

U.S. Department of Education

Washington, D.C. 20202-5335



APPLICATION FOR GRANTS UNDER THE

**STATEWIDE LONGITUDINAL DATA SYSTEM RECOVERY ACT GRANTS
CFDA # 84.384A
PR/Award # R384A100010**

Closing Date: NOV 19, 2009

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Application for Federal Assistance SF-424

Version 02

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

* 3. Date Received:	4. Applicant Identifier:
12/1/2009	

5a. Federal Entity Identifier:	* 5b. Federal Award Identifier:
	NA

State Use Only:

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

8. APPLICANT INFORMATION:

* a. Legal Name: Arkansas Department of Education

* b. Employer/Taxpayer Identification Number (EIN/TIN):	* c. Organizational DUNS:
716007390	781558564

d. Address:

* Street1:	ADE Technology Center
Street2:	8221 Ranch Boulevard
* City:	Little Rock
County:	
State:	AR
Province:	
* Country:	USA
* Zip / Postal Code:	72223

e. Organizational Unit:

Department Name:	Division Name:
	Research and Technology

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

Prefix:	Mr.	* First Name:	James
Middle Name:			

* Last Name: Boardman

Suffix:

Title: Assistant Commissioner

Organizational Affiliation:

Arkansas Department of Education

* Telephone Number:

(501)371-5005

Fax Number:

(501)371-5010

* Email: JIM.BOARDMAN@ARKANSAS.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:

84.384A

CFDA Title:

Statewide Longitudinal Data System Recovery Act Grants

*** 12. Funding Opportunity Number:**

ED-GRANTS-072909-001

Title:

Institute of Education Sciences;(IES) Grant Program for Statewide Longitudinal Data Systems Recovery Act Program (ARRA) CFDA 84.384A

13. Competition Identification Number:

Title:

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

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

Arkansas Department of Education's Statewide Longitudinal Data System Improvement and Modernization Project

Attach supporting documents as specified in agency instructions.

Attachment:

Title :

File :

Attachment:

Title :

File :

Attachment:

Title :

File :

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant: AR-002

* b. Program/Project: AR-all

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

Attachment:

Title :

File :

17. Proposed Project:

* a. Start Date: 5/1/2010

* b. End Date: 4/30/2013

18. Estimated Funding (\$):

a. Federal	\$ 2855984
b. Applicant	\$ 2230745
c. State	\$ 0
d. Local	\$
e. Other	\$
f. Program Income	\$
g. TOTAL	\$ 5086729

*** 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: Mr. * First Name: James

Middle Name:

* Last Name: Boardman

Suffix:

Title: Assistant Commissioner

* Telephone Number: (501)371-5005 Fax Number: (501)371-5010

* Email: JIM.BOARDMAN@ARKANSAS.GOV

* Signature of Authorized Representative:

* Date Signed:

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.



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

OMB Control Number: 1894-0008

Expiration Date: 02/28/2011

Name of Institution/Organization:
 Arkansas 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	\$ 465,500	\$ 477,138	\$ 489,066	\$ 0	\$ 0	\$ 1,431,704
2. Fringe Benefits	\$ 144,751	\$ 147,635	\$ 150,591	\$ 0	\$ 0	\$ 442,977
3. Travel	\$ 9,500	\$ 9,500	\$ 9,500	\$ 0	\$ 0	\$ 28,500
4. Equipment	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Supplies	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Contractual	\$ 1,976,598	\$ 3,424,300	\$ 2,131,838	\$ 0	\$ 0	\$ 7,532,736
7. Construction	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
8. Other	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
9. Total Direct Costs (lines 1-8)	\$ 2,596,349	\$ 4,058,573	\$ 2,780,995	\$ 0	\$ 0	\$ 9,435,917
10. Indirect Costs*	\$ 259,635	\$ 405,857	\$ 278,099	\$ 0	\$ 0	\$ 943,591
11. Training Stipends	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
12. Total Costs (lines 9-11)	\$ 2,855,984	\$ 4,464,430	\$ 3,059,094	\$ 0	\$ 0	\$ 10,379,508

***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: 7/1/2007 To: 6/30/2010 (mm/dd/yyyy)

Approving Federal agency: ED Other (please specify): _____ The Indirect Cost Rate is 0%

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

Is included in your approved Indirect Cost Rate Agreement? or, Complies with 34 CFR 76.564(c)(2)? The Restricted Indirect Cost Rate is 0%



U.S. DEPARTMENT OF EDUCATION

BUDGET INFORMATION

NON-CONSTRUCTION PROGRAMS

OMB Control Number: 1894-0008

Expiration Date: 02/28/2011

Name of Institution/Organization:
Arkansas 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	\$ 298,300	\$ 305,758	\$ 313,401	\$ 0	\$ 0	\$ 917,459
2. Fringe Benefits	\$ 91,769	\$ 93,617	\$ 95,511	\$ 0	\$ 0	\$ 280,897
3. Travel	\$ 5,400	\$ 5,400	\$ 5,400	\$ 0	\$ 0	\$ 16,200
4. Equipment	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Supplies	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Contractual	\$ 1,632,481	\$ 830,250	\$ 1,162,000	\$ 0	\$ 0	\$ 3,624,731
7. Construction	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
8. Other	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
9. Total Direct Costs (lines 1-8)	\$ 2,027,950	\$ 1,235,025	\$ 1,576,312	\$ 0	\$ 0	\$ 4,839,287
10. Indirect Costs	\$ 202,795	\$ 123,502	\$ 157,631	\$ 0	\$ 0	\$ 483,928
11. Training Stipends	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
12. Total Costs (lines 9-11)	\$ 2,230,745	\$ 1,358,527	\$ 1,733,943	\$ 0	\$ 0	\$ 5,323,215

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Standard Form 424B (Rev.7-97)

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
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 sub-agreements.
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 (Clear Air) Implementation Plans under Section 176(c) of the Clear 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. "1721 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

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 the 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.

with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. '470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. "469a-1 et seq.).

14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. "2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. "4801 et seq.) which prohibits the use of lead- based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this program.

