



Paul Garstki Consulting

INDEPENDENT REVIEW
OF A PROPOSED
EDUCATOR LICENSING SYSTEM

For the
STATE OF VERMONT
AGENCY OF DIGITAL SERVICES (ADS)
And
The AGENCY OF EDUCATION (AOE)

Submitted to the
State of Vermont, Office of the CIO
by:

Paul E. Garstki, JD, Consultant
d/b/a/ Paul Garstki Consulting
344 Laird Pond Rd.
Plainfield, VT 05667
paulg.consulting@gmail.com

August 7, 2023

Version 2.0

TABLE OF CONTENTS

1	Executive Summary	6
1.1	Cost Summary	6
1.2	Disposition of Independent Review Deliverables	7
1.3	Identified High Impact &/or High Likelihood of Occurrence Risks	10
1.4	Other Key Issues.....	10
1.5	Recommendation.....	10
1.6	Independent Reviewer Certification.....	10
1.7	Report Acceptance.....	11
2	Scope of this Independent Review	12
2.1	In-Scope	12
2.2	Out-of-scope	12
3	Sources of Information	13
3.1	Independent Review Participants	13
4	Project Information	14
4.1	Independent Review Documentation.....	14
4.2	Historical Background	15
4.3	Project Goal.....	16
4.4	Project Scope	16
4.5	Project Phases, Milestones, and Schedule.....	20
5	Acquisition Cost Assessment	22
5.1	Cost Validation:	22
5.2	Cost Comparison:	22
5.3	Cost Assessment:	24
6	Technology Architecture Review	25

- 6.1 State’s Enterprise Architecture Guiding Principles 27
- 6.2 Sustainability 28
- 6.3 How does the solution comply with the ADS Strategic Goals enumerated in the Agency of Digital Services Strategic Plan 2022-2026? 28
- 6.4 Compliance with the Section 508 Amendment to the Rehabilitation Act of 1973, as amended in 1998 29
- 6.5 Disaster Recovery..... 29
- 6.6 Data Retention 29
- 6.7 Service Level Agreement..... 29
- 6.8 System Integration..... 30
- 7 Assessment of Implementation Plan32**
- 7.1 The reality of the implementation timetable 32
- 7.2 Readiness of impacted divisions/ departments to participate in this solution/project 33
- 7.3 Do the milestones and deliverables proposed by the vendor provide enough detail to hold them accountable for meeting the Business needs in these areas: 33
- 7.4 Does the State have a resource lined up to be the Project Manager on the project? If so, does this person possess the skills and experience to be successful in this role in your judgment? 36
- 8 Cost Analysis and Model for Benefit Analysis.....37**
- 8.1 Analysis Description: 37
- 8.2 Assumptions:..... 37
- 8.3 Funding: 37
- 8.4 Tangible Costs & Benefits: 37
- 8.5 Intangible Costs & Benefits:..... 38
- 8.6 Costs vs. Benefits: 39
- 8.7 IT ABC Form Review: 39
- 9 Analysis of Alternatives40**

9.1 Provide a brief analysis of alternate technical solutions that were deemed financially unfeasible..... 40

9.2 Provide a brief analysis of alternate technical solutions that were deemed unsustainable..... 40

9.3 Provide a brief analysis of alternate technical solutions where the costs for operations and maintenance were unfeasible. 40

10 Impact Analysis on Net Operating Costs.....41

10.1 Insert a table to illustrate the Net Operating Cost Impact. 41

10.2 Provide a narrative summary of the analysis conducted and include a list of any assumptions. 42

10.3 Explain any net operating increases that will be covered by federal funding. Will this funding cover the entire lifecycle? If not, please provide the breakouts by year. 42

10.4 What is the break-even point for this IT Activity (considering implementation and on-going operating costs)?..... 42

11 Security Assessment43

11.1 Will the new system have its own information security controls, rely on the State’s controls, or incorporate both? 43

11.2 What method does the system use for data classification? 43

11.3 What is the vendor’s breach notification and incident response process?..... 44

11.4 Does the vendor have a risk management program that specifically addresses information security risks?..... 44

11.5 What encryption controls/technologies does the system use to protect data at rest and in transit? 45

11.6 What format does the vendor use for continuous vulnerability management, what process is used for remediation, and how do they report vulnerabilities to customers?..... 45

11.7 How does the vendor determine their compliance model and how is their compliance assessed? 45

11.8 Further Comments On Security 45

12 Risk Assessment & Risk Register46

13 Attachments51

13.1 Attachment 1 – Cost Spreadsheet 52

13.2 Attachment 2 – Risk Register 53

TABLES

Table 1 - Cost Summary 6

Table 2 - Disposition of Independent Review Deliverables 7

Table 3 - Identified High Impact &/Or High Likelihood of Occurrence Risks 10

Table 4 - Independent Review Participants 13

Table 5 - Independent Review Documents 14

Table 6 - Major Deliverables 18

Table 7 - Project Phases 20

Table 8 - Project Milestones 21

Table 9 - Acquisition Costs 22

Table 10 - Project Lifecycle Costs 41

Table 11 - Project Lifecycle Cumulative Costs 41

1 EXECUTIVE SUMMARY

The present project proposes to implement and operate a new Educator Licensure System (ELS), replacing the existing problematic system. The selected vendor is R&A Solutions, Inc., DBA RANDA Solutions, of Franklin, Tennessee. The contract term would be 6 years – 1 year for implementation and 5 years of operation. The implementation cost is reasonable and appropriate, as are the operating costs.

We found the project to be well-managed, with enthusiastic participation from both ADS and AOE personnel. The technology architecture is modern, well-designed, and in alignment with the State’s IT Strategic Plan and the State’s technology preferences. The implementation plan proposed by the vendor is detailed, well-paced, and in our opinion likely to succeed on time. There is a tangible cost of **\$1,647,533.80** over the lifecycle, when compared to the hypothetical cost of continuing to use the existing system, but the intangible benefits to the State and its people are well worth the cost. The impact on State costs is equal to the tangible cost above. None of the possible alternatives considered were favorable for this project. A security assessment shows that the proposed solution would be highly secure, compliant with State and federal standards and industry best practices.

1.1 COST SUMMARY

Table 1 - Cost Summary

IT Activity Lifecycle (years):	5y
Total Lifecycle Costs:	\$2,302,993.80
Total Implementation Costs:	\$1,126,763.80
New Average Annual Operating Costs:	\$235,246.00
Current Annual Operating Costs	\$131,092.00
Difference Between Current and New Operating Costs:	\$104,154.00
Funding Source(s) and Percentage Breakdown if Multiple Sources:	State: 100%

1.2 DISPOSITION OF INDEPENDENT REVIEW DELIVERABLES

Table 2 - Disposition of Independent Review Deliverables

Deliverable	Highlights from the Review <i>Include explanations of any significant concerns</i>
Acquisition Cost Assessment	<p>The total acquisition cost would be \$1,126,763.80, of which \$805,458.80 would cover implementation services from the selected vendor.</p> <p>A comparison of implementation costs for similar systems in 2 other states indicates that Vermont would be paying about the same.</p> <p>The costs are valid and appropriate.</p>
Technology Architecture Review	<p>We find the proposed project’s architecture to be well-designed, aligned with the State’s needs, and likely to work well for its intended function.</p> <p>The overall architecture (SaaS, Cloud-hosted, user interface via browser, APIs for integration) is familiar to the State from implementing architecturally similar projects in many Agencies. As a pure SaaS application, the solution puts no burden on the State’s network beyond browser traffic.</p> <p>User interaction with the system is via any standard web browser using secure protocol from a computer or mobile device.</p> <p>The user base comprises two general groups: External users (such as applicants and educational preparation providers) and internal users (such as Agency Licensure Staff, State licensure staff, and other State staff). Each user role in both groups access the system via secure role-dedicated portals.</p> <p>The solution optimizes process by automating many AOE business processes and applicant notifications. Notably, the solution would resolve a number of deficiencies in the existing system.</p>
Implementation Plan Assessment	<p>The implementation is expected to take one year. The preliminary schedule is well-sequenced and fully consistent with the Agile/Hybrid approach employed by the vendor and preferred by the State. It includes State participation consistently and appropriately throughout the implementation period. It includes periods of review and adjustment, demonstrating an understanding that implementations often proceed in ways that were not fully anticipated, or require</p>

