

Project Investment Justification

Arizona Workforce Evaluation Data System

E018001

Office of Economic Opportunity

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1. GENERAL INFORMATION

PIJ ID: EO18001

PIJ Name: Arizona Workforce Evaluation Data System

Account: Office of Economic Opportunity

Business Unit Requesting: Office of Economic Opportunity

Sponsor: Paul Shannon

Sponsor Title: Director

Sponsor Email: paul.shannon@oeo.az.gov

Sponsor Phone: (602) 771-0478

2. MEETING PRE-WORK

2.1 What is the operational issue or business need that the Agency is trying to solve? (i.e....current process is manual, which increases resource time/costs to the State/Agency, and leads to errors...):

The state does not have a high quality longitudinal workforce evaluation data system that matches data on individuals from education and workforce programs over time. Aggregate findings from such a system produce an important source of information for state policymakers, program administrators and the public. The task of matching individuals in disparate databases where a patchwork of identifiers exist is a complex technical problem. Building a system that facilitates privacy-preserving data matching requires experienced computer scientists.

2.2 How will solving this issue or addressing this need benefit the State or the Agency?

The development of a data system that combines data from education and workforce programs will benefit a number of stakeholders. State policymakers can design and fund programs that help people gain skills effectively and move into sustainable jobs. Workforce program managers can measure the effectiveness of their services based on employment outcomes. Community colleges and universities can benchmark and improve outcomes of graduates and former students. Parents and students can make informed decisions on education choices to increase the likelihood of better jobs and wages upon graduation.

2.3 Describe the proposed solution to this business need.

Through a competitive solicitation process, OEO has chosen a qualified vendor to build a computing system called Arizona Workforce Evaluation Data System (AWEDS). AWEDS will be separate from the administrative data systems used for program administration in the host agencies. The data pipeline for AWEDS begins after data extracts are produced from the administrative data systems (databases, mainframe files etc.), and ends in the central system where record linkages are made and statistical records have been created for analysis.

To reduce privacy risk, an identical suite of software will be used in the host agencies for de-identifying data. De-identification is done by transforming direct identifiers such as social security numbers before the secure transmission of the data to a central system, where linkages are performed and statistical results are produced. The results of the data matching across programs would be a system of linked records. A select group of approved analysts from the participating agencies would be granted access to this system of records using written enforceable agreements that cover stipulations on non-disclosure and data use.

Copies of individual-level administrative data will not be replicated. In other words, the data warehouse concept involving long-term storage of administrative data is not being considered. The system of records in AWEDS will be retained only for the duration of an analysis period, when it is accessed for statistical purposes. The data curation exercise will be repeated once every quarter. More about this design can be seen in the scope of work in part 2 of the Request for Proposal.

2.4 Has the existing technology environment, into which the proposed solution will be implemented, been documented?

Yes

2.4a Please describe the existing technology environment into which the proposed solution will be implemented.

2.5 Have the business requirements been gathered, along with any technology requirements that have been identified?

Yes

2.5a Please explain below why the requirements are not available.

3. PRE-PIJ/ASSESSMENT

3.1 Are you submitting this as a Pre-PIJ in order to issue a Request for Proposal (RFP) to evaluate options and select a solution that meets the project requirements?

No

3.1a Is the final Statement of Work (SOW) for the RFP available for review?

3.2 Will you be completing an assessment/Pilot/RFP phase, i.e. an evaluation by a vendor, 3rd party or your agency, of the current state, needs, & desired future state, in order to determine the cost, effort, approach and/or feasibility of a project?

No

3.2a Describe the reason for completing the assessment/pilot/RFP and the expected deliverables.

3.2b Provide the estimated cost, if any, to conduct the assessment phase and/or Pilot and/or RFP/solicitation process.

3.2e Based on research to date, provide a high-level cost estimate to implement the final solution.

4. PROJECT

4.1 Does your agency have a formal project methodology in place?

Yes

4.2 Describe the high level makeup and roles/responsibilities of the Agency, Vendor(s) and other third parties (i.e. agency will do...vendor will do...third party will do).

(1) The Nerderly, OEO and participating agencies will identify data elements, establish data formats for data extracts. Participating agencies will create processes that produce data extracts from host systems. (2) The Nerderly will create the de-identification and data preparation software. The participating agencies will implement de-identification software in agency environment with assistance from The Nerderly. (3) The Nerderly will design, test, implement and operate the AWEDS data matching system on AWS. (4) The Nerderly will design, test and implement risk management and security procedures for all AWEDS components. (5) The Nerderly will design, test and implement quality control software with assistance from the participating agencies. (6) The Nerderly, OEO and participating agencies will gather the requirements for the analysis and reporting component of the AWEDS. The Nerderly will design, test, implement and operate the analysis and reporting component of the AWEDS on AWS.