Signature of Authorized Certifying Representative:

Name of Authorized Certifying Representative: James Boardman

Title: Assistant Commissioner

Date Submitted: 11/25/2009

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

1. Type of Federal Action: <input type="checkbox"/> Contract <input checked="" type="checkbox"/> Grant <input type="checkbox"/> Cooperative Agreement <input type="checkbox"/> Loan <input type="checkbox"/> Loan Guarantee <input type="checkbox"/> Loan Insurance	2. Status of Federal Action: <input type="checkbox"/> Bid/Offer/Application <input checked="" type="checkbox"/> Initial Award <input type="checkbox"/> Post-Award	3. Report Type: <input type="checkbox"/> Initial Filing <input type="checkbox"/> Material Change For Material Change only: Year: 0 Quarter: 0 Date of Last Report:
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier, if known: 0 Name: Arkansas Department of Education Address: 8221 Ranch Boulevard City: Little Rock State: AR Zip Code + 4: 72223-	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: Name: Address: City: State: Zip Code + 4: - Congressional District, if known:	
6. Federal Department/Agency: U.S. Department of Education	7. Federal Program Name/Description: Statewide Longitudinal Data Systems CFDA Number, if applicable: 84.384A	
8. Federal Action Number, if known:	9. Award Amount, if known: \$0	
10. a. Name of Lobbying Registrant (if individual, last name, first name, MI): Address: City: State: Zip Code + 4: -	b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI): Address: City: State: Zip Code + 4: -	
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 this 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.	Name: James Boardman Title: Assistant Commissioner Applicant: Arkansas Department of Education Date: 11/25/2009	
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

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 any 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 or 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

Arkansas Department of Education

PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Prefix: Mr. First Name: James Middle Name:

Last Name: Boardman Suffix:

Title: Arkansas Department of Education

Signature: _____

Date:

11/25/2009

Project Narrative

Project Narrative - Project Abstract

Attachment 1:

Title: **Section 5 - Project Abstract** Pages: **1** Uploaded File: **Section 5 - Project Abstract.pdf**

5. Project Abstract

Arkansas Department of Education's SLDS Improvement and Modernization Project

With significant help from its 2005 and 2009 IES SLDS grants, the Arkansas Department of Education (ADE) has established and continues to improve its SLDS, which by 2007 had already met all of the Data Quality Campaign's 10 essential elements. ADE is committed to achieving improvements in student outcomes and is pursuing a broad range of new initiatives to build a strong culture of DDDM that is enriched through cross-agency data sharing and engagement of the research community. In its December 2008 evaluation of the Arkansas SLDS, ADE's evaluator documented significant utilization and good end-user satisfaction with the SLDS and showed that schools that made the heaviest use of the SLDS experienced small but discernable growth in student achievement compared to other schools. ADE will use the opportunity provided by ARRA and the IES SLDS 2009 grant to advance several new improvements and accelerate initiatives to address the new SLDS standard set by the seven required capabilities and 12 elements outlined in the RFA. To improve the currency and utility of data delivered to stakeholders, ADE will significantly modernize its SLDS environment, replacing or restructuring legacy components and migrating to newer technologies and real-time data/information exchange and exchange standards. ADE will advance several bold, cutting-edge initiatives related to inter-agency data sharing and adoption of national data standards that will benefit Arkansas and advance the state of practice nationally. Backed by a strong endorsement for its planned activities by Arkansas Governor Mike Bebee and heads of several state agencies ADE will, in addition to meeting all current grant commitments, achieve the following outcomes:

- Expansion of the Arkansas Research Center (ARC) with participation from ADE; Arkansas educational research, teacher preparation, and educational policy institutions; and higher education, workforce, human services, and health agencies.
- Expansion and acceleration of current work on DDDM and researcher engagement, facilitation of relevant research within each of these agencies and research that requires data from these agencies to be combined.
- Development of the DDDM and researcher/policy portals and the conducting of targeted needs assessments to address gaps in SLDS utilization in some ADE administrative units.
- Establishment and utilization of teacher-student links to support evaluation of teacher effectiveness, and participation in the Gates Foundation-funded multistate Teacher-Student Link Project for Agency Leadership pilot.
- Expansion of data-sharing agreements to maximize amount of data about the Pre-K population collected in the SLDS.
- Participation in Arkansas's new state data-sharing consortium, the Arkansas Education to Employment Tracking and Trends Initiative (AEETT), and development of master data management/entity resolution, "TrustEd", and service oriented architecture (SOA) based solutions—including a focus on NIEM, SIF, and PESC data-exchange standards—to ensure privacy protection, FERPA compliance, and a high degree of interoperability.
- Completion of a two-phase modernization/standardization upgrade of the SLDS systems architecture, including replacement of 12-year-old statewide school information systems with a new SIF 2.0 compliant SunGard eSchoolPLUS solution, implementation of a state-level Zone Integration Server and restructuring of data exchange based on SOA/SIF standards.
- Implementation of a NEDM-compliant database synchronized to the current ADE production SLDS for use by researchers and data analysts, external data exchanges, and alignment of Arkansas' data definitions to the NCES Handbook.

ADE will continue to evaluate its SLDS implementation, including tracking stakeholder use and satisfaction and impact on student achievement outcomes.

Project Narrative

Project Narrative - Project Narrative

Attachment 1:

Title: **Section 6 - Project Narrative** Pages: **30** Uploaded File: **Section 6 - Project Narrative.pdf**

6. Project Narrative

(a) Need for the Project

Introduction and Current Status of the SLDS

With significant help from its 2005 IES SLDS grant and the recently awarded 2009 IES SLDS grant, the Arkansas Department of Education (ADE) has established and continues to improve its SLDS, which as early as 2007 had already met all of the Data Quality Campaign's (DQC) 10 essential elements. Today, ADE is aggressively pursuing a broad range of new initiatives that build on the foundation established in the 2005–2008 grant period, with a primary focus on driving the effective utilization of its SLDS data resources. ADE's objective is to engage the research community and build a strong culture of data-driven decision-making (DDDM) in the state that is enriched by sharing of data across the K–12, higher education, and workforce thresholds. In all of its work, ADE is committed to driving real and demonstrable improvements in student outcomes.

Since the 2009 award, ADE has moved forward with the initiatives described in its 2008 grant application and is working across several fronts. Earlier this year, ADE executed its statewide site licensing agreement with IBM/Cognos. Initial versions of scorecards and dashboards built using the Cognos tools suite are now being deployed, as is an ADE open source visual analytic and collaboration tool (Hive). Central to its drive to ensure the effective use of its data resources and tools, ADE recently completed the first phase of its strategic effort to engage institutional partners and educators throughout the state around a common and defined set of best practices, methods, and curriculum components necessary to achieving a culture of DDDM. Working with the Assessment and Accountability Comprehensive Center (AACC)/National Center for Research on Evaluation, Standards, and Student Testing (CRESST) and the Mid-Continent Comprehensive Center (MC3), ADE developed a stepwise framework and protocol for educational data analysis and decision-making at the school and classroom level, and is now working with its Arkansas institutional partners to make this a central element in educational practice throughout the state. ADE's parallel efforts to strengthen the framework for data sharing across the K–12 to workforce thresholds and other organizational boundaries have been reinforced by the establishment of a statewide multiagency data-sharing consortium established at the direction of the Arkansas Governor.