	<p>redefining focus and time allocation. All things considered, and with full participation and coordination from all relevant parties, the plan is likely to succeed in providing the solution desired by the State.</p> <p>There are some risks, none of them major, related to continued and consistent availability of State and vendor personnel.</p>
<p>Cost Analysis and Model for Benefit Analysis</p>	<p>Tangible Cost: \$1,752,993.80 over the lifecycle, when compared to the hypothetical cost of continuing to use the existing system.</p> <p>(This section includes a table listing expected intangible benefits with associated measures of success.)</p> <p>The processes facilitated by the proposed solution are crucial to the proper functioning of the State’s educational system and maintaining compliance with State and federal law. Anything impeding that need, such as the shortcomings of the existing system and poor performance by the vendor maintaining it, is potentially damaging to the State.</p> <p>Replacing the existing licensure solution with a fully functional one not only ensures that the educational system can continue to operate properly but also modernizes the licensure platform, increasing its useability, capability, and utility.</p> <p>For all these reasons, we assess that the tangible cost is a fair price to pay for the intangible benefits gained.</p>
<p>Impact Analysis on Net Operating Costs</p>	<p>The impact on net operating costs when considering project lifecycle costs compared to the cost of a hypothetical continuation of the existing system for the same lifecycle (\$655,460.00) is \$1,647,533.80.</p> <p>There is no break-even point for this IT activity.</p>
<p>Analysis of Alternatives</p>	<ul style="list-style-type: none"> • During the initial conception of this project, AOE became aware of an alternative CRM platform from PEGA Solutions in use at the Secretary of State office and used for professional licensure. The SOS solution was viewed and discussed as a possible existing solution that could be leveraged. In the event, however, it was found that the functions of the SOS solution were so different from that needed for the ELS that an adaptation would effectively amount to a whole new project. Since the Salesforce CRM was already under consideration as a possible ELS platform, it was redundant to pursue the leveraged solution.

- Continuing with the existing ALIS ELS would require a continuing, and probably increasing, dedication of staff and financial resources that very likely become unsustainable in a few years or less.

Security Assessment

The proposed solution will handle protected information of several types, consequently requiring a very robust security stance. The solution as proposed by the vendor and memorialized in the draft contract establishes that this solution would have that strong posture. The vendor demonstrates a comprehensive understanding of compliance standards, security and privacy controls, and physical security with recoverability. The three-layer recovery model with backup to a tertiary hosting site is a very good idea. We have no issues with security or privacy as proposed for this project.

1.3 IDENTIFIED HIGH IMPACT &/OR HIGH LIKELIHOOD OF OCCURRENCE RISKS

NOTE: Throughout the narrative text of this document, **Risks and Issues are identified by bold red text**, and an accompanying tag (**RISK_ID#_0**) provides the Risk or Issue ID to reference the risk, response, and reference in the Risk Register.

The following table lists the risks identified as having high impact and/or high likelihood (probability) of occurrence.

Please see the **Risk & Issues Register, in Section 12**, for details.

Table 3 - Identified High Impact &/Or High Likelihood of Occurrence Risks

Risk Description	RATING IMPACT/ PROB	State's Planned Risk Response	Reviewer's Assessment of Planned Response
(none)	0 0/0		concur

1.4 OTHER KEY ISSUES

none

1.5 RECOMMENDATION

We recommend that this project go forward as planned.

1.6 INDEPENDENT REVIEWER CERTIFICATION

I certify that this Independent Review Report is an independent and unbiased assessment of the proposed solution's acquisition costs, technical architecture, implementation plan, cost-benefit analysis, and impact on net operating costs, based on the information made available to me by the State.

DocuSigned by:

Paul Garstki

493B2479DEA04AE...

8/11/2023

Independent Reviewer Signature

Date

1.7 REPORT ACCEPTANCE

The electronic signature below represent the acceptance of this document as the final completed Independent Review Report.

DocuSigned by:

289191A4D6AB4C0...

ADS Oversight Project Manager

8/11/2023

Date

DocuSigned by:

6041A76735A7442

State of Vermont Chief Information Officer

8/14/2023

Date

2 SCOPE OF THIS INDEPENDENT REVIEW

2.1 IN-SCOPE

The scope of this document is fulfilling the requirements of Vermont Statute, Title 3, Chapter 056, §3303(d):

2.1.1 THE AGENCY SHALL OBTAIN INDEPENDENT EXPERT REVIEW OF ANY NEW INFORMATION TECHNOLOGY PROJECTS WITH A TOTAL COST OF \$1,000,000.00 OR GREATER OR WHEN REQUIRED BY THE CHIEF INFORMATION OFFICER

2.1.2 THE INDEPENDENT REVIEW REPORT INCLUDES:

- A. An acquisition cost assessment;
- B. A technology architecture and standards review;
- C. An implementation plan assessment;
- D. A cost analysis and model for benefit analysis;
- E. An analysis of alternatives;
- F. An impact analysis on net operating costs for the Agency carrying out the activity; and
- G. A security assessment.

2.2 OUT-OF-SCOPE

- A separate deliverable contracted as part of this Independent Review may be procurement negotiation advisory services, but documentation related to those services are not part of this report.

3 SOURCES OF INFORMATION

3.1 INDEPENDENT REVIEW PARTICIPANTS

Table 4 - Independent Review Participants

First	Last	Title	Role	Topic
Amanda	Meredith	EPMO Portfolio Manager	Portfolio Manager	Oversight
Drew	Elwood	EPMO Project Manager	Project Manager	Project Mgt.
Bill	Froberg	ADS Enterprise Architect	Enterprise Architect	Enterprise Architecture
Spencer	Lanning	ADS Security Analyst	Security Analyst	Security
Amy	Boulanger	ADS Business Analyst	Business Analyst	Business Process
Tracey	Delphia	ADS IT Director	Technical Lead	Information Technology (IT)
Morgan	Ecklund	ADS IT Systems Administrator	Subject Matter Expert	IT
Oblio	Leitch	ADS IT System Developer	Subject Matter Expert	IT
Brian	Treacy	ADS IT Manager	Subject Matter Expert	IT
Amy	Scalabrini	Education Programs Coordinator	Subject Matter Expert	Overview, History, Business, Finance
Josh	Souliere	Assistant Director of Education Quality Division	Business Lead	Overview, History, Business
Mark	Combs	Chief Technology Officer	Subject Matter Expert	Salesforce

4 PROJECT INFORMATION

4.1 INDEPENDENT REVIEW DOCUMENTATION

The following documents were used in the process and preparation of this Independent Review

Table 5 - Independent Review Documents

Document	Source
AOE Educator Licensing_RFP Comparison Workbook_102722.xlsx	State
AOE ELS - IT ABC Revised 20211203_FULLY_EXECUTED (1).pdf	State
AOE ELS Charter v1.0_EXECUTED.pdf	State
AOE ELS Logical Architecture (1).pdf	State
AoE ELS Logical Architecture Revised 230501d.pdf	State
AOE ELS Randa CONTRACT v4 (07-28-22).docx	State
AOE ELS RFP Evaluation Workbook (1).xlsx	State
AOE ELS Risks.pptx	State
Architecture Vision - AOE ELS Acquisition v 4 Deliver.docx	State
Stakeholders and Roles v3.docx	State
VT AOE ELS RANDA Response.pdf	State
VT_Pricing_BAFO.xlsx	State
AOE Educator Licensing System RFP v4 (2).docx	State
AOE ELS - Bidder Response Form 2022 v2 (2).docx	State
AOE ELS Bidders Conf QnAs (1).xlsx	State
RFP Written Q and A (2).xlsx	State
Item13-OPAL_Implementation_Report.pdf	State of Nevada

4.2 HISTORICAL BACKGROUND

CURRENT SOLUTION

Since 2012, the Agency of Education (AOE) has employed the Aithent Licensing Information System (ALiS) for online educator licensing. Aithent Inc. provides the AOE with licensing and fee management, data/document storage, and ongoing maintenance and support of their proprietary system. Over time, the system has become frustrating in several ways for Vermont’s educators and the licensure staff at AOE. The current system is unable to easily accommodate common features, required changes in business processes, or scale with technical demands. Some of the frustrations include:

- ALiS users (educators, staff) access the system by web browsers, but the system is only compatible with Windows-based Edge or (deprecated) Internet Explorer browsers, available only on Windows Operating Systems.
- Licensure Staff must often intervene manually to assist users in performing functions that should be available automatically for users, such as resetting account passwords.
- AOE’s legal staff uses ALiS for management of disciplinary cases. The existing system maintains *some* disciplinary and legal case records, but other related records such as case notes, documentation, and communications are maintained by the legal staff in a completely separate database.
- Applicants are able to submit incomplete applications, requiring licensure staff to assess and deny the applications, then send them back to applicants with instructions for correcting the applications, potentially multiple times. This wastes time and effort for both the staff and the applicants.

FIRST PROCUREMENT EFFORT

The contract with Aithent has been amended seven times (four have been for AOE desired upgrades and three for End Date extensions). In 2021, with an impending amendment expiration date approaching, and in accordance with VT State Bulletin 3.5, a fair bidding process was performed to determine if there was a current State enterprise solution that would be more favorable to AOE. The procurement process was supported by the ADS Enterprise Project Management Office with Project Management, Enterprise Architecture Vision and Design, Security Oversight, and Business Analysis to understand licensure needs and processes and to elicit functional requirements in the form of “user stories.”

