ADOA-ASET

Project Investment Justification

Version 01.01

A Statewide Standard Document for Information Technology Projects

Project Title:

Mainframe Refresh

Agency Name:	**ADOA – ASET**
Date:	**August 11, 2014**
Agency Contact Name:	**Patrick Cravens**
Agency Contact Phone:	
Agency Contact Email:	

Hover for Instructions

I. Management Summary*

The current IBM z/10 mainframe system, at the State Data Center (SDC) for the Arizona Department of Administration (ADOA), located at 1510 West Adams Street in Phoenix, provides direct mainframe computing capacity for eight (8) State and county agencies: AHCCCS, ADOA, ADOT, HHCS, ASU, ADHS, Pima County, and indirect processing for ADPS. This system is currently rated at a capacity of 1,612 MIPS (millions of instructions per second). This environment replaced individual mainframe computers at several of these agencies, consolidating State mainframe computing needs into a single service provider. Following the consolidation of these systems, the represented agencies' processing demand has grown at a normalized rate of approximately 5-7% per year. During 2010, the processing demand had risen to a level that required replacement of the then-current infrastructure. The IBM z/10 processor that is installed today was that replacement machine.

Today, the State is facing similar, yet more critical, issues. Over the past three (3) years, processing demand has risen organically at a 6% rate and the system resource utilization rate now consistently rises to 90% and above during the business day, peaking at 100% more frequently in the last month. The net effect of that utilization rate to the user community is slower performance. As the individual logical partitions compete for physical resources, the system has to slow down to be able to accommodate the increased processing requests. As an example, a Department of Transportation employee submits a request to update a consumer's car title information. When the system is experiencing utilization at or above 90%, that request might take several seconds to process, when, under more normal circumstances, sub-second response times are the norm. The system doesn't stop; it slows to allow processes to complete.

This document outlines potential solutions to the two current issues with the ADOA IBM z/10 infrastructure: first, provide relief to the processing workload by adding capacity, replacing the current hardware; second, introduce a more flexible mainframe infrastructure by supporting non-traditional operating systems (such as Linux, Windows, and Power). Newer mainframe systems now have the capability to integrate non-traditional mainframe operating systems within the infrastructure to accommodate a growing demand for processing in Linux, Windows, and RISC systems. As agencies explore migration from their current processing and application models to newer applications, the transition from their current production infrastructure can be very high risk. By the introduction of a more flexible mainframe platform, these transitions can be simplified and the risk of application migrations can be reduced.

II. Project Investment Justification (PIJ) Type*

☐ **Yes** ☒ **No** Is this document being provided for a Pre-PIJ / Assessment phase?

If Yes,

Identify any cost to be incurred during the Assessment phase.	$
Based on research done to date, provide a high-level estimate or range of development costs anticipated for the full PIJ.	$

Explain:
6T

☐ **Yes** ☒ **No** Will a Request for Proposal (RFP) be issued as part of the Pre-PIJ or PIJ?

III. Business Case

*A. Business Problem**

The increased processing requirements are undergoing significant changes. Several agency customers are exploring application migration from the current mainframe platform to other platforms such as Windows or Linux. This reevaluation of their workload is being driven in part by the needs of the agency business units to modernize their applications, some of which were originally written more than 20 years ago, as well as a general business need to revitalize current application functionality. Many agency-specific applications have been modified and improved to accommodate additional business unit functional requirements over time; as a result it is common to see the number of transactions across the entire mainframe steadily increasing. This organic growth has been normalized to approximately 6% year over year. Recently new Federal programs, such as the Affordable Care Act (ACA), and potentially new State programs will accelerate the normal growth of some State agencies. As an example, the Arizona Health Care Cost Containment System (AHCCCS) is realizing a current growth increase of 20%. This jump in computing demand is pushing the ADOA mainframe to regularly operate at 90-95% of its total available capacity. Additionally, increased mainframe usage is also occurring at both the Department of Transportation and the Department of Corrections, which adds to the problem of providing adequate data processing capacity for all customers. As the mainframe approaches 100% of its processing capacity, more transactions are scheduled than can be serviced. As a result, more transactions wait for system resources, causing a delay in processing. These processing delays will continue to increase as demand increases until the system is unable to service additional workload. As an example, when drivers seek to renew their driver's license in a Motor Vehicle Division office, their information is entered into the ADOT-DMV system. When the operator presses the "Enter" button to submit an update, normal response time is less than a second. As the system slows down, the wait time between pressing "Enter" and getting a response increases, in some cases, to more than five (5) or six (6) seconds, and, in very bad cases, more than a minute. This very issue at ADOT-DMV was reported in the *Arizona Republic* recently.