ADE is moving forward with many other SLDS initiatives to which it committed in its 2008 IES grant application, including those related to interim testing and curriculum development, integration of teacher licensure, professional development, district-level system integration, researcher access, systems documentation, and training. In its December 2008 evaluation of the Arkansas SLDS effort, Metis Associates, ADE's SLDS evaluator, was able to document significant utilization and a very good level of satisfaction based on results of surveys administered to some 5,000 Arkansas teachers, principals and other educators. In addition, Metis showed that schools that made the heaviest use of SLDS system resources experienced a small but discernable growth in achievement over schools that made less use of these resources. There is now a very strong indication that the work ADE is doing to develop the SLDS program is achieving results.

ADE has carefully reviewed the state of its SLDS implementation against the new standard established by the seven required capabilities and the 12 elements prescribed in the America COMPETES Act outlined in the RFA. As documented in the chart included in Section 10, Appendix C of this application, Arkansas can report significant accomplishment across many of these capabilities and elements, but there are still substantial gaps. Accomplishment in a number of areas is only partially complete, leaving room for further improvement. Therefore, ADE seeks to use the opportunity provided by ARRA stimulus funding and the IES SLDS 2009 grant competition to advance a number of new initiatives to address, or to more fully address, the required capabilities and elements outlined in the RFA. In doing so, ADE will begin to substantially upgrade its SLDS systems architecture. Legacy components that have been in place for a decade or more tie ADE to capturing data that are out of date for many potential uses; this is increasingly at odds with the users' needs and the forward-looking architectural strategies for data delivery expressed in Triand interfaces and Cognos business intelligence (BI)/visual tools. To guarantee the currency of SLDS data into the next decade, ADE will modernize its SLDS environment by replacing or restructuring legacy components and moving to newer technology and data and information exchange architectures that support real-time exchange. This is essential to keeping Arkansas aligned to the best and emerging practices being used by its SEA peers and others across the country, as well as ensuring that the SLDS continues to meet broader goals for enabling educational change and student improvement. In its approach to interagency data sharing and national data standards adoption, Arkansas is also seeking to advance several bold, cutting-edge initiatives with the potential to greatly benefit Arkansas and advance the state of practice nationally. Although these initiatives are consistent with emerging technology standards and trends, they have not yet been advanced by other SEAs to the extent that Arkansas proposes in this grant application.

Accelerating Arkansas' DDDM and Policy Research Agendas and Evaluating Teacher Effectiveness

Driving use of Arkansas' SLDS and creating a culture of DDDM in the state—in which data are used pervasively and materially to inform decision-making from the classroom to the highest levels of local and state policymaking—has been and continues to be the central focal point of all of ADE's SLDS work. An aggressive program to bring about these transformations is already under way based on commitments made in ADE's last grant application and funding provided through the 2009 IES grant award. In its 2008 IES SLDS grant application, ADE committed to engage several institutional partners, including the Arkansas Leadership Institute, University of Central Arkansas (UCA), and Arkansas Regional Cooperatives, to adopt a DDDM focus and integrate this into their respective professional development, training, and curriculum development and delivery programs. Working with AACC/CRESST and MC3, ADE conducted a year-long pilot project to determine how educators actually use the data provided in the SLDS. From this work came a stepwise framework and protocol for systematically engaging educators in detailed data analysis and identification of actionable relationships in the data they analyze. Following an evaluation of this phase of work, which is currently under way, this framework will become the basis of Arkansas' new DDDM-driven school improvement planning process in which educators will analyze their local school or classroom data, plan and carry out actions based on what the analysis shows, and over time continue to identify what other data should be

captured and analyzed. The DDDM framework will be shared with ADE's institutional partners for embedding in the state curriculum and will be advanced in other complementary ways to ensure widespread adoption in the state. A joint task force consisting of representatives from these institutional partners is being organized and will be charged with overseeing development of more detailed plans for the next phase of this activity, which will be further stimulated by the initial roll out of ADE's visual tools suite of Cognos-based dashboards and scorecards.

ADE has already strengthened its computer-based training facilities and is augmenting these with a more robust instructor-led training program. In past years, work by the University of Arkansas Fayetteville and NORMES has contributed substantially in this area, as has Arkansas' Educational Renewal Zones, which have representatives located at colleges across the state. To further support the goal of aligning the curriculum and sharing electronic lesson resources across the state, ADE is in the process of becoming a more active partner in the CCSSO Surveys of Enacted Curriculum (SEC) and will make SEC resources available for schools as part of their school improvement programs. The participation of Arkansas schools in the SEC will be a strong complement to its data initiatives. A comprehensive, objective analysis of state standards, current instruction, and assessment will enable schools to identify weaknesses and will be an invaluable tool in the effort to address achievement gaps. In a parallel effort, Arkansas is engaged in pursuing major new initiatives to strengthen institutional relationships with researchers to undertake substantive and directed research that will be fed back into the decision-making processes within the educational establishment.

ARC: Strengthening ADE DDDM and Policy Research Initiatives

ADE is moving forward on all of the initiatives it committed to as part of its DDDM and researcher engagement plans described in its 2008 IES grant application, but it has become apparent that progress in these areas could be significantly accelerated if there was a greater degree of centralized leadership, a greater commitment of resources, and a more focused organizational and institutional structure for coordinating this work. Although many partners have been involved, the central responsibility for coordinating the many DDDM and researcher engagement initiatives has fallen primarily to one Assistant Manager and one data management specialist within ADE's SLDS project management office (PMO), who must divide their time across several other initiatives. In response to this, ADE has recently entered into a partnership with the Arkansas Department of Higher Education (ADHE) and has established the Arkansas Research Center (ARC) under the joint governance of both ADE and ADHE. This relationship between ADE and ADHE has been given special impetus by the state legislature, which has specifically mandated increased collaboration between ADE and ADHE, including setting reporting mandates that require the matching of data between the two agencies.

The ARC is centered at University of Central Arkansas (UCA), with a main office in Conway, Arkansas, but it has been established as a cross-institutional entity that includes units at the University of Arkansas at Little Rock and the University of Arkansas at Fayetteville. The UCA is the primary center in the state for the development and promulgation of curriculum for teacher and administrator preparation in the state. The University of Arkansas at Fayetteville houses the Office of Educational Policy, the main educational policy research entity in the state. The University of Arkansas at Little Rock, and in particular its Laboratory for Advanced Research in Entity Resolution and Information Quality (ERIQ), houses staff with special expertise in

information technology, data standards, and data quality. Since its recent establishment, the ARC has been primarily focused on educational policy research, using data sets from both ADE and ADHE, and it has already begun a series of targeted policy studies beginning with an important study concerning remediation for Arkansas' students entering college in the state. However, Arkansas would like to greatly expand the scope and role of the ARC and have it assume responsibility for providing more focused leadership across the range of DDDM and associated researcher engagement initiatives being pursued by Arkansas under its 2009 IES SLDS grant award.