This first procurement effort resulted in a vendor selection. The State commenced negotiations with the selected vendor, but due to circumstances including the Covid pandemic, these negotiations were terminated without a contract agreed.

SECOND (CURRENT) PROCUREMENT EFFORT

A new RFP was issued in September of 2022 with a due date of October 10, 2022. 7 compliant proposals were received. A proper evaluation process followed and 3 finalists were chosen. These 3 were invited to do demonstrations (demos) of their proposed solution, and these also were evaluated by the State.

The highest scoring bidder and selected vendor was Randa Solutions of Franklin, Tennessee. The State requested a Best and Final Offer (BAFO) from the vendor and received a financially improved offer. That BAFO was the source of vendor costs for the draft contract and for the present Review.

4.3 PROJECT GOAL

The State seeks to fulfill the following goals:

Development and implementation of an educator licensing management system (ELS) to replace and modernize the existing licensing system.

- A vendor to provide requisite ongoing support and maintenance of the replacement ELS.
- An ELS that can securely manage online fee collection and processing.
- The provision of any expert professional services required to convert and migrate information from the legacy system into the new ELS.
- Provision of all training needed to administer, operate, and interact with the new ELS.

4.4 PROJECT SCOPE

4.4.1 IN-SCOPE

- Replacement of the current system
- Multiple system implementations
- New base licensing solution
- New system functionality to include:
 - Workflow Management
 - User Account Management
 - Contact Management
 - Document Management
 - Records Management
 - Case Management
 - Reporting & Queries
 - Solution Administration
 - Public Portal
 - Online Services for Registered Users
 - License Process
 - Fee Management
 - Enforcement Process
 - L/RSB Meetings & Governance
 - Data Management

- Email/Notification Management
- System Interfaces
 - NIC for payment processing
 - ERP (eFinancePLUS) for educator updates
- Data Migration
- Document Migration
- Batch scanning of existing paper documents

4.4.2 OUT-OF-SCOPE

- VISION (State finance system) Integration

4.4.3 MAJOR DELIVERABLES

Table 6 - Major Deliverables

Deliverable	Description
Project Initiation	<ul style="list-style-type: none"> Contract, recurring program tasks, document management system.
Project Planning	<ul style="list-style-type: none"> Kick-off meeting. Work plans, baseline project plan, change management plan, risk management plan, communication management plan, issue management plan, requirement management plan, quality management plan, test management plan.
Business Requirements and Analysis	<ul style="list-style-type: none"> User interface documents and design. Business analysis and requirements. Business rules and user stories. Interoperability and dependency analysis (functional domain dependencies).
Platform Configuration	<ul style="list-style-type: none"> Deploy and setup ELS platform environments. Hosting and setup. Development, testing, and production environments. Deploy platform to environments. Test and confirm customer access.
Development Iterations	<ul style="list-style-type: none"> Expect 3 development iterations with 6 sprints. Scheduling and content of Agile iterations and sprints. Each sprint includes planning and estimation, software configuration, testing and QA, business analysis and requirements (ongoing), customer demonstration, review, and feedback.
Data Analysis and Migration	<ul style="list-style-type: none"> Data analysis – create database backup of existing legacy system for analysis. Conduct initial database analysis and statistics. Conduct data review sessions with AOE and ADS SMEs. Complete data tracking document and provide results to AOE. Data migration & Extract, Transform, and Load (ETL). Migrate cleansed data to the new platform.
AOE and ADS Testing and Feedback	<ul style="list-style-type: none"> Test cases and results. Document test results and feedback iteratively. Prioritize feedback, apply enhancements, and update documentation.

Finalize Platform Iteration	<ul style="list-style-type: none"> • Incorporate feedback enhancements into system.
Launch, Training, & Deployment	<ul style="list-style-type: none"> • Final data migration. • System Go-Live preparation. • Review system deployment and launch plan.
Training	<ul style="list-style-type: none"> • Training documentation. • Quick start guides. • Build user guides. • Review preliminary training documentation. • Incorporate feedback and finalize training plan. • Submit training plan for review and approval. • Update user guides. • Conduct training sessions.
Help Desk Support, Hosting, and Maintenance	<ul style="list-style-type: none"> • Ongoing throughout contract
Post Launch Support	<ul style="list-style-type: none"> • Project management ongoing communication. • Manage changes. • Respond to AOE and ADS issues and needs.

4.5 PROJECT PHASES, MILESTONES, AND SCHEDULE

Table 7 - Project Phases

Phase	Description
Initiation and Planning	Kick-off meeting, Preparation of project management plans including but not limited to work plans, baseline project plan, change management plan, risk management plan, communication management plan, issue management plan, requirement management plan, quality management plan, test management plan, training management plan.
Requirements Gathering	Contractor performs necessary requirements gathering to finalize functional and technical requirements and identify gaps between State requirements and Solution capabilities.
Legacy Data Analysis and Migration	Contractor shall create database backup of existing legacy system for analysis, using State-approved migration plan and data mapping templates. Conduct initial database analysis. Complete data tracking document and provide results to State. Hold data review sessions with AOE and ADS SMEs. Migrate cleansed data from all necessary platforms to the new solution.
Development	Contractor installs and configures the Solution in a Test environment.
Testing	State subject matter experts perform Solution testing in in a Test (not live) environment accordance with Contractor-developed Test plans. Document test results and feedback iteratively. Prioritize feedback, apply enhancements, and update documentation.
Training	Contractor creates all training documentation, including but not limited to Quick Start guides and User guides. Reflects all changes and fixes made to date. Documentation and training management plan approved by the State. Contractor performs training of State personnel (train the trainer or train the user).
Deployment	Contractor implements the tested and State-approved Solution, containing all bug fixes, in the production environment for additional State testing and Go-Live.
Post-Implementation Support/Warranty	Contractor shall be responsible for fixing all Defects found during the Warranty Period. All Defects found within the Warranty Period, shall be corrected by Contractor at no additional cost to the State.

The table below shows the Implementation Milestones as listed in the payments schedule table found in Attachment B, Payment Provisions, of the draft contract. The draft contract does not yet contain estimated dates for invoice submission corresponding to the milestones. These will be added once the selected vendor revises the Implementation Master Schedule after contract execution and the State approves it (as provided for in the draft contract Attachment A, Section 6.3).

Table 8 - Project Milestones

Milestone Name
Initiation and Planning
Requirements Gathering
Legacy Data Analysis and Migration
Development
Testing
Deployment and Deployment
Post-Implementation Support/Warranty

5 ACQUISITION COST ASSESSMENT

Table 9 - Acquisition Costs

Acquisition Costs	Cost	Comments
Hardware Costs	\$0.00	No hardware costs to State
Software Costs	\$0.00	No software costs to State
Implementation Services	\$805,458.80	See attach. 3, Cost Spreadsheet
State Personnel	\$303,536.00	See attach. 3, Cost Spreadsheet
Professional Services (e.g. Project Management, Technical, Training, Independent Review etc.)	\$17,769.00	See attach. 3, Cost Spreadsheet
Total Acquisition Costs	\$1,126,763.80	

5.1 COST VALIDATION:

Describe how you validated the Acquisition Costs.

- Implementation Services are as defined in the draft contract.
- State personnel costs were estimated by the State from past actuals and estimates going forward.
- Professional services are as agreed in a service contract.

5.2 COST COMPARISON:

How do the above Acquisition Costs compare with others who have purchased similar solutions (i.e., is the State paying more, less or about the same)?

We identified 15 states and one Canadian province as having recently (since 2018) implemented an educator licensing system. In cases where we could determine the vendor engaged, that information is included in the table below.

State	Vendor
Alberta, CA	Aithent
Arkansas	?
Colorado	Randa
Delaware	inLumon
Illinois	ILIS
Indiana	elmanage
Iowa	Salesforce
Kentucky	Randa
Maryland	The Canton Group
Mississippi	Randa
Montana	Randa
Nebraska	inLumon
Nevada	inLumon
New Hampshire	Randa
North Carolina	?
Ohio	Randa
South Carolina	Randa
Tennessee	Randa

Randa is the most popular at this time. That likely relates to the fact that they are the only one of the vendors implementing only education focused products.

The implementation of the Kentucky system cost approximately \$840,000. We spoke with Todd Davis, the Kentucky Department of Education Director, Division of Educator Preparation & Certification, Office of Educator Licensure and Effectiveness regarding their very recent implementation. The vendor was Randa. The requirements for the system were similar to those of the Vermont procurement, including disciplinary case management. The new system replaces They are greatly pleased with both the system and the vendor, so much so that they are considering an implementation of a new feature to optimize the Kentucky Educator Placement System (which fulfills a statutory requirement that schools post certified positions 30 days before they can be filled).