*B. Proposed Business Solution**

This PIJ proposes to improve system performance and flexibility at the lowest risk to the State data systems by refreshing the current IBM z/10 mainframe system with a more robust, higher processing mainframe system using the mechanism of a five (5) year Fair Market Value lease contract with an appropriate vendor. This solution will provide additional capacity for the near term future system processing capabilities, as well as provide flexibility to multiple operating system platforms. This solution will provide value for approximately five (5) years based on the historical growth since the last system upgrade in 2010. A Rough Order of Magnitude (ROM) estimate for lease over a five year period would be in the twelve million dollar ($12,000,000.00) range, including software upgrade costs.

Refreshing the ADOA mainframe will provide increased capacity and greater flexibility required to accommodate other mainframe operating system support requests from various agency partners and enhanced ability of the ADOA mainframe infrastructure to those agency partners and to the citizens of Arizona required not only today, but for the next five years.

This PIJ specifically requests approval for an amount of $2,878,371.00 in Development Costs to instantiate the delivery of this leased mainframe, a one-time cost for mainframe software, and the first year of increased software maintenance.

*C. Quantified Benefits**

X	Service enhancement
	Increased revenue
	Cost reduction
X	Problem avoidance
X	Risk avoidance

Explain:

A newer, more robust mainframe system will provide ADOA with the ability to provide customers with greater system performance and the flexibility to utilize new operating systems, such as Linux and Windows, which have not been previously available with the existing mainframe environment.

The customers of the existing z/10 mainframe system are encountering problems with slowness due to the capacity demands currently put on the current mainframe infrastructure. These problems will not only be avoided, but virtually eliminated through the upgrade of the existing mainframe system.

The primary reason for this Fair Market Value lease is for risk avoidance. In order to mitigate potential issues with Federal funding for Capital Equipment expenditures, a Fair Market Value lease will allow for replacement of the z10 mainframe and leverage Operational Expense to fund the purchase.

IV. Technology Approach

*A. Proposed Technology Solution**

According to Gartner, the next generation of IBM mainframes (zEC12) was announced in August, 2012. This model system extends IBM mainframe flexibility to integrate multiple operating systems within a single hardware environment so that that as clients begin execution of strategic plans to migrate their applications from CICS/MVS to Linux, Windows, or Power platforms, the mainframe is positioned to accommodate the majority of these new/re-written applications.

Additionally, the newer hardware platform has a 46% increase in capacity and throughput, running at 2,389 MIPS (millions of instructions per second). Utilization of the new hardware will allow current ADOA mainframe agency customers to effectively continue managing their computing needs for their older applications and will allow a lower risk migration path as applications are converted from traditional mainframe platforms to a newer, more portable infrastructure.

It is possible, however, that this model system may become end-of-life within the next two (2) years, and another IBM mainframe platform (z/Next) may replace that current solution within the time frame of this lease. Language in the five (5) year Fair Market Value lease contract negotiated with the appropriate vendor will allow ADOA immediate use of the zEC12 system and will also allow a transition to z/Next technology upon its availability.

B. Technology Environment

To effectively migrate existing data from the legacy ADOA mainframe platform to the new ADOA mainframe solution, a phased approach has been developed which will result in minimal (4 to 8 hours) disruption to day-to-day operations, administration and payroll activities. The following is a high-level overview of the phased approach:

Phase 1: Negotiate terms with vendors. Write project charter. Gain ITAC approval. Gain Favorable Review from JLBC. Gain SPO approval. Start project.

Phase 2: Lease mainframe hardware and software from selected vendor(s). Purchase software upgrades for new mainframe.

Phase 3: Begin technical planning, including power requirements, software validation, coordination of scheduled outages with mainframe customers, planning floor space for the new mainframe system, and distributing communications to the appropriate stakeholders.

Phase 4: Receive and install mainframe hardware and software.

Phase 5: Test new ADOA mainframe environment.

Phase 6: Plan cutover of all processing to new mainframe environment.

Phase 8: Dismantle old z/10 mainframe and send to surplus.

Phase 9: Achieve project acceptance and sign-off. Close project.

C. Selection Process

An Invitation for Bid (IFB) was utilized in order to identify potential vendors for this solution. A single vendor responded, IBM Corporation, that proposed a Fair Market Value lease. The Fair Market Value lease solution was selected due to significantly lower risk and cost considerations.