As described more fully elsewhere in this application, the ARC will play a major role in advancing several other initiatives/outcomes relating to cross-agency data sharing and standards adoption. Bringing these entities together in the ARC allows the integration, "under one roof," of specialists in teacher preparation, educational policy research, and information systems and data quality. This, in combination with the launching of interdisciplinary efforts based around a shared vision for advancing the goals of educational transformation—as articulated in ADE's SLDS applications—as well as the augmentation of resources to support this effort, can generate the critical mass necessary to stimulate the work described in this and earlier applications. The expanded ARC will provide a more focused organizational structure that is fully dedicated to ensuring the critical interaction between staff pursuing focused policy research and the work being conducted to promote adoption of the state's framework for DDDM. These institutions are already collaborating with ADE on SLDS related research and dedicate a substantial amount of staff time in helping ADE advance its SLDS DDDM and researcher engagement agenda. A number of researchers at ADHE are working on material related to the K–12 higher education transition and related issues. The SLDS PMO Project Manager also serves as the director of the ARC, and other ADE staff focused on DDDM work under the current 2009 IES award are now working under the ARC umbrella with staff from the UCA to embed the new DDDM framework into the curricula used to train state educators.

To take the ARC to the next level, ADE proposes adding a new Assistant Project Manager and four additional full-time equivalents (FTEs), including one senior program manager knowledgeable across all disciplines from each of four other Arkansas agencies, some of which are also collaborating with ADE in the state's cross-agency data-sharing initiatives. This includes the Arkansas Department of Workforce Services (DWS), the Arkansas Department of Health (DOH), the ADHE, and the Arkansas Department of Human Services (DHS). This will further enrich the interdisciplinary nature of the ARC with an interagency focus that is critical to viewing the "whole child" from early childhood through transition to higher education and the workforce, will open up many new research opportunities using combined interagency data, and is central to advancing an effective DDDM policy research agenda. To drive DDDM, the ARC team will be charged with expanding and intensifying outreach efforts to institutional partners, schools and school districts, parent organizations, and others, and will serve as the primary facilitator and staff resource to the broader task force comprising part-time stakeholders that Arkansas is in the process of establishing pursuant to the 2008 grant application work plan. This will allow Arkansas to give greater impetus to this work over the next 3 years. The team will be responsible for promoting and coordinating activities with all of the state entities that are involved, as well as systematically monitoring, measuring, and reporting on the progress of the state's transition toward a culture of DDDM and the outcomes being achieved. The expanded

ARC will work in close coordination with ADE's Research and Technology Division, the SLDS PMO, and all ADE units responsible for systems development and support of ADE's SLDS infrastructure to ensure close interaction between staff developing and implementing visual tools and related technology and data resources. The ARC staff spearheading the work will ensure that the initiatives related to visual tools deployment and the state's DDDM framework take hold. Similarly, the team for policy research will drive and help focus the policy research agenda by reaching out to researchers and policymakers, inviting researchers to utilize the state's SLDS resources, challenging researchers to address the critical questions facing educational policymakers, and ensuring that the results of policy research are driven back into the state's policy decisions. The ARC will serve as a research and development hub for driving innovation and technology solutions for the educational community, will play a central role (described below) in advancing technology solutions for the state's expanding commitment to data sharing, and serve as an incubator for work related to the development and utilization by Arkansas of national educational technology standards.

Developing DDDM and Researcher Collaboration Portals

As a critical aid in the advancement of this work, ADE will create a statewide DDDM collaboration portal that not only allows viewing of static information on a website envisioned in the 2008 grant application, but also becomes the central repository/collaboration site for all participants across the state to discuss their experiences; share lessons learned; and post guidance, best practices, online tutorials, etc. ADE will establish clear benchmarks and ensure regular reporting on statewide progress against these benchmarks through the collaboration portal. As appropriate, the portal will be linked to the ADE SLDS data repository (and potentially other data sources) to create a quasi-public portal site to allow for the presentation of various data aggregations, scorecards, and other artifacts deployed in the SLDS environment. ADE would like to establish a research policy portal that aggregates relevant materials from the research community across the states and internationally, where ADE and local policymakers, researchers, and others can view and discuss selected research papers and abstracts, including the anonymized data sets used in the research. The portal will be used to engage policymakers and promote collaboration between the researchers and the consumers of the research; the site will allow needed research projects to be proposed and discussed, and will highlight examples of the effective application of research to policy decision-making. The site will contain wikis and blogs, and encourage users to collaborate and share their opinions. The repository of data sets available on the site, which researchers will be required to cite in any published work, will allow additional analyses to be performed to test the original hypotheses and/or extend the original analysis into new areas. The DDDM collaboration and policy and research portals will be implemented using a SharePoint MOSS portal product for which ADE is already licensed, and both portals will run in a DIS hosting environment. The content of the portals will be guided by the ARC, and the technical implementation will be conducted by the technical specialist in the ADE Research and Technology Division with support from a consultant.

Evaluating Teacher Effectiveness: Teacher-Student Link

The establishment of effective teacher-student links needed to include student achievement as a component of teacher effectiveness has become an important priority for Arkansas over the last year. Arkansas' SLDS collects information on teachers, students, and the programs of study in which the students are enrolled, and these data provide the basis for analyzing teacher

effectiveness. In the past, however, these data have not been organized within the SLDS in such a way that they can be readily used to measure teacher effectiveness without additional technical work, nor has Arkansas previously developed a comprehensive strategy to address the complex set of policy questions that surround the use of student achievement data as the basis of evaluating teacher effectiveness. Arkansas has adopted and made effective use of a student growth percentile model methodology used in many states and localities to assess school and teacher contributions to student growth, and the results of these analyses have been widely disseminated and discussed among educators in the state. However, until now, these analyses have been aggregated at the district and school level but have not drilled down to the teacher and classroom level (exceptions exist, such as in a one-time special effort where ADE retrieved and provided Teach for America test scores for all their teachers, along with student growth percentiles). With each presentation of the aggregated district-level analysis, educators across the state are demanding that teacher-level analysis be provided; the idea is popular among teachers themselves, making this a priority for ADE to address.