The Nevada system was implemented for \$609,835.16. (Additional contingency funds were approved but not used.) This was the lowest cost bid, the highest being approximately \$1.6 million. The system went live in 2018. It replaced a system that had been in operation since 2005. The features of the system are similar to those of the Vermont proposed system, including disciplinary case management but also adding different background check features to conform to Nevada law. Implementation of the system took longer than expected, in part because the system was customized from a general-purpose licensure system. Satisfaction with the new system is high.

Given that the Nevada implementation took place 5 years ago, on the basis of this small comparison we think that Vermont is paying about the same as other governmental entities.

5.3 COST ASSESSMENT:

Are the Acquisition Costs valid and appropriate in your professional opinion? List any concerns or issues with the costs.

Yes, the vendor's implementation cost seems in line with other projects of this size and scope. The range of bids received by the State from finalist vendors ranged as high as \$1.6 million. The estimates of State personnel time are reasonable and appropriate for the project.

Additional Comments on Acquisition Costs:

None

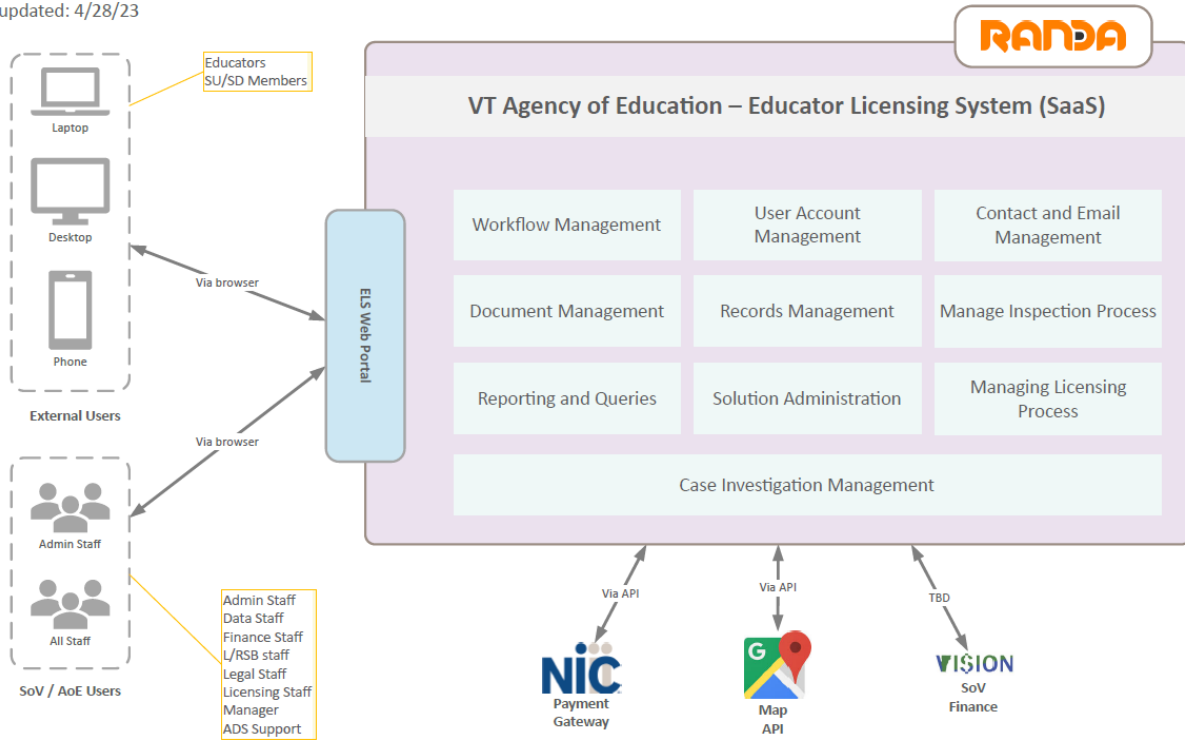
6 TECHNOLOGY ARCHITECTURE REVIEW

Overview

AoE – Educator Licensing System

Draft Architectural Context – Post-Selection

Last updated: 4/28/23



The diagram above (supplied by the State) illustrates the application architecture of the proposed system in logical form. The application itself is a Modified Off The Shelf (MOTS) system, which will be configured by the vendor (Randa: www.randasolutions.com) during implementation. The application is proprietary. The bid proposal is highly descriptive of the functionality of the application but generally opaque regarding the inner architecture. The solution uses SQL server and MongoDB for database functions. It will be deployed as a Software As A Service (SaaS) Cloud system, hosted in a highly secure third-party datacenter (Tierpoint: www.tierpoint.com). All hosting costs, operations, and maintenance are included in the Vendor's product offering.

User interaction with the system is via any standard web browser using secure protocol from a computer or mobile device. The system is Operating System (OS) and browser agnostic, resolving one of the primary complaints about the State's existing Aithent system. The user base comprises two general groups: External users (such as applicants and educational preparation providers) and internal users (such as Agency Licensure Staff, SoV IT staff, other SoV staff). Each user role in both groups access the system via secure role-dedicated portals. As a pure SaaS application, the solution puts no burden on the State's network beyond browser traffic.

Data integration with other services employ Application Programming Interfaces (APIs), consistent with State preference. The system will integrate with the State's preferred payment processor (Tyler Technologies' payment solution, generally known as NIC) and with the State's preferred Geographic Information System (GIS) for location data. Under consideration for the future is integration with the State's financial system, VISION; however it is not in-scope for this implementation.

The vendor states that the architecture is designed to ingest over eighteen different data categories aligned with teacher credentialing, licensing, exemplars of practice, and those data which teachers identify as their unique intellectual property in their professional practice.

The solution automates many AOE business processes and applicant notifications. Of particular note is that the system does not allow applicants (including renewal applicants) to submit applications until every requirement is fulfilled. It provides feedback to the applicant in the form of an illustrated "meter".

That feature resolves another major frustration with the State's existing system: Currently, an applicant can submit an application before all requirements of the application are met. The application is sent to a licensure specialist, who rejects and returns the application with an explanation of what's missing or insufficient, and the sequence can recur multiple times for a single applicant. It has been a relatively common occurrence and it wastes staff time, confuses the applicant, and delays the whole process.

The existing system maintains *some* disciplinary and legal case records, but other related records such as case notes, documentation, and communications are maintained by the legal staff in a completely separate database. The new system will maintain all relevant records without the State having to use of a separate database.

The system allows password reset by the user. Currently this task must be handled by State staff.

The vendor builds and maintains Development, Quality Assurance (QA), User Acceptance Testing (UAT), and Production environments for each instance of the deployed platform. (See 7.3.3 Testing and 7.3.4 Training, *below*, describing how these environments are employed.)

The vendor uses Metabase open-source software for Business Intelligence (BI) and reporting in the solution. According to the vendor, data analysis and reporting has minimal impact on the database performance. System performance is monitored continually with 95% of all page accesses within 2-3 seconds, and pages requiring data mining or filters taking 5-10 seconds depending on the complexity of the feature.

Assessment

The solution architecture aligns with State expectations and preferences. (See **Additional Comments on Architecture**, below.) The overall architecture (SaaS, Cloud-hosted, user interface via browser, APIs for integration) is familiar to the State from implementing architecturally similar projects in many Agencies. It is to the State's advantage that the proposed system is purpose-built for educator licensure. (Some other proposals were adaptations of systems designed for other functions.) It has been deployed successfully in other states. Additionally, the vendor's entire business line is education-focused, so they

are conversant with licensure processes, compliance requirements, and terminology, which would benefit the State by potentially streamlining implementation tasks and timelines.

The State's ADS Enterprise Architecture (EA) and Security divisions have developed the NFRs and evaluated the proposed system for alignment with the project Vision document. A Business Analyst was employed to assist in the development of user stories and documentation of business processes.

The proposed vendor and system fulfills all Functional and Non-Functional Requirements (NFRs) developed by the State and included in the RFP. The Functional Requirements listed in the Bidder Response Form of the RFP are in the form of a Requirement Title with an associated User Story. The same requirements were incorporated in the draft contract. User Stories are integral to the Agile development process, and it is to the State's credit that these were elicited and refined prior to the procurement process. On the other hand, strictly speaking they do not take the more traditional form of Functional Requirements. The EA staff expressed some slight preference for the traditional form. The State may want to consider whether this difference is important in the procurement process.

We find the proposed project's architecture to be well-designed, aligned with the State's needs, and likely to work well for its intended function.