Refreshing the ADOA mainframe will provide additional capacity, providing for relief from the current processing demand. By adding infrastructure efficiency and flexibility, the expanded platform will support agency customers' migration from legacy applications to newer cloud or web-based applications.

Additionally, refreshing the mainframe aligns with ADOA-ASET's IT strategy and objectives by utilizing leading edge technologies and improving an infrastructure's ability to provide support for multiple operating systems within a single solution. As client agencies strive to modernize their applications and processes, a powerful, flexible infrastructure is an essential factor in provisioning of a cost-effective, lower risk solution.

V. Project Approach

*A. Project Schedule**

Project Start Date: 09/09/2014 **Project End Date**: 10/30/2014

B. Project Milestones

Major Milestones	Start Date	Finish Date
Hardware/Software Ordered	09/09/14	09/09/14
Technical Planning Starts	09/09/14	09/20/14
Hardware/Software Delivered, Installed, Tested	10/14/14	10/20/14
Cutover all processing functions from old z/10	10/19/14	10/19/14
Legacy z/10 Mainframe Dismantled and Returned to IBM	10/21/14	10/24/14
Project acceptance and sign-off	10/27/14	10/27/14
Creation of Lessons Learned	10/27/14	10/30/14

VI. Roles and Responsibilities

A. Project Roles and Responsibilities

Agency Director: Brian C. McNeil, ADOA Director
Chief Information Officer: Aaron V. Sandeen, ADOA Deputy Director, State CIO
Project Sponsor: Donald L. Hennington, Chief Operating Officer, Assistant Director, ADOA-ASET
Project Manager (PM): Ken Roundtree, Project Manager, ADOA-ASET
Technical PM: Patrick H. Cravens, Manager, Mainframe Systems Administration (MSA), ADOA-ASET
Technical Support: Howard Banks, Linda Kepner - MSA staff
Technical Support: Dennis Maynes - IBM

B. Project Manager Certification

[X] Project Management Professional (PMP) Certified
[X] State of Arizona Certified

☐ Project Management Certification not required

C. Full-Time Employee (FTE) Project Hours

Total Full-Time Employee Hours	150
Total Full-Time Employee Cost	$

VII. Risk Matrix, Areas of Impact, Itemized List, PIJ Financials

VIII. Project Approvals

A. *Agency CIO Review**

Key Management Information	Yes	No
1. Is this project for a mission-critical application system?	X	
2. Is this project referenced in your agency's Strategic IT Plan?	X	
3. Is this project in compliance with all agency and State standards and policies for network, security, platform, software/application, and/or data/information as defined in http://aset.azdoa.gov/security/policies-standards-and-procedures, and applicable to this project? If **NO**, explain in detail in the "XI. Additional Information" section below.	X	
4. Will this project transmit, store, or process sensitive, confidential or Personally Identifiable Information (PII) data? If **YES,** in the "XI. Additional Information" section below, describe what security controls are being put in place to protect the data.	X	
5. Is this project in compliance with the Arizona Revised Statutes (A.R.S.) and GRRC rules?	X	
6. Is this project in compliance with the statewide policy regarding the accessibility to equipment and information technology for citizens with disabilities?	X	

B. *Project Values**

The following table should be populated with summary information from other sections of the PIJ.

Description	Section	Number or Cost
Assessment Cost (if applicable for Pre-PIJ)	II. PIJ Type - Pre-PIJ Assessment Cost	**$**
Total Development Cost	VII. PIJ Financials tab	**$2,878,371.00**
Total Project Cost	VII. PIJ Financials tab	**$52,282,936.98**
FTE Hours	VI. Roles and Responsibilities	**150**

C. *Agency Approvals**

Contact	Printed Name	Signature	Email and Phone
Project Manager:	Ken Roundtree		
Agency Information Security Officer:	Mike Lettman		
Agency CIO:	Aaron V. Sandeen		
Project Sponsor:	Don Hennington		
Agency Director:	Brian C. McNeil		

IX. Optional Attachments

A. Vendor Quotes

X. Glossary

XI. Additional Information

PII will be handled through controls that have been put in place through ADOA's Security, Privacy and Risk (SPR) Team, based on the ADOA Security Policy Manual. These controls are based on NIST (National Institute of Standards and Technology) guidelines.

Links:

ADOA-ASET Website

ADOA-ASET Project Investment Justification Information Templates and Contacts

Email Addresses:

Strategic Oversight

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