Currently, ADE's Cognos data warehouse environment captures the planned schedule of courses to be taught by teachers only twice each year, in October and June. Using this infrequently captured course roster information as the basis for analyzing teacher effectiveness is by itself unreliable in establishing the teacher of record and is, therefore, inadequate as the basis of analysis. On the other hand, ADE's Triand system captures regular information about the teacher, class, and student assignments as they change throughout the year, and it also receives from ADE's assessment vendor detailed year-end test results for individual students. In addition, ADE is moving toward a near-term ETL solution that will result in much more frequent uploads to the SLDS from the Pentamation environment. Subject to timing of the availability of the Pentamation ETL upgrade, ADE will pull the requisite teacher, class, and student assignment data from one or, if needed temporarily, both of these sources at regular intervals to load an appropriate table within the Cognos data warehouse. When combined with year-end test results, ADE will then be able to use these data to perform the necessary growth model analyses and generate a variety of reports and visuals for display in its Cognos BI environment. With more reliable and timely information about the actual teacher-student course relationships over the course of the year, ADE will then be in a position to perform its analysis at the teacher level with greater confidence that it will accurately reflect the specific contributions made by specific teachers to the progress of the students they teach.

Arkansas has just been awarded a Teacher-Student Link Project for Agency Leadership grant by the Bill and Melinda Gates Foundation. Under this grant, Arkansas will collaborate with Florida, Georgia, Louisiana, and Ohio to address a broad range of system, process, and policy questions around how to most effectively measure teacher effectiveness. Arkansas' participation in this project will provide the critical broader context for how to most appropriately collect, validate, and use data. Through this grant, which engages states that already have the capability for capturing student-teacher course linkages, the Bill and Melinda Gates Foundation seeks to help states improve the collection, verification, reporting, and analysis of linked teacher and student data, with a special focus on the need for high-quality data that are comparable across states and validated by teachers. The project's goal is to develop and implement a common, best practice definition of teacher of record and a standard SEA business process for linking and validating teacher and student data (including state assessment data), with a small group of participating

states beginning with three pilot LEAs within the state. The first phase of the project, from April to June 2010, will involve a detailed needs assessment of each state and its participating LEAs; this assessment will evaluate each state's relevant data definitions, systems, and processes, and identify gaps between the current capacity/process and the project's goal. Participating SEAs and LEAs will then develop a common definition of teacher of record and a common business process for collecting and having teachers validate these data. Each state will then conduct a pilot implementation with its participating LEAs from July 2010 to October 2011. Collaboration across the participating states will ensure that a single, common definition and set of business processes are developed, and collaboration between the SEAs and their participating pilot school districts will ensure that the definition and processes accurately reflect the reality at the school level and will facilitate teacher buy-in. The CELT Corporation and the Data Quality Campaign will be actively involved in helping the Foundation implement the project. ADE will systematically adopt approaches, processes, and definitions from this work to inform and enhance its broader statewide efforts, which will proceed in parallel, especially with respect to the introduction of a means for teacher validation of the teacher of record. From October 2011 through the end of the IES grant period in 2013, ADE anticipates taking the piloted model fully to scale in its statewide implementation of teacher-student linkage.

To provide all stakeholders with the capability to better analyze, draw conclusions from, and collaborate around state education data, ADE has used the services of Enspire, Inc. to implement a new open source tool, named "Hive," which is now available to the general public online. Hive has many analytical and visualization capabilities. The tool's website is designed as a venue for collaboration, and Hive is contributing to an expansion of knowledge about student achievement in the state. The tool allows stakeholders to explore state and local test scores at the district, school, and individual levels, with filter options for program participation, demographics, and socioeconomic status. It also incorporates the Colorado Growth Model, which allows users to place growth measures on one axis and scale scores on the other axis to see improvements since prior test administrations. Individuals can work on their particular area of interest: a parent can compare schools in a district, a teacher can try to discover patterns of student performance, and a principal can try to determine if there are weak areas of instruction in his/her building. Users can post and share analyses they create, comment on the work of others, and share ideas in threaded discussions. ADE will engage Enspire to enhance this tool to incorporate teacher-student links so that this information can be made an integral part of the Hive environment for interactive use by stakeholders for a broad range of purposes in addition to its use within the state's scorecard and dashboard environments.

Comprehensive SLDS Needs Assessment Program: ADE Administrative Users

The Metis evaluation of the Arkansas SLDS project in December 2008, as well as regular interactions and discussions on the part of ADE with individuals at all levels of the educational establishment, has shown that use of the facilities provided by the SLDS is not universal. Although some non-use or limited use by individuals within the system can be attributed to a lack of education or training or ease-of-use issues (now being addressed via visualization), it is recognized that this shortfall is due in part to the system not always being fully attuned to the information needs of intended users and their unique roles. It has been several years since the original focus groups specified the requirements that led to the initial design of the SLDS that is currently used. As part of the current initiative related to DDDM and the development of

dashboards, scorecards, and visual analytics, ADE is establishing a process that emphasizes significant interaction with stakeholders in the major roles related to educational delivery, especially teachers and principals. ADE would like to undertake a more systematic and far-reaching needs assessment in which in-depth interviews will be held with key individuals within each of ADE's more specialized administrative units (e.g., special education, school meals, facilities, distance learning, etc.). Interviews will also be conducted with representative individuals in corresponding or similar administrative roles in the state, district, and school level organizational structure, institutional partners, and appropriate external entities. This will result in the development of a set of business use cases that more broadly captures these respondents' data needs. This information will be used to enhance the SLDS to be more fully responsive to the information needed by all the groups and individuals functioning in these roles.

Expanding and Enhancing Cross-Agency Data Sharing

Since before 2005, ADE has aggressively pursued a broad range of efforts to establish a policy framework for extending the state's longitudinal view of its students to P-20 and into the workforce. For some years, ADE has had in place agreements with ADHE for the execution of P-20 higher education matches for students entering all institutions of higher learning in the state, including private colleges, as freshmen in 2007. ADE now does annual matches as successive groups of high school graduates enter college in the fall of each year for the purposes of creating college-readiness reports that are sent to high schools and colleges. ADE also has agreements with Arkansas' workforce authorities for similar matching for graduating students entering the workforce. In both cases, the agreements permit the match activity but prohibit the introduction of the resulting match data directly into the SLDS, though match results are available in an offline repository for analysis by ADE or its designees. ADE also has long-standing data sharing agreements with DHS to certify meal status, electronically exchange transcripts for young adults entering DHS alternative learning environments, and provide data for the evaluation of the early childhood programs.

Important as these efforts have been, they have until now remained somewhat limited in their overall approach, involving ad hoc arrangements among the parties for exchanging files and manual handling of matching, de-duplication, etc. The dissemination of results is also far from a formalized process in which these data resources are well known, understood, and easily accessible by policymakers and researchers as part of the Arkansas SLDS or extended SLDS. In 2008, as part of its efforts to achieve more effective use of the SLDS, ADE committed to establishing a plan to engage appropriate institutional partners around the use of the match results to ensure that the results of these efforts are effectively interpreted and used as part of the state's focus on DDDM to address the appropriate questions about P-12 programs, policies, and performance. In its 2008 IES SLDS grant application, ADE indicated that it would begin in-depth discussions with institutional partners already engaged in higher education matching, including ACT, UCA, and others; review current strategies and plan and execute more comprehensive analyses based on match data; and solicit input from educators in the state. Although this work is progressing on a number of fronts, some of this work is about to occur in an entirely new context as the result of the launching of the Arkansas Education to Employment Tracking and Trends initiative, discussed below.