6.1 STATE'S ENTERPRISE ARCHITECTURE GUIDING PRINCIPLES

6.1.1 A. ASSESS HOW WELL THE TECHNOLOGY SOLUTION ALIGNS WITH THE BUSINESS DIRECTION

The proposed solution has the potential to increase licensure staff efficiency by automating business processes which are repetitive and mechanical in the current system (such as checking applications for completed documentation of requirements, instead of manually checking applications, bouncing them back to the applicant when incomplete, and then reviewing them again after resubmission). The proposed solution incorporates built-in communication tools and templates to streamline communications between staff and applicants without the use of external systems.

6.1.2 B. ASSESS HOW WELL THE TECHNOLOGY SOLUTION MAXIMIZES BENEFITS FOR THE STATE

The proposed system benefits three main stakeholders:

- Current and Prospective Educators, because the system is much more accessible, and it is clearer in eliciting proper documentation of requirements;
- AOE staff, because it eliminates most of the frustrations, workarounds and redundant or repetitive processes;
- Vermont citizens, because it assures the continued high quality of the educator workforce.

6.1.3 C. ASSESS HOW WELL THE INFORMATION ARCHITECTURE OF THE TECHNOLOGY SOLUTION ADHERES TO THE PRINCIPLE OF INFORMATION IS AN ASSET

The information contained in the proposed system is essential to the proper functioning of the State's educational system, as well as maintaining compliance with State and federal law. The proposed system would enhance the value of that information by making it more easily and reliably acquired, accessed, and maintained.

6.1.4 D. ASSESS IF THE TECHNOLOGY SOLUTION WILL OPTIMIZE PROCESS

It will optimize process by intrinsically clarifying the application process for applicants, incorporating the use cases developed by the project team and staff with the Business Analyst, and increasing staff efficiency (see 6.1.1 above). Enforcement and legal case management tools will now be a fully-functional part of the solution, rather than requiring external storage of case notes in a desktop application.

6.1.5 E. ASSESS HOW WELL THE TECHNOLOGY SOLUTION SUPPORTS RESILIENCE-DRIVEN SECURITY.

See **section 7, Security Assessment**, below.

6.2 SUSTAINABILITY

The proposed solution is a pure Software-as-a-Service (SaaS) platform. Aside from web browsers and adequate network access, no additional hardware is required to operate the system for either State or other users. The software itself is sustainable in the sense that it can be adapted to accommodate new State license requirements as they arise. Taken together, these characteristics support long-term sustainability, as the State has minimal new hardware investment and significant flexibility should its needs change in the future.

6.3 HOW DOES THE SOLUTION COMPLY WITH THE ADS STRATEGIC GOALS ENUMERATED IN THE AGENCY OF DIGITAL SERVICES STRATEGIC PLAN 2022-2026?

6.3.1 IT MODERNIZATION

This is entirely a modernization project, allowing a much wider variety of modern browser types, a streamlined and clearer public user interface, and a comprehensive incorporation of newly documented business processes.

6.3.2 VERMONT EXPERIENCE

The public interface as encountered by prospective and renewing applicants will be much cleaner and more functional, with appropriate feedback through the application process. The applications are not considered complete and passed on to the licensure staff until all applicable requirements are fulfilled. This will very likely be experienced as a cleaner, more logical process.

6.3.3 CYBERSECURITY & DATA PRIVACY

An ADS Security Analyst was engaged through the procurement process of this project, [and relevant Non-functional Requirements (NFRs) supporting security were included in the RFP]. Please see **Section 7 Security Assessment**, *below*, for further information about security and privacy in this project.

6.3.4 FINANCIAL TRANSPARENCY

N/A

6.4 COMPLIANCE WITH THE SECTION 508 AMENDMENT TO THE REHABILITATION ACT OF 1973, AS AMENDED IN 1998

The proposed application conforms to Section 508 standards (36 CFR 1194.22). The vendor seems well-versed in the need for accessible user interfaces in government sponsored public-facing portals. We have no concerns in this regard.

6.5 DISASTER RECOVERY

See **Section 7, Security Assessment**, *below*.

6.6 DATA RETENTION

Pursuant to 1 V.S.A. § 317a (Management of Public Records) all public records are considered permanent unless destruction has been authorized under a record schedule approved by the State Archivist or by law. There is an Agency-specific Record Schedule for the Agency of Education, but it does not reference the information contained in this system. We did not find a General Record Schedule that references this information categorically. The selected vendor states that the system's database is scalable without limitation, so it would seem that the data in this system could be retained permanently.

6.7 SERVICE LEVEL AGREEMENT

6.7.1 WHAT ARE THE POST IMPLEMENTATION SERVICES AND SERVICE LEVELS REQUIRED BY THE STATE?

See 6.7.2, *below*.

6.7.2 IS THE VENDOR PROPOSED SERVICE LEVEL AGREEMENT ADEQUATE TO MEET THOSE NEEDS IN YOUR JUDGMENT?

The Service Level Agreement (SLA) draft between the vendor and the State (Attachment J in the draft contract) includes sufficient and appropriate service definitions and targets, including Uptime, Downtime, Planned Outages, application performance response, Scalability, Backup and Recovery times and frequency schedules, Support Targets, and tiered support ticket escalation times. The SLA includes appropriate remedies due should the vendor fail to meet targets. These all seem adequate to meet State needs.

6.8 SYSTEM INTEGRATION

6.8.1 IS THE DATA EXPORT REPORTING CAPABILITY OF THE PROPOSED SOLUTION CONSUMABLE BY THE STATE?

Yes. The system has extensive reporting capabilities. The selected vendor would source and manage the data by both data type and source system, validate the data, and make it available for use in data visualization, dashboards, and reports including the ability to drill down into the source data. Ad-hoc queries can be performed. Dashboards and reports can be configured to run on a schedule or at any time.

6.8.2 WHAT DATA IS EXCHANGED AND WHAT SYSTEMS (STATE AND NON-STATE) WILL THE SOLUTION INTEGRATE/INTERFACE WITH?

The primary interfaces are between the system and

- NIC, the payment gateway required by the State, to process applicant fees, etc.
- A Map API, to facilitate precise location of addresses

Integration with VISION, the State's financial system, is likely at a future date, but not in-scope for this implementation.

The vendor's proposal offers built-in integrations to 9 School Information System (SIS) vendors, as well as 15 more licensure-related services. At this time, those built-in integrations are not in-scope for this project.

Additional Comments on Architecture:

Customer (sometimes Consumer) Relationship Management (CRM) systems help organizations manage information about, and communications with, a large number of people. Originally developed for large corporations, they have been found adaptable to many other businesses and organizations. The present project could be considered to be a CRM system. Many other State systems are CRM systems as well.

When this project began, the State had a strong preference for CRM solutions to be developed and hosted on the State's CRM platform, Salesforce. The present project was conceived as a Salesforce

*project. The project's foundational documents (IT ABC form, Charter, Vision document) all describe it as a Salesforce project. (An exception is the Logical Architecture diagram, which was revised shortly before this Review). As related in **Section 4.2**, above, the initial procurement faltered, and the RFP was revised for a new procurement cycle.*

The second RFP allowed vendors to propose a Salesforce project or a non-Salesforce project. This difference results from a change in the State's technology solution preferences. The State's Chief Technology Officer (CTO) told us that, while Salesforce will continue to be an important platform for data projects and data use, recent changes in the Salesforce, Inc. pricing models have made it less of a priority to the State for some CRM projects.

7 ASSESSMENT OF IMPLEMENTATION PLAN

The implementation is expected to take 12 months from initiation to production go-live. The preliminary Implementation Master Schedule (IMS) attached to the draft contract defines a detailed chronological list with 12 major deliverables (see Section 4.5, above). These deliverables are contained in the 8 major phases of the implementation:

1. Initiation and Planning
2. Requirements Gathering
3. Legacy Data Analysis and Migration
4. Development
5. Testing
6. Training
7. Deployment
8. Post-Implementation Support/Warranty and Deployment

The preliminary IMS is well-sequenced and fully consistent with the Agile/Hybrid approach employed by the vendor and preferred by the State. It includes State participation consistently and appropriately throughout the implementation period. It includes periods of review and adjustment, demonstrating an understanding that implementations often proceed in ways that were not fully anticipated, or require redefining focus and time allocation. All things considered, and with full participation and coordination from all relevant parties, the plan is likely to succeed in providing the solution desired by the State.

After assessing the Implementation Plan, please comment on each of the following.

7.1 THE REALITY OF THE IMPLEMENTATION TIMETABLE

A full year of implementation is reasonable and do-able for a project of this intermediate size, probably more dependent on the availability of State staff throughout the implementation than vendor ability to deliver the technology.

Project tasks required of the State during implementation (e.g., acceptance testing, business process descriptions) could be delayed if coinciding with particularly busy times, such as prime license renewal period, approximately March-June. We identified this as a risk **RISK_ID#_R1_**. The State responded:

The project team acknowledges the possibility of overlap and the need to assure all required licensing activity is completed to allow for smooth opening of schools in the fall. Having knowledgeable backups and staggering the demand will reduce the risk.

We concur with this mitigation plan. The proposed vendor has implemented this solution in 5 other states, and presumably has experienced the annual rhythms of educator licensure, which should help during the implementation planning period.

Similarly, expected or unexpected licensure staff turnover could result in a loss of business knowledge during implementation. The State's risk register identifies the mitigation plan as "Institutional

knowledge should be captured during vendor discovery and training supports should be developed by the vendor to help support potential new AOE staff users." It is not clear from the contract draft that the vendor is assigned this particular responsibility. We identified this as a risk **RISK_ID#_R2**. The State responded:

The State is open to updating business processes and needs to work closely with the vendor to do so. This will be emphasized during the Business Requirements and Analysis Phase. Our intent is to leverage the solution's functionality to create improved workflows and not simply automate our existing processes, to evolve to more of a licensing generalist using standard workflows, from a specialist using customized workflows for each type of license. The State can make it clear that we expect to test this functionality and have all the training material reflect these improvements.

Concur. This is a very good mitigation plan.

The vendor is relatively small (25 employees). Attrition or competing demands could diminish the vendor's ability to deliver on time. We identified this as a Risk **RISK_ID#_R4**. The State responded:

The project team has discussed the vendor's size and acknowledges this contributes to increased risk. We believe the naming of staff in the contract and closely managing to the project schedule will provide some degree of mitigation.

Concur. We also recognize that the proposed vendor has implemented this system in 5 states and the State has received very positive reports in reference checks. The Kentucky Director of Licensure and Certification expressed the opinion that "you should be more worried about whether the state people can keep up with [the vendor]."

7.2 READINESS OF IMPACTED DIVISIONS/ DEPARTMENTS TO PARTICIPATE IN THIS SOLUTION/PROJECT

(consider current culture, staff buy-in, organizational changes needed, and leadership readiness).

We detected a lot of enthusiasm for this project among the AOE licensure staff and associated IT support staff. Much of the anticipation comes from an expectation that the new system will eliminate or ameliorate the frustrations experienced with the existing licensure system. This expectation aligns with the major objectives of the project, not unusual for a modernization effort. As the agency already employs an online system for licensure, no organizational changes are needed. There is a sense that the solution will allow staff to focus more fully on the important aspects of their jobs, rather than on backfilling for a creaky application.

7.3 DO THE MILESTONES AND DELIVERABLES PROPOSED BY THE VENDOR PROVIDE ENOUGH DETAIL TO HOLD THEM ACCOUNTABLE FOR MEETING THE BUSINESS NEEDS IN THESE AREAS:

7.3.1 A. PROJECT MANAGEMENT

The project management deliverables are defined in the contract and derive from the project management deliverables in the vendor's proposal. They comprise 20 topics and each is defined in sufficient detail.

<ul style="list-style-type: none"> • Project Charter • Project Management Plan • Formal Acceptance Criteria • Formal Acceptance Sign Off • Change Requests • Change Requests Log • Budget Log • Risk Log • Issue/Action Items/Decision Log • Decision Log 	<ul style="list-style-type: none"> • Requirements Documents • Test Plans • Test Cases & Results • IMS • Project Status Reports • Project Phase Audit/Gate Check • Meeting Agenda/ Minutes • End of Project Metrics • Lessons Learned • Closeout Report
---	--

The vendor has identified a well-qualified project manager to facilitate development activities. This individual is identified by name in the contract. As with other such vendor staff, any change in key project personnel by the vendor will require consultation and approval by the State.

7.3.2 B. TRAINING

According to the agreed-upon implementation phases and preliminary IMS, a training management plan will be developed in the first project phase (Initiation and Planning), and requires collaboration with, and approval by, the State. The plan will then be implemented in Phase 6, Training and Deployment. A well-qualified training professional has been assigned by the vendor to this role. The training plan *itself* is not in the contract, since it hasn't yet been devised; but the characteristics of the expected training processes are adequately identified in the proposal, as is appropriate for this project. The AOE staff will need some experience on the system as it is being developed to be able to assess where and how training should be focused.

Also, please see 7.3.3 Testing, *below*.

7.3.3 C. TESTING

The vendor will establish and maintain a sandbox environment for testing and training purposes throughout the duration of the contract. The sandbox is populated with realistic sample data and scrubbed of all Personally Identifiable Information (PII). The data used in testing and training will meet the State's specifications and allow the software to be tested and demonstrated in a real-world environment. The testing environment also equips the QA team and customer user groups to test software in a UAT process including integration with third-party components. UAT comprises activation

of the UAT sandbox environment, training the State’s UAT testers, developing the UAT test plan and test cases, and the UAT testing period itself. An additional sprint is scheduled following UAT testing for any fixes and improvements included in the Scope of Work. The training instance of the system equips trainers and learners with a realistic hands-on experience of the system.

The testing deliverable design is well-ordered and appropriate.

7.3.4 D. DESIGN

The proposed solution is (as the vendor calls it) a Modified Off The Shelf system. As such, it is a purpose-built application — meaning it is designed in the first place as an educator licensing system — that will be configured to meet the State’s particular business needs. The vendor is the originator of the application, so the configuration design process will rely heavily on the State’s definition of its needs. The State has largely defined these needs in terms of user stories. The design process is likely to be largely a process of aligning the application’s capabilities with the State’s needs in order to properly sequence them in an implementation plan.

7.3.5 E. CONVERSION (IF APPLICABLE)

The conversion process in this project would bring into the new system the data from the existing AlIS system. The selected vendor is experienced in bringing licensing data into this application. The general approach described by the vendor consists of: (1) discovery, documentation, and definition of all data sources and their schemas; (2) modeling of desired data structures, (3) mapping the existing structures to the new ones; (4) scripting a repeatable process which extracts, transforms, and loads (ETL) into the target system. This is a conventional data migration sequence. The conversion process also presents an opportunity to inspect and clean existing data, deleting duplicates and non-conforming records, etc. The State is equally experienced with these processes. We see no issues with data conversion.

7.3.6 F. IMPLEMENTATION PLANNING

Implementation planning is the focus of the entire first phase of the project (“Initiation and Planning”). The draft contract defines this phase as including a kick-off meeting, work and project plan creation/refinement including all requisite plans (Master Project Plan, Communication, Risk Management, Quality Assurance, Change Management and Control, and Knowledge Transfer Plan) with review, revision, and approval of each plan. This process and these deliverables are consistent with State expectations and practice. Detailed deliverables for project management are listed in detail in the draft contract. We see no problems with this approach.

7.3.7 G. IMPLEMENTATION

The detail contained in the preliminary IMS is sufficiently detailed to assure the State of receiving the deliverables listed in the Assessment above. The IMS in the first phase as State and vendor cooperate to flesh out the requirements and their relationship to the implementation schedule.

7.4 DOES THE STATE HAVE A RESOURCE LINED UP TO BE THE PROJECT MANAGER ON THE PROJECT? IF SO, DOES THIS PERSON POSSESS THE SKILLS AND EXPERIENCE TO BE SUCCESSFUL IN THIS ROLE IN YOUR JUDGMENT?

Yes, the current project manager is certified, experienced, and a member of ADS EPMO Project Management staff.

Additional Comments on Implementation Plan:

none

8 COST ANALYSIS AND MODEL FOR BENEFIT ANALYSIS

8.1 ANALYSIS DESCRIPTION:

Provide a narrative summary of the cost benefit analysis conducted.

- Tangible benefits were derived by comparing project costs to the hypothetical costs of continuing to use the existing system, over the lifecycle of the project.
- Intangible benefits and measures were derived from statements in the project Charter and the IT ABC Form.

8.2 ASSUMPTIONS:

List any assumptions made in your analysis.

- Cost assumptions are as described in **Section 10, below**.

8.3 FUNDING:

Provide the funding source(s). If multiple sources, indicate the percentage of each source for both Acquisition Costs and on-going Operational costs over the duration of the system/service lifecycle.

State funds 100%

8.4 TANGIBLE COSTS & BENEFITS:

Provide a list and description of the tangible costs and benefits of this project. Its “tangible” if it has a direct impact on implementation or operating costs (an increase = a tangible cost and a decrease = a tangible benefit). The cost of software licenses is an example of a tangible cost. Projected annual operating cost savings is an example of a tangible benefit.

Tangible Cost: **\$1,647,533.80** over the lifecycle, when compared to the hypothetical cost of continuing to use the existing system.

(The hypothetical cost of continuing to use the existing system includes the hardware, software, and support costs; the costs associated with the ADS datamart; and the costs of staff time dedicated to developing and implementing workarounds for the deficiencies of the existing system.)