4.3 Will a PM be assigned to manage the project, regardless of whether internal or vendor provided?

Yes

4.3a If the PM is credentialed, e.g., PMP, CPM, State certification etc., please provide certification information.

4.4 Is the proposed procurement the result of an RFP solicitation process?

Yes

4.5 Is this project referenced in your agency's Strategic IT Plan?

Yes

5. SCHEDULE

5.1 Is a project plan available that reflects the estimated Start Date and End Date of the project, and the supporting Milestones of the project?

Yes

5.2 Provide an estimated start and finish date for implementing the proposed solution.

Est. Implementation Start Date

Est. Implementation End Date

1/1/2018 12:00:00 AM

12/31/2018 12:00:00 AM

5.3 How were the start and end dates determined?

Based on project plan

5.3a List the expected high level project tasks/milestones of the project, e.g., acquire new web server, develop software interfaces, deploy new application, production go live, and estimate start/finish dates for each, if known.

Milestone / Task	Estimated Start Date	Estimated Finish Date
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5.4 Have steps needed to roll-out to all impacted parties been incorporated, e.g. communications, planned outages, deployment plan?

Yes

5.5 Will any physical infrastructure improvements be required prior to the implementation of the proposed solution. e.g., building reconstruction, cabling, etc.?

No

5.5a Does the PIJ include the facilities costs associated with construction?

5.5b Does the project plan reflect the timeline associated with completing the construction?

6. IMPACT

6.1 Are there any known resource availability conflicts that could impact the project?

No

6.1a Have the identified conflicts been taken into account in the project plan?

6.2 Does your schedule have dependencies on any other projects or procurements?

No

6.2a Please identify the projects or procurements.

6.3 Will the implementation involve major end user view or functionality changes?

No

6.4 Will the proposed solution result in a change to a public-facing application or system?

No

7. BUDGET

7.1 Is a detailed project budget reflecting all of the up-front/startup costs to implement the project available, e.g, hardware, initial software licenses, training, taxes, P&OS, etc.?

Yes

7.2 Have the ongoing support costs for sustaining the proposed solution over a 5-year lifecycle, once the project is complete, been determined, e.g., ongoing vendor hosting costs, annual maintenance and support not acquired upfront, etc.?

Yes

7.3 Have all required funding sources for the project and ongoing support costs been identified?

Yes

7.4 Will the funding for this project expire on a specific date, regardless of project timelines?

No

7.5 Will the funding allocated for this project include any contingency, in the event of cost over-runs or potential changes in scope?

Yes

8. TECHNOLOGY

8.1 Please indicate whether a statewide enterprise solution will be used or select the primary reason for not choosing an enterprise solution.

There is not a statewide enterprise solution available

8.2 Will the technology and all required services be acquired off existing State contract(s)?

No

8.3 Will any software be acquired through the current State value-added reseller contract?

No

8.3a Describe how the software was selected below:

8.4 Does the project involve technology that is new and/or unfamiliar to your agency, e.g., software tool never used before, virtualized server environment?

Yes

8.5 Does your agency have experience with the vendor (if known)?

No

8.6 Does the vendor (if known) have professional experience with similar projects?

Yes

8.7 Does the project involve any coordination across multiple vendors?

No

8.8 Does this project require multiple system interfaces, e.g., APIs, data exchange with other external application systems/agencies or other internal systems/divisions?

Yes

8.9 Have any compatibility issues been identified between the proposed solution and the existing environment, e.g., upgrade to server needed before new COTS solution can be installed?

No

8.9a Describe below the issues that were identified and how they have been/will be resolved, or whether an ADOA-ASET representative should contact you.

8.10 Will a migration/conversion step be required, i.e., data extract, transformation and load?

Yes

8.11 Is this replacing an existing solution?

No

8.11a Indicate below when the solution being replaced was originally acquired.

8.11b Describe the planned disposition of the existing technology below, e.g., surplus, retired, used as backup, used for another purpose:

8.12 Describe how the agency determined the quantities reflected in the PIJ, e.g., number of hours of P&OS, disk capacity required, number of licenses, etc. for the proposed solution?

The P&OS and hosting costs on AWS was provided by The Nerdery (vendor). It is noteworthy that the machine learning methods for data matching and associated software engineering practices are known, but the data profile and data quality are still unknown. Therefore, the appropriate machine learning techniques will need to be found using research and experimental work by the data scientists in The Nerdery.

8.13 Does the proposed solution and associated costs reflect any assumptions regarding projected growth, e.g., more users over time, increases in the amount of data to be stored over 5 years?