Arkansas Education to Employment Tracking and Trends Initiative (AEETT)

In August 2009, at the direction of Governor Mike Beebe, a Project Charter was executed by four state agencies to establish the AEETT consortium under the lead of the state's DIS and operating under the direct oversight of The Governor's Workforce Cabinet. The AEETT was established to plan and execute a series of cross-agency matches and produce reports on the progress of students in the workforce, as well as other topics to "unify Arkansas' current education, employment, and workforce development statistical results to aid in providing new and better services." The initial signatories to the agreement are the ADHE, ADE, DWS, the Arkansas Economic Development Commission, and the Arkansas Department of Career Education. It is anticipated that several other agencies, such as DHS, will become signatories in the near future. The signatories approved a detailed work plan and budget for DIS to carry out the initial phase of work, including the design, build, and implementation of a data mart data repository. This repository will contain selected education and employment data using extracted files from ADHE, ADE, DWS, and also the Arkansas Department of Finance and Administration (Income Tax System) that will be matched and merged for data analysis, with storage of non-personally identifying results. Data are to be included only after official documented approval from agency data owners, and, once completed, the data repository will be used only by authorized participating agency users for approved custom report views. Phase I will include identifying data sources to produce select reports, identifying missing data sources, documenting the methodology and approach for data storage and metadata, and documenting reports to be produced in this phase. The effort will also involve defining the scope of work of Phase II, including the involvement of additional agencies.

The plan set forth in the AEETT MOU and project plan provides the basis for important major advances in cross-agency data sharing in the state. However, a great deal of work beyond what is currently envisioned or explicitly discussed in the Phase I plan will need to be addressed in both the short and longer terms to ensure that the solution is robust, fully protective of privacy, and capable of meeting a broad range of data sharing needs, including those that bear on achieving improved educational outcomes. This changes the context in which ADE will advance elements of its previous SLDS cross-agency data-sharing strategies. ADE will need to address a number of new initiatives to support the work of the AEETT as currently envisioned and to carry out additional tasks to assist in the evolution of this new data-sharing environment over the next 3 years. ADE will regularly participate in the consortium's ongoing activities, working in both a governance and oversight capacity and also playing a technical participatory role. Most importantly, this grant application seeks funding for several positions in the ARC for representatives from AEETT and other partner agencies, allowing ADE to establish the ARC as an essential research and development arm of the AEETT. The ARC will collaboratively examine the multitude of issues around the current availability and quality of data in the systems of the participating agencies, contribute to the development of comprehensive business use case definitions to identify the range of most important data-sharing needs among ARC and AEETT partners, and help define cross-agency data governance processes. The ARC will also develop new forward-looking data-sharing strategies that are flexible, efficient, and in keeping with both the spirit and letter of FERPA, HIPPA, and all other state and federal laws concerning the privacy of individuals. By placing the control of FERPA-restricted educational data under the control of the ADE, ADHE operated ARC and using the TrustEd solution, described below, to filter data exchanges within AEETT, Arkansas will avoid the problem that AEETT would

otherwise face if it were to allow educational data to come under the control of non-educational entities.

TrustEd

Working in the ARC, ADE will focus on assisting DIS and other AEETT partners to develop and implement a set of technology solutions to achieve AEETT's goal of robust and widespread data sharing in the state while also protecting the privacy of individuals. In addition to its DDDM and research focus at the UCA, the ARC will expand its work by engaging ERIQ at the University of Arkansas at Little Rock as an additional ARC partner. ERIQ has already been deeply engaged in planning and the initial development of a statewide facility to address the need for secure FERPA-compliant cross-agency information exchange. Of immediate concern is the need to address FERPA and related privacy concerns where student data are to be shared within a consortium that is under the direction of entities other than ADE and ADHE.

To address both FERPA and general privacy concerns, the ARC Trusted Broker unit, TrustEd, will operate as a service bureau to the AEETT consortium by establishing a highly secure TrustEd registry of individuals known to AEETT partner agencies that will include linkages between agency-specific client IDs (CIDs). TrustEd will use industry standard master data management approaches, including deterministic and probabilistic matching, for entity resolution, thus ensuring a very high level of integrity of its registry index (something not achievable with social security number or other deterministic matching methods). It will receive requests for matched data from an external agency, perform a lookup within its registry to find the corresponding CID for the receiving agency, and send only the relevant set of CIDs to the receiving agency along with the request for matched data. The receiving agency will return the set of CIDs back to TrustEd along with the requested data, and TrustEd will remap the data set back to the requesting agency CIDs, returning the requestor's original requested file with the additional data, as long as policy and regulation allows. If not allowed, TrustEd will return anonymized data that are still at a unit level if it does not compromise the privacy of individuals. This procedure will accomplish the necessary exchange of data, but no personally identifiable data will move between the agencies that are party to the exchange. This process will also support returning de-identified data or aggregates back to the originating agency, depending on what policy and regulation allows. The ARC will work with the AEETT consortium to undertake the research, development, and testing activities necessary to move these TrustEd solutions to the point where an appropriate technology transfer can occur and the solutions can be migrated into regular, ongoing use by the AEETT consortium.

AEETT Interoperability Architecture

The consortium's data exchanges, including operation of TrustEd, will initially rely on traditional data exchange mechanisms such as the physical exchange of data files and storage of the matched data in the receiving agencies' data repositories or a central AEETT repository. However, creating a truly robust data-sharing environment that can flexibly handle a substantial increase in the volume and types of data exchanged over time by different agencies requires a more forward-looking architectural strategy that builds on best practices and emerging trends in data exchange methodology. The system must be able to handle everything from the large data sets exchanged less frequently for policy and research to exchanges involving real-time access to cross-agency data in the course of transaction processing. To address these requirements, the

consortium will likely need to migrate over time to a more federated approach based on the use of service-oriented architecture (SOA), web services, and SOAP technologies in which data from two or more agencies are linked virtually on an on-demand basis rather than physically integrated through the actual movement of data from a source agency and its persistent storage in a requestor's database. A federated approach provides efficiency and economy in resource use and is essential to maintaining the integrity and quality of data resources that can be problematic under circumstances in which every agency seeks to store and maintain all the data supplied by all of the agencies. With this environment in place, queries initiated by a requesting agency will spawn appropriate web service calls through the Trusted Broker to agency web services, and the results will be returned to the requester in a fully transparent process as if all of the data were stored within the agency's own data system environment.

The development of this federated strategy must address the standardization of data from the standpoint of the exchange models and the semantics of the data that are exchanged. It is essential for senders and receivers to be able to efficiently carry out exchanges without the need for custom mapping of every exchange, and to be certain there is an agreement as to the meaning of the data that are exchanged. As described elsewhere in this application, ADE intends to migrate toward the adoption of the School Interoperability Framework (SIF) along with standard data definitions published in the NCES Handbooks Online as the basis for the exchange of educational data in Arkansas as well as with educational entities in other states and the federal government. However, the AEETT data exchange consortium will involve the participation of many agencies, each representing a field of endeavor outside of education with its own unique data and exchange models. Very substantial momentum has been building around a national standard, the National Information Exchange Model (NIEM), for broad cross-domain data-sharing in the United States. Until now, NIEM has primarily involved a partnership of the U.S. Department of Justice and the Department of Homeland Security and related agencies to efficiently automate the sharing of critical information throughout the whole of the justice, public safety, emergency and disaster management, intelligence, and homeland security enterprise. However, recently, federal government representatives, several states, and local governments have initiated efforts to assess and, in some cases, adopt NIEM for information exchange not only within law enforcement, public safety, and antiterrorism operations, but also with a view toward its use for transportation, health, and human services. Comparable to SIF in the educational domain, the NIEM framework defines XML structured data components consisting of a common core and agency-specific extensions of the core components that together provide the mechanism for interagency communication. NIEM is based on the International Organization for Standardization (ISO) 11179. Most recently, the organization that handles NIEM, the NIEM Program Management Office, announced the beta release of NIEM 2.1.

ADE proposes to work with ADHE and other agency representatives in the ARC and AEETT consortium to assign responsibility to the ARC to undertake the necessary research and (to the maximum extent practical and indicated based on research) development and testing and other activities necessary to move the solutions described in this section (i.e., data federation, NIEM adoption) to the point where the technology can be transferred and the solutions migrated into regular use by the AEETT consortium. It is Arkansas' intent, working through the ARC, to place itself in the forefront of emerging efforts to address the technological challenges in expanding cross-agency data sharing. However, ADE recognizes that the solutions described in

this section are very much in the category of emerging practice and have scarcely begun to be considered, much less implemented, in other SEA environments. Thus, although ADE is committed to advancing this practice, its commitment to the outcomes to be achieved under this grant will extend only to conducting a proof of concept (POC) and follow-on pilot implementation. ADE recognizes that national direction on cross-agency data-sharing standards may undergo changes that impact this effort, and the readiness for full adoption by AEETT will likely be contingent on a number of factors that will only become fully understood as Arkansas pursues this work. As part of the POC and pilot effort, the ARC will address the need for a SIF to NIEM mapping solution, as well as mapping to the PESC standard, recognizing their role in the field of higher education. Working through the ARC, ADE will work closely with representatives of the SIF Organization, vendor partners it engages in its internal SIF migration, the NIEM Program Management Office, PESC representatives, and appropriate IES workgroups in this field.

Linking to Pre-K and Early Childhood

Historically, Arkansas has captured information about Pre-K students attending programs within the Arkansas public school system as part of its regular data collection processes for all students attending public schools. For some Pre-K students in private or publically funded programs outside of the public school systems, no data have been captured or made available within ADE's data systems. Hence, the potential for bringing Pre-K and K-12 data together for longitudinal analysis has been somewhat limited. Comprehensive data exist in the state pertaining to early childhood and Pre-K programs, but they are contained in systems maintained by agencies other than ADE. Although a number of matches and special studies involving crossing the Pre-K to K-12 boundary have been performed, Arkansas has not previously achieved the cross-agency data sharing in this domain that it now seeks to establish.

ADE is planning to take a substantial step in addressing these limitations through a data-sharing arrangement with Arkansas' Pre-K program, the Arkansas Better Chance (ABC) program, administered under the DHS Division of Child Care and Early Childhood Education. The ABC program serves 3- to 5-year-olds in Pre-K programs run by 318 agencies, including 145 school districts and cooperatives and 173 private providers in either center-based classrooms or through its Home Instruction Program for Parents of Preschool Youngsters. Places are allocated to children in families with incomes below 200% of the federal poverty threshold, with priority funding for programs in low-performing school districts. Importantly, the ABC program is of very high quality as measured by teacher standards, class sizes, and support services. The ABC serves 25,096 children, or one half of children eligible, and about one third of the 79,000 children in the state in this age group, including an approximately 9,000 children not currently known to ADE. The ABC program maintains a comprehensive roster of demographic information on all Pre-K enrollments and also maintains data pertaining to a number of screenings it performs on children participating in the program, particularly those in need of early intervention because of physical, emotional, or health problems. All ABC children are required to have an annual health and developmental screening. Body Mass Index (BMI) data are collected on all ABC children through ABC's web-based reporting system, and ABC children are assessed three times per year using the Pearson Work Sampling System. Information is maintained on early interventions triggered as a result of these screenings. ABC also maintains information on the educational background of teachers and paraprofessionals serving in its programs. These data

represent an excellent basis for the pursuing of a number of avenues of valuable research, all of which are not being pursued at the present time.

To expand the population of Pre-K children known to ADE and available in the SLDS, ADE has recently reached an agreement with the ABC program under which the full roster of Pre-K students will be provided to ADE twice annually (which is sufficient regularity for the intended purpose). The information will include demographic and other screening-related information, as well as teacher and paraprofessional educational profiles. ADE will run this file through its unique ID identifier system to generate a 10-digit ID for each student. The roster will then be unduplicated for students already known to ADE, and all new Pre-K students not previously known to ADE will be added to the SLDS, specifically to the Cognos data warehouse. As a result, as school-age children not previously known to ADE enter the Arkansas public school system, they will already have a record relating to their Pre-K experience. In this way, ADE will achieve the objective of being able to extend its longitudinal view for a much larger percentage of its students back into Pre-K. Using the screening information and information on early interventions, ADE will be able to help itself and DHS to understand the efficacy of early interventions that are made as a result of ABC screenings, determine the impact of Pre-K teacher educational attainments, and evaluate other dimensions of the Pre-K programs delivered from the perspective of how the students progress later in their K–12 experience. ADE also has an agreement to obtain historical rosters, going back to 2005, which will allow it to immediately begin conducting comprehensive studies. Unlike some data received through cross-agency sharing, these Pre-K children will become students in the Arkansas K–12 school system, so it is appropriate that core data elements for these children be stored directly in ADE’s SLDS. However, it is likely over time that a broader range of data collected in Pre-K, childcare, and related early childhood programs will be most effectively handled through a data federation approach as previously described. ADE’s longer term objective is to expand the capture of information for all Arkansas children in this age category and ultimately to collect a broad range of information on children in the state from their earliest years to fully understand the impact of these experiences on their future educational success. The ARC will pursue a distinct agenda to maximize the collection and/or access to these data through the AEETT and direct negotiations with appropriate organizational entities, such as Department of Health, vital records, and child care providers, and to maximize its use in policy research and decision-making.

Restructuring ADE’s SLDS Technical and Data Architecture

Over the past 4 years, ADE has solidified the basic elements of its current SLDS architecture, which was built using a combination of elements that were either already in place, under development, and/or newly acquired with funding from the 2005 IES SLDS grant. As described in prior grant applications, ADE began with an existing vertical reporting system based on near-universal adoption by school districts in the state of the Pentamation transactional system (which supports 245 school district instances of both the Arkansas Student Management System [SMS] and its Financial Management System [FMS]). These are all co-located in Little Rock in the DIS data center under the administrative control of the Arkansas Public School Computer Network (APSCN) Division. The district Pentamation system feeds data to a central statewide Student Information System (SIS) based on the state’s nine-cycle reporting schedule. The state’s Cognos based educational data warehouse, which was already being implemented at the time of the 2005

grant, was designed to provide a user-friendly and accessible front end to the SIS data by providing a set of dimensionally structured data marts and advanced BI tools and reports to administrative users. To address the broader and very urgent need to provide near real-time access (i.e., before certification of the data in the cycle process) to student data housed in the district Pentamation transactional system to a much wider audience of school-based educators (teacher, principals, and others), ADE used funding from the 2005 grant to begin a subscription to Triand's Software as a Service or cloud-based solution. This system pulled student data twice weekly directly from the district Pentamation system in near real-time into a virtual data warehouse, combined it with an extensive body of assessment data that Triand was authorized to collect, and made this extensive body of student information—including demographics, test scores, and much else—immediately available to school-based staff via Triand's web-based interface. Triand also provided ADE its solution for providing unique student IDs as well as transfer of transcripts between districts and to institutions of higher education through the same cloud-based computing solution. This architectural solution for deploying the state's SLDS provided a practical solution for leveraging resources or initiatives already in place or under way while at the same time meeting the imperative of putting longitudinal data immediately in the hands of large numbers of ADE educators at every level of the educational enterprise. This environment continues to be enhanced; in support of the large number of scholarship applications received under Arkansas' new state lottery for scholarships, this system will allow electronic transcripts to be automatically pulled into the ADE scholarship application, allowing a student to automatically see what scholarships s/he is eligible for.

In its 2008 grant application, ADE requested additional funding to help build on the basic architectural foundation to extend its front-end BI interface components, add visual components (e.g., dashboards, scorecards, visual analytics), and to integrate several additional source systems (e.g., teacher licensure, professional development, child nutrition, etc.) into the data warehouse environment. ADE also planned to expand the functionality of the Triand cloud environment (e.g., expand target testing, integrate LEA-based systems, etc.). Activities related to the further advancement of ADE's data quality program, including improvements needed to complete and extend its data dictionary/metadata management system and address the need for data quality measurement and audit, were requested and approved as part of that grant application. ADE is or will begin (depending on each initiative's scheduled start date) actively pursuing each expansion initiative. However, ADE has come to recognize the limitations imposed by several legacy components within the SLDS architecture adopted in 2005 and the need to restructure key elements in the architecture to forestall obsolescence and address the need for moving to a modern standards-based and real-time data oriented environment that SLDS end users increasingly need and expect. To address these limitations, ADE will conduct a two-phased restructuring and re-architecting modernization effort that involves short-term tactical improvements and long-term strategic changes.

Phase I: SLDS Technical Architecture and Data Quality and Reporting Improvements (ETL/Staging Area Restructuring and Other Improvements)

Technical Architecture. In the last year, ADE developed an initial roadmap for the development of an Arkansas SOA-based Enterprise Data System. The vision underlying this roadmap involves two main elements. The first, which will be the subject of the Phase 1 restructuring effort, involves restructuring the SLDS' ETL processes and back-end technical staging areas

where data are moved from district transactional systems, undergo certification in the state's certification cycle, and then move to the Cognos data warehouse. ADE has already begun this restructuring effort. Although this work addresses, in part, the initiatives outlined in the 2008 IES grant application to streamline the state's cycle certification process, it has now grown into a much more substantial effort to address a broader range of near-term objectives. Thus, ADE also plans to implement an operational data store in its back-end technical environment that will more rationally consolidate data feeds provided from the district systems as well as additional source systems it is working to integrate, including special education and professional development. ADE also plans to upgrade the ETL processing routines to handle daily batch loads of incremental changes in source data, which is essential if ADE is to begin making fully meaningful use of the non-cycle certified data collected from Pentamation environments and loaded to its "District Data Warehouse" region in its Cognos data warehouse (in contrast to the cycle data oriented "State Data Warehouse" region) to populate dashboards and scorecards. The new operational data store will allow ADE to ensure the synchronicity of time dimensions of the data that are migrated to the Cognos warehouse, thus eliminating the frustration of discrepancies between data viewed or reported in different environments due to point-in-time data collection issues. As committed to in the 2008 IES grant application, a facility will be provided to handle the cycle certification process online and improve overall quality management. Currently, Pentamation data are loaded via a set of old and brittle Informix 4GL Genaro ETL routines directly from the DIS mainframe to the SIS running on a DIS Informix database. ADE is seeking to more effectively document these programs as part the ETL upgrade effort already under way, but ADE needs additional resources to complete this work.

Data Quality. Since 2005, ADE has devoted substantial effort to creating an organizational structure and plan to ensure data quality. ADE established an Office of Data Quality (ODQ), established a formal program of data stewardship, and published a formal data quality campaign plan, and has gradually implemented elements of the plan with good results. In 2007, ADE established a web-based data dictionary/metadata management system. With 2008 IES grant funding, ADE is pursuing several data quality improvement initiatives, including expanding the data dictionary/metadata management system, developing a collaboration portal for data stewards, beginning a quality measurement and reporting program, and conducting a data audit from now through 2011.

Arkansas has made solid progress on quality programs and policies and has built a strong culture of data quality, but it has not previously addressed the complementary need to build quality directly into its information systems architecture, allowing quality to be addressed using facilities provided within the system. To address this, ADE will introduce a commercial data quality rules engine such as DataFlux or a similar product as part of its plan to restructure the data staging area, as previously described. The staging area will be designed to not only allow districts and schools to review and certify data, but also allow direct implementation of data quality monitoring and continuous improvement using profiling, standardizing, clustering, and other techniques, thus giving data stewards and others the ability to analyze the data and resolve problems in source systems. ADE would like to enhance, expand, and more formally organize its data stewardship program; this will realize the benefits of the new capability offered through such a facility, accelerate work currently under way to populate the existing data dictionary model, and address the very large body of work implied in the transition to the use of standards-