8.5 INTANGIBLE COSTS & BENEFITS:

Provide a list and descriptions of the intangible costs and benefits. Its “intangible” if it has a positive or negative impact but is not cost related. Examples: Customer Service is expected to improve (intangible benefit) or Employee Morale is expected to decline (intangible cost)

THE STATE EXPECTS THE FOLLOWING INTANGIBLE BENEFITS:

Benefit	Success Criteria
A robust educator licensing system contributes to the Governor's priority of Growing the Economy by both strengthening Vermont's workforce and supporting creating a cradle-to-career education system by ensuring teachers are highly qualified.	Increase in number of teachers licensed through the new system.
Final system will be intuitive to public and internal users.	New system reduces user support requests by 25% compared to current system Decrease in need for participation in annual ELS training
The new system will adapt to new processes and industry interoperability standards, including current browsers.	New system adapts to most current browsers used. New system scales as new business processes are needed. Today, the AOE and field have to use older browsers or the Licensing Staff have to manually perform workarounds for these. With an up-to-date system, the AOE and field will see improved features and functionality consistent with other apps use (i.e. eliminate the need to use multiple browsers, improved user workflow, improved reporting, etc.).
New system houses and integrates all associated documents in a digital format.	The new system is able to capture all required licensing documentation from applicants digitally within the platform, resulting in a more efficient process for the applicant and AOE staff.
Better communication with educators in a timely way.	A new solution with greater interface capabilities enabling the two-way communication, keeping the licensing system more up to date while also enabling the exchange of Educator credentials back to the ERP system (only being setup today with manual extract and load processes).
Consolidation of records, documentation, and notes for disciplinary case management, with a modern and more useable interface for the legal team.	The new system is able to capture all required licensing and discipline documentation, resulting in a more efficient process. Currently the AOE system does not have a useable interface for this purpose.

8.6 COSTS VS. BENEFITS:

Do the benefits of this project (consider both tangible and intangible) outweigh the costs in your opinion? Please elaborate on your response.

Yes. The processes facilitated by the proposed solution are crucial to the proper functioning of the State's educational system and maintaining compliance with State and federal law. Anything impeding that need, such as the shortcomings of the existing system and poor performance by the vendor maintaining it, is potentially damaging to the State. Replacing the existing licensure solution with a fully functional one not only ensures that the educational system can continue to operate properly but also modernizes the licensure solution, increasing its useability, capability, and utility.

For all these reasons, we assess that the tangible cost is a fair price to pay for the intangible benefits gained.

8.7 IT ABC FORM REVIEW:

Review the IT ABC form (Business Case/Cost Analysis) created by the Business for this project. Is the information consistent with your independent review and analysis? If not, please describe. Is the lifecycle that was used appropriate for the technology being proposed? If not, please explain.

The IT ABC form was executed during the first procurement effort, when a vendor was selected for a Salesforce-based implementation. The total lifecycle costs estimated for that implementation were 19% higher compared to the expected total lifecycle costs for the currently proposed project – higher both in terms of vendor costs and State personnel costs. The business case was the same as for the currently proposed project.

We understand that the IT ABC Form is being revised to reflect the currently proposed project.

Additional Comments on the Cost Benefit Analysis:

none

9 ANALYSIS OF ALTERNATIVES

9.1 PROVIDE A BRIEF ANALYSIS OF ALTERNATE TECHNICAL SOLUTIONS THAT WERE DEEMED FINANCIALLY UNFEASIBLE.

There were no desired technical solutions that were eliminated from consideration on the basis of financial unfeasibility. However, it is worth noting that among the 7 compliant proposals received from prospective vendors, one proposal was an outlier on cost, being more than twice the cost of the next highest total price. Had this proposal progressed to the finalist stage, it might have been deemed to not provide adequate value for money.

9.2 PROVIDE A BRIEF ANALYSIS OF ALTERNATE TECHNICAL SOLUTIONS THAT WERE DEEMED UNSUSTAINABLE.

1. During the initial conception of this project, AOE became aware of an alternative CRM platform from PEGA Solutions in use at the Secretary of State office and used for professional licensure. The SOS solution was viewed and discussed as a possible existing solution that could be leveraged. In the event, however, it was found that the functions of the SOS solution were so different from that needed for the ELS that an adaptation would effectively amount to a whole new project. Since the Salesforce CRM was already under consideration as a possible ELS platform, it was redundant to pursue the leveraged solution.
2. Continuing with the existing ALiS ELS would require a continuing, and probably increasing, dedication of staff and financial resources that very likely become unsustainable in a few years or less.

9.3 PROVIDE A BRIEF ANALYSIS OF ALTERNATE TECHNICAL SOLUTIONS WHERE THE COSTS FOR OPERATIONS AND MAINTENANCE WERE UNFEASIBLE.

N/A

10 IMPACT ANALYSIS ON NET OPERATING COSTS

10.1 INSERT A TABLE TO ILLUSTRATE THE NET OPERATING COST IMPACT.

Table 10 - Project Lifecycle Costs

	Procurement	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Project Cost	\$1,126,763.80	\$235,246.00	\$235,246.00	\$235,246.00	\$235,246.00	\$235,246.00	\$2,302,993.80
Current Costs	\$0.00	\$131,092.00	\$131,092.00	\$131,092.00	\$131,092.00	\$131,092.00	\$655,460.00
Total Cost	\$1,126,763.80	\$104,154.00	\$104,154.00	\$104,154.00	\$104,154.00	\$104,154.00	\$1,647,533.80

Table 11 - Project Lifecycle Cumulative Costs

	Procurement	Year 1	Year 2	Year 3	Year 4	Year 5
Project Cost Cumulative	\$1,126,763.80	\$1,362,009.80	\$1,597,255.80	\$1,832,501.80	\$2,067,747.80	\$2,302,993.80
Current Costs Cumulative	\$0.00	\$131,092.00	\$262,184.00	\$393,276.00	\$524,368.00	\$655,460.00
Cumulative Cost Savings	-\$1,126,763.80	-\$1,230,917.80	-\$1,335,071.80	-\$1,439,225.80	-\$1,543,379.80	-\$1,647,533.80

10.2 PROVIDE A NARRATIVE SUMMARY OF THE ANALYSIS CONDUCTED AND INCLUDE A LIST OF ANY ASSUMPTIONS.

Table figures were determined by comparing proposed project costs to existing project costs over the project lifecycle.

Assumptions for the analysis:

- That vendor costs for implementation and M&O will be as memorialized in the contract Exhibit 5.
- That estimates of State and contract labor rates and time needed are accurate.
- That existing system annual cost is accurate, including estimates of state labor expenditures and datamart costs.
- That existing system annual costs would continue at the same level over the lifecycle.
- That funding will be available as stated.

10.3 EXPLAIN ANY NET OPERATING INCREASES THAT WILL BE COVERED BY FEDERAL FUNDING. WILL THIS FUNDING COVER THE ENTIRE LIFECYCLE? IF NOT, PLEASE PROVIDE THE BREAKOUTS BY YEAR.

N/A

10.4 WHAT IS THE BREAK-EVEN POINT FOR THIS IT ACTIVITY (CONSIDERING IMPLEMENTATION AND ON-GOING OPERATING COSTS)?

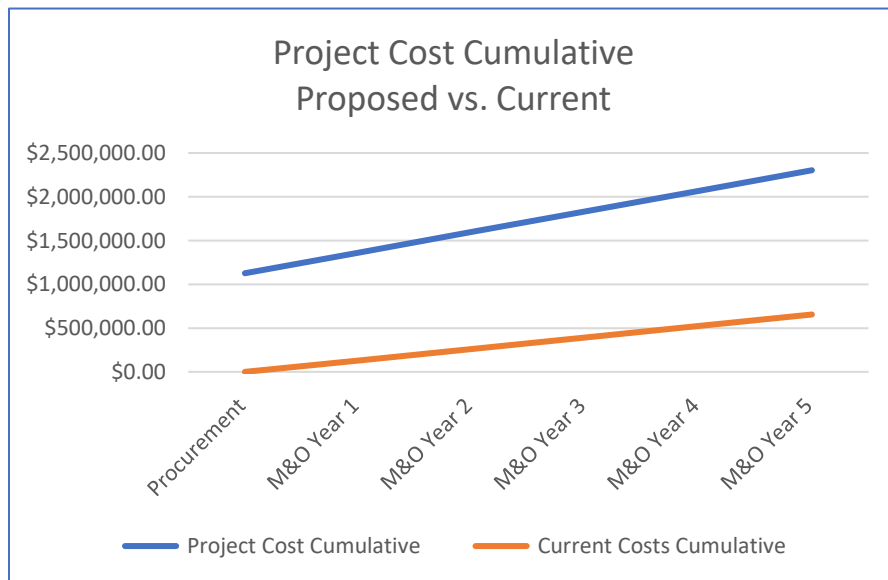


Figure 1 - Project Cost Cumulative Proposed vs. Current

There is no break-even point for this IT activity.

