2,700.00			
Per Diem (unit = day)	75	3	2			450.00	450.00	450.00	1,350.00			
Required Travel: Annual NCES MIS Conference-- locations TBD. (2 people over basic federal allotment)												
Airfare (unit = round-trip flight)	500	1	2			1,000.00	1,000.00	1,000.00	3,000.00			
Hotel (unit = night)	150	3	2			900.00	900.00	900.00	2,700.00			
Per Diem (unit = day)	75	3	2			450.00	450.00	450.00	1,350.00			

Network											
Enterprise Switch							50,000.00		50,000.00		
Chassis expansion							10,000.00		10,000.00		
Routers/switch panels							2,500	10,000.00	10,000.00		
Environmentals											
HVAC upgrade to support additional requirements							250,000	250,000.00	250,000.00		
Power unit (battery)							50,000	50,000.00	50,000.00		
Distributed power unit for chassis							10,000	10,000.00	10,000.00		
Total Equipment								1,279,300.00	25,000.00	0.00	1,304,300.00
5. Supplies											
Printing and copying services, mailing costs, and other miscellaneous costs.											
Total Supplies								4,000.00	4,000.00	4,000.00	12,000.00
								4,000.00	4,000.00	4,000.00	12,000.00

6. Contractual	Rate	Weeks	FTE	Year 1	Year 2	Year 3	Total
<i>Note 1: The work day for all contractors is 8 hours per day</i>	8						
<i>Note 2: Only the first \$25,000 of each Contracted Services is subject to Indirect Cost according to Arizona Department of Education policy/</i>							
<i>Note 3: Contract Rate contains a 2.5% annual COLA in years 2 and 3.</i>							
Ilana Licht, Project Manager							
Year 1			(b)(4)	108,000.00			
Year 2					110,700.00		
Year 3						113,467.50	332,167.50
Data Warehouse Architect / Designer (unnamed)							
Year 1				170,000.00			
Year 2					55,760.00		
Year 3						0.00	225,760.00

Myrna Johnson, Business Analyst									
Year 1			130,000.00						
Year 2				133,250.00					
Year 3					136,581.25				399,831.25
Total Contractual			408,000.00	299,710.00	250,048.75				957,758.75
<i>Indirect Cost Base Total</i>			<i>75,000.00</i>	<i>75,000.00</i>	<i>50,000.00</i>				<i>200,000.00</i>
7. Construction			Year 1	Year 2	Year 3				Total
Construction			0.00	0.00	0.00				0.00
Total Construction			0.00	0.00	0.00				0
8. Other			Year 1	Year 2	Year 3				Total
Software Licenses									
Data visualization tool upgrade	200,000	1	200,000.00						200,000.00
SQL Server 2005 licenses	21,500	2	43,000.00	10,000.00	10,000.00				63,000.00
Single Sign-on Solution (SSO)	100,000	1	100,000.00						100,000.00
Professional development streaming software	12,400	1	12,400.00						12,400.00
Desktop software for new FTE and contract staff	2,500	9	22,500.00						22,500.00

Operating Expenses										
Operating Expenses per staff headcount, Year 1	4,751	18	85,518.00							85,518.00
Operating Expenses per staff headcount, Year 2	4,751	19		90,269.00						90,269.00
Operating Expenses per staff headcount, Year 3	4,751	18			85,518.00					85,518.00
Total Other			463,418.00	100,269.00	95,518.00					659,205.00
9. Total Direct Costs (sections 1 through 8)			Year 1	Year 2	Year 3					Total
Total Direct Costs			2,891,794.16	1,234,117.66	1,174,469.47					5,300,381.29
10. Indirect Costs										
<i>Note 2: Only the first \$25,000 of each Contracted Service is subject to Indirect Cost according to Arizona Department of Education policy.</i>	14.4%									
Total Indirect Cost Base (see Note 2 in Section 6. Contractual)			2,558,794.16	1,009,407.66	974,420.72					4,542,622.54
Total Indirect Costs			368,466.36	145,354.70	140,316.58					654,137.65

Arizona Department of Education (ADE)
Statewide Longitudinal Data System Grant, Round 2
"Arizona Education Data Warehouse"
March 2007
Appendix B – Budget Justification

1. Personnel

Personnel costs include a 2.5% annual Cost Of Living Adjustment (COLA) for years 2 and 3.

This project will be staffed with a combination of full-time employees and contractors.