Yes

8.14 Does the proposed solution and associated costs include failover and disaster recovery contingencies?

Yes

8.14a Please select why failover and disaster recovery is not included in the proposed solution.

8.15 Will the vendor need to configure the proposed solution for use by your agency?

Yes

8.15a Are the costs associated with that configuration included in the PIJ financials?

Yes

8.16 Will any app dev or customization of the proposed solution be required for the agency to use the project in the current/planned tech environment, e.g. a COTS app that will req custom programming, an agency app that will be entirely custom developed?

No

8.16a Will the customizations inhibit the ability to implement regular product updates, or to move to future versions?

8.16b Describe who will be customizing the solution below:

8.16c Do the resources that will be customizing the application have experience with the technology platform being used, e.g., .NET, Java, Drupal?

8.16d Please select the application development methodology that will be used:

8.16e Provide an estimate of the amount of customized development required, e.g., 25% for a COTS application, 100% for pure custom development, and describe how that estimate was determined below:

8.16f Are any/all Professional & Outside Services costs associated with the customized development included in the PIJ financials?

8.17 Have you determined that this project is in compliance with all applicable statutes, regulations, policies, standards & procedures, incl. those for network, security, platform, software/application &/or data/info found at aset.az.gov/resources/psp?

Yes

8.17a Describe below the compliance issues that were identified and how they have been/will be resolved, or whether an ADOA-ASET representative should contact you:

8.18 Are there other high risk project issues that have not been identified as part of this PIJ?

No

8.18a Please explain all unidentified high risk project issues below:

9. SECURITY

9.1 Will the proposed solution be vendor-hosted?

Yes

9.1a Please select from the following vendor-hosted options:

Commercial data center environment, e.g AWS, Azure

9.1b Describe the rationale for selecting the vendor-hosted option below:

The vendor will host the system on AWS, in a FedRAMP compliant system for moderate impact levels, which has the appropriate set of controls for data with PII.

9.1c Has the agency been able to confirm the long-term viability of the vendor hosted environment?

Yes

9.1d Has the agency addressed contract termination contingencies, e.g., solution ownership, data ownership, application portability, migration plans upon contract/support termination?

Yes

9.1e Has a Conceptual Design/Network Diagram been provided and reviewed by ASET-SPR?

Yes

9.1f Has the spreadsheet located at <https://aset.az.gov/arizona-baseline-security-controls-excel> already been completed by the vendor and approved by ASET-SPR?

No

9.2 Will the proposed solution be hosted on-premise in a state agency?

No

9.2a Where will the on-premise solution be located:

9.2b Were vendor-hosted options available and reviewed?

9.2c Describe the rationale for selecting an on-premise option below:

9.2d Will any data be transmitted into or out of the agency's on-premise environment or the State Data Center?

9.3 Will any PII, PHI, CGIS, or other Protected Information as defined in the 8110 Statewide Data Classification Policy be transmitted, stored, or processed with this project?

Yes

9.3a Describe below what security infrastructure/controls are/will be put in place to safeguard this data:

The "data security" and "risk management" section of the proposal from The Nerdery (vendor) has details on how the infrastructure will be secured to safeguard data. The system is designed to be deployed once every quarter on AWS for an operating period that would last a few weeks, after which the system and the data would be scrubbed. OEO will work with ASET to conduct quarterly penetration tests of the system before data is transmitted from the participating agencies.

Also, individual-level data will have direct identifiers such as social security numbers, names, and addresses transformed by using techniques such as cryptographic hashing and encryption. Privacy-preserving data matching will be done using these alternate identifiers. See scope of work in section 2 of the Request for Proposal for more on this topic.

10. AREAS OF IMPACT

Application Systems

New Application Development

Database Systems

Data Warehouse/Mart;Database Consolidation/Migration/Extract Transform and Load Data;MySQL

Software

Open Source

Hardware

Hosted Solution (Cloud Implementation)

AWS (non-government) cloud

Security

Encryption;Firewall;Intrusion Detection System (IDS);Intrusion Prevention System (IPS)