11 SECURITY ASSESSMENT

Data Center Services (hosting) for the solution would be provided by Tierpoint, LLC, of St. Louis, Missouri.

Each data center complies with a unique set of industry security standards, TierPoint's facilities are compliant with ISO 27001, SOC 1 Type II and SOC 2 Type II, HIPAA/HITECH, GLBA, PCI-DSS V3.2.1, NIST SP 800-53, FISMA, SOC 2+, HITRUST, ITAR, and Privacy Shield. Controls are backed by policies and procedures that are based on NIST 800-53 standards. The servers are in locked racks with tightly controlled access. Backups of the databases are created daily and hourly. the applications are monitored 24/7/365.

The backup strategy employs a fully mirrored recovery site at TierPoint's colocation facility in Little Rock, AR. This strategy entails maintaining a fully mirrored duplicate site which enables switching between the primary site (TierPoint Franklin, TN) and the secondary backup site (TierPoint Little Rock, AR), with tertiary backup in Azure for disaster recovery, to mitigate disasters and disaster recovery.

The data management systems reside within a Role-Based Access Control (RBAC) subsystem, to define what information a particular user can see and what actions that user can take. All data is encrypted in transit and at rest. All communications are encrypted.

Assessment:

The proposed solution will handle protected information of several types, consequently requiring a very robust security stance. The solution as proposed by the vendor and memorialized in the draft contract establishes that this solution would have that strong posture. The vendor demonstrates a comprehensive understanding of compliance standards, security and privacy controls, and physical security with recoverability. The three-layer recovery model with backup to a tertiary hosting site is a very good idea. We have no issues with security or privacy as proposed for this project.

Assess Information Security alignment with State expectations. ADS-Security Division will support reviewer and provide guidance on assessment.

11.1 WILL THE NEW SYSTEM HAVE ITS OWN INFORMATION SECURITY CONTROLS, RELY ON THE STATE'S CONTROLS, OR INCORPORATE BOTH?

Most of the controls in a cloud environment are shared between the cloud provider and the consumer. The Systems Security Plan required of the vendor includes Management Controls, Operational Controls, Technical Controls, and Equipment Inventory Lists.

11.2 WHAT METHOD DOES THE SYSTEM USE FOR DATA CLASSIFICATION?

The proposed system uses compliance standards for classifying data. The State has identified 3 types of classified data that the system would contain: Publicly available information, Confidential Personally

Identifiable Information (PII), Payment Card Information (PCI), Federal Tax Information (FTI), Personal Health Information (PHI)¹, Prescription Information, Student Education Data, Personal Information from Motor Vehicle Records, Criminal Records, and Subject to Child Support Order.

For publicly available information the proposed vendor employs role-based access control which exposes only that information approved by the state on public sites. They are NIST SP 800-53 compliant, and they maintain a media protection policy consistent with SCIO advice, which details their compliance with each of the above standards.

11.3 WHAT IS THE VENDOR'S BREACH NOTIFICATION AND INCIDENT RESPONSE PROCESS?

This process is defined in the draft contract in Attachment D, Information Technology System Implementation Terms and Conditions (rev. 3/08/19) **Section 6.2** and is compliant with Section 9 V.S.A. §2435(b)(3).

Additionally, the proposed vendor states:

RANDA employs a third-party security company, CYBERMAXX, to perform regular penetration testing and provide alerts if imminent threats are detected. CYBERMAXX will provide monthly vulnerability scan and threat briefings to the State and notify the State of any events.

- *Security incidents are documented, including the nature and content of any breach and this is immediately reported to the State.*
- *RANDA complies with all governmental regulations to immediately rectify the breach.*
- *Internal record keeping and training includes the processes and identification of any concern or risk, and the appropriate supervisor with whom to file for each work group. This extends to subcontractors, consultants, committee members, and any other work groups requested by the client. Depending on the priority and sensitivity level, security incidents may be reported while the while the process of investigation is still in progress. We will comply with the State's security breach reporting requirements. Analysis and recovery of any data involved is part of this process. We take full responsibility for keeping data secure and will hold the client harmless for any financial liability should a breach occur. It should be noted: we have not had a breach of secure data in our history.*

11.4 DOES THE VENDOR HAVE A RISK MANAGEMENT PROGRAM THAT SPECIFICALLY ADDRESSES INFORMATION SECURITY RISKS?

The draft contract requires a risk management plan as a project management deliverable during the initiation phase. Several NFRs require compliance with Information Security risk management. The

¹ Some comments in the draft contract indicate that the system will not contain PHI and most references to PHI have been deleted. However, some NFRs do refer to HIPAA and PHI.

proposed vendor references risk management several times in their proposal but does not use the terminology “information security risk.” We think it is implied in the adoption of NIST SP 800-53 standards.

11.5 WHAT ENCRYPTION CONTROLS/TECHNOLOGIES DOES THE SYSTEM USE TO PROTECT DATA AT REST AND IN TRANSIT?

For VPN tunnels the vendor complies with FIPS 140-2 which requires AES 256 encryption. Encryption of all data in transit or at rest is AES 256 encryption.

11.6 WHAT FORMAT DOES THE VENDOR USE FOR CONTINUOUS VULNERABILITY MANAGEMENT, WHAT PROCESS IS USED FOR REMEDIATION, AND HOW DO THEY REPORT VULNERABILITIES TO CUSTOMERS?

The vendor is NIST (SP) 800-53 compliant and states that they employ defense in depth strategies including employing a third-party security company, CYBERMAXX, to perform regular penetration testing and provide alerts if imminent threats are detected.

Additionally, Attachment D of the standard contract language will require the following:

5.1 Vulnerability Testing. The Contractor shall run quarterly vulnerability assessments and promptly report results to the State. Contractor shall remediate all critical issues within 90 days, all medium issues within 120 days and low issues within 180 days. Contractor shall obtain written State approval for any exceptions. Once remediation is complete, Contractor shall re-perform the test.

11.7 HOW DOES THE VENDOR DETERMINE THEIR COMPLIANCE MODEL AND HOW IS THEIR COMPLIANCE ASSESSED?

This is addressed in **Section 11.2, above**.

11.8 FURTHER COMMENTS ON SECURITY

none

12.1.2 RISK REGISTER

The following table explains the Risk Register components:

Risk ID:	Identification number assigned to risk or issue.	
Risk Rating:	An assessment of risk significance, based on multiplication of (probability X impact ratings) (<i>see below</i>).	
	1-9 = low	See table below
	10-48 = moderate	
49-90 high		
Probability:	Assessment of likelihood of risk occurring, scale of 1,3,5,7, or 9 , from least to most likely	
Impact:	Assessment of severity of negative effect, scale of 1,3,5,7, or 10 , from least to most severe	
Finding:	Review finding which led to identifying a risk	
Risk Of:	Nature of the risk	
Source:	Project, Proposed Solution, Vendor or Other	
Risk domains:	What may be impacted, should the risk occur	
State's Planned Risk Strategy	Decision to <i>avoid, mitigate, or accept</i> risk	
State's Planned Risk response	Detailed description of response to risk, in order to accomplish decision	
Reviewer's Assessment:	Reviewer's evaluation of the State's planned response	

Risk Rating Matrix			IMPACT				
			Trivial	Minor	Moderate	Major	Extreme
			1	3	5	7	10
LIKELIHOOD	Rare	1	1	3	5	7	10
	Unlikely	3	3	9	15	21	30
	Moderate	5	5	15	25	35	50
	Likely	7	7	21	35	49	70
	Very Likely	9	9	27	45	63	90

Risk ID: R1	Rating:	25	
	Likelihood:	5	
	Impact:	5	
Finding:	Project tasks required of the State during implementation (e.g., acceptance testing, business process descriptions) could be delayed if coinciding with particularly busy times, such as prime renewal period, approximately March-June.		
Risk Of:	Implementation Delay		
Risk domains:	Timeline		
State's Planned Risk Response:	The project team acknowledges the possibility of overlap and the need to assure all required licensing activity is completed to allow for smooth opening of schools in the fall. Having knowledgeable backups and staggering the demand will reduce the risk.		
Reviewer's Assessment of State's Planned Response	We concur with this mitigation plan. The proposed vendor has implemented this solution in 5 other states, and presumably has experienced the annual rhythms of educator licensure, which should help during the implementation planning period.		

Risk ID: R2	Rating:	9	
	Likelihood:	3	
	Impact:	3	
Finding:	Expected or unexpected licensure staff turnover could result in a loss of business knowledge during implementation. The State's risk register identifies the mitigation plan as "Institutional knowledge should be captured during vendor discovery and training supports should be developed by the vendor to help support potential new AOE staff users." It isn't clear from the contract draft that the vendor is assigned this particular responsibility.		
Risk Of:	interfering with staff capability and efficiency		
Risk domains:	