Existing FTE staff. In order to leverage existing institutional knowledge and to maximize cross-pollination of new knowledge gained on this project with other ongoing project efforts (such as the State's existing data warehouse project), many full-time staff will work part time on this project and part time on other related projects. The smallest incremental split of time will be 50%, so that staff does not lose momentum by continually switching gears between assignments. At the termination of this project funded by this SLDS grant, those full-time staff will revert to working on other projects full time.

2. Fringe Benefits

ADE calculates fringe benefits at a flat rate for FTEs. The current rate is 25%. No fringe benefits are included for staff hired on a contractual basis.

3. Travel

ADE's travel budget has two general components.

Information sharing with grantee and collaboration states. Several trips are budgeted for information sharing not only about this grant opportunity itself, but also about education data in general. Each year two people from the project team will travel to the summer NCES Data Conference, to the winter NCES MIS Conference, to collaboration states (Maine and Connecticut), and to Washington, DC, grantee state conference (a noted Special Requirement for this grant).

Stakeholder professional development and training. Based on feedback from prior grantee states, a successful SLDS project contains a heavy professional development and training component. This resonates particularly with Arizona, which covers a large geographic territory. New system deployment and training always poses a difficult and often insurmountable challenge to LEAs that are in remote, rural locations. More often than not, this distance and the expense of travel makes it impossible for these LEAs to avail themselves of centrally offered training. Just one case that illustrates Arizona's travel-related idiosyncrasies is Palominas Elementary District in Arizona's Cochise

County. While Palominas isn't the most remote district in Arizona, it is expansive and distant. It is located in the southeastern corner of Arizona, sharing a border with Mexico. Palominas covers 192 square miles and has only three schools. Traveling is a constant drain on their budget and it continually vies with other equally crucial demands on their staffs' time.

In order for this project to succeed, it will involve considerable travel by staff, so this component is large. The stakeholder professional development and training travel component lists two types of trips: same-day trips and overnight trips.

- Two trips per month in each year of the grant (early on for information gathering, later on for training).
- Travel is via state vehicle, with a cost of \$28 per day.
- State vehicle fuel cost is \$3 per gallon, calculated at 15 miles per gallon.
- Sixteen of the twenty-four trips each year will be single-day trips averaging 200 miles per trip.
- Eight trips each year (two trips to each of the four remotest areas of the state) will be three-day trips so that we can most economically serve multiple stakeholders. The state per diem rate (\$47.66) and average hotel rate (\$91.22) apply to these trips.

4. Equipment

"One-time setup costs for new staff" include the desktop or laptop computer and associated hardware for new staff only. The Arizona standard cost at this time is \$2700. These positions will not require a charge for desk, modular furniture, or chair, as these items already exist in the new space where the IT team is about to relocate.

5. Supplies

"Supplies" covers print shop printing and copying supplies, mailing costs, and other miscellaneous costs associated with supporting a major implementation project. This is set at \$4000 per year for the project.

6. Contractual

Budget for contractual labor assumes an 8-hour work day, and a 5-day work week.

Contractual rates include a 2.5% annual Cost Of Living Adjustment (COLA).

Contractual services include use of a Project Manager and a Business Analyst, both of whom have solid experience working with ADE in these respective capacities.

The services of a Data Warehouse Designer/Architect will also be engaged for this project. Just as this hot skill set is desirable at ADE it is also desirable in the general marketplace as well, and our experience has shown that it is a tough position to fill with

an FTE. For the limited duration of this project, ADE will seek to utilize consultant services and to bring our FTE staff up to speed on these skills.

7. Construction

There is no construction component to this grant.

8. Other

Software Licenses

Software licenses are required for the 9 additional staff members being added for this project. These licenses are the standard suite of tools used by the existing AEDW project and are costed out at \$2500.

Operating Expenses

Operating Expenses per staff headcount includes is an Arizona agency standard. ADE costs include IT services charge, risk management, telecommunications, internal printer/copier, and rent. Current Arizona "Other" expense cost points are noted in the table below.

Risk Management	\$	836
MIS	\$	925
Telecom	\$	1,500
Internal Printer/Copier	\$	250
Rent	\$	<u>1,240</u>
Total	\$	4,751

10. Indirect Costs

Arizona calculates Indirect Costs at 14.4% of Direct Costs. Only the first \$25,000 of each **Contracted Services** is subject to Indirect Cost according to Arizona Department of Education policy.

11. Training Stipends

There is no training stipend component to this proposal.