Telecommunications

Enterprise Solutions

Business Intelligence System

Contract Services/Procurements

11. FINANCIALS

Description	PIJ Category	Cost Type	Fiscal Year Spend	Quantity	Unit Cost	Extended Cost	Tax Rate	Tax	Total Cost
Product delivery, strategy, compliance, business analysis, system architecture and user experience design.	Professional & Outside Services	Development	1	1	\$1,393,089	\$1,393,089	0.00%	\$0	\$1,393,089
Agile software development, data architecture and data science.	Professional & Outside Services	Development	1	1	\$924,887	\$924,887	0.00%	\$0	\$924,887
Application integration involving agile development, back-end and front-end development, tooling and infrastructure	Professional & Outside Services	Development	1	1	\$1,169,253	\$1,169,253	0.00%	\$0	\$1,169,253
Quality assurance, DevOps and infrastructure costs (covers P&OS, software and hosting costs).	Other	Development	1	1	\$1,198,171	\$1,198,171	0.00%	\$0	\$1,198,171
Year 2 operation and maintenance costs (covers P&OS, software and hosting costs)	Other	Operational	1	1	\$720,000	\$720,000	0.00%	\$0	\$720,000
Year 3 operation and maintenance costs (covers P&OS, software and hosting costs)	Other	Operational	1	1	\$720,000	\$720,000	0.00%	\$0	\$720,000
Year 4 operation and maintenance costs (covers P&OS, software and hosting costs)	Other	Operational	1	1	\$720,000	\$720,000	0.00%	\$0	\$720,000
Year 5 operation and maintenance costs (covers P&OS, software and hosting costs)	Other	Operational	1	1	\$720,000	\$720,000	0.00%	\$0	\$720,000

Base Budget (Available)	Base Budget (To Be Req)	Base Budget % of Project
\$0	\$0	0%
APF (Available)	APF (To Be Req)	APF % of Project
\$0	\$0	0%
Other Appropriated (Available)	Other Appropriated (To Be Req)	Other Appropriated % of Project
\$0	\$0	0%
Federal (Available)	Federal (To Be Req)	Federal % of Project
\$0	\$0	0%
Other Non-Appropriated (Available)	Other Non-Appropriated (To Be Req)	Other Non-Appropriated % of Project
\$8,249,600	\$0	100%

Total Budget Available	Total Development Cost
\$8,249,600	\$4,685,400
Total Budget To Be Req	Total Operational Cost
\$0	\$2,880,000
Total Budget	Total Cost
\$8,249,600	\$7,565,400

12. PROJECT SUCCESS

Please specify what performance indicator(s) will be referenced in determining the success of the proposed project (e.g. increased productivity, improved customer service, etc.)? (A minimum of one performance indicator must be specified)

Please provide the performance objective as a quantifiable metric for each performance indicator specified.

Note: The performance objective should provide the current performance level, the performance goal, and the time period within which that performance goal is intended to be achieved. You should have an auditable means

to measure and take corrective action to address any deviations.

Example: Within 6 months of project completion, the agency would hope to increase "Neighborhood Beautification" program registration by 20% (3,986 registrants) from the current registration count of 19,930 active participants.

Performance Indicators

Within 6 months of project completion 4 research products approved by the Workforce Data Task Force will be produced by AWEDS.

Note: Here the Workforce Data Task Force (A.R.S. 41-5404) is a governance body that was set up to oversee development and operations of AWEDS.

13. CONDITIONS

Conditions for Approval

Should the final costs exceed the estimated costs by 10% or more, or should there be significant changes to the proposed technology, scope of work or implementation schedule, the Agency must amend the PIJ to reflect the changes and submit it to ADOA-ASET for review and approval prior to further expenditure of funds.

The Arizona Baseline Security Controls document must be completed in order to ensure that the selected solution will provide an appropriate level of protection for State data.

The Office of Economic Opportunity must return to ITAC to inform the Committee of any changes if the project is significantly altered as a result of a formal Administrative Process by any of the Interested Parties.

14. ENGAGEMENT MANAGER COMMENTS

Project Background

The Office of Economic Opportunity does not currently have an easy way to aggregate data from the many education and workforce programs that exist, in order to produce meaningful information that can be used by policy makers and stakeholders.

Business Justification

With better information, State policymakers can design and fund programs that help people gain skills effectively and move into sustainable jobs. Workforce program managers can measure the effectiveness of their services based on employment outcomes. Community colleges and universities can benchmark and improve outcomes of graduates and former students. Parents and students can make informed decisions on education choices to increase the likelihood of better jobs and wages upon graduation.

Implementation Plan

The vendor has provided a detailed Scope of Work that outlines their development and implementation plan. The Office of Economic Opportunity will also be providing Project Management and there are a pre-defined series of Milestones that will be achieved.

Vendor Selection

With assistance from the State Procurement Office, the Office of Economic Opportunity issued a Request for Proposal to the community. After the vendor community submitted their responses, a Steering Committee help select the chosen vendor by applying pre-defined measurement and selection criteria.

Budget or Funding Considerations

There are no budget or funding considerations at this time.

15. PIJ REVIEW CHECKLIST

Agency Project Sponsor

Paul Shannon

Agency CIO (or Designee)

Vignesh Sukumaran

Agency ISO (or designee)

Mike Lettman

OSPB Representative

ASET Engagement Manager

ASET SPR Representative

Owen Zorge

Agency SPO Representative

Cori Masters

Agency CFO

Susie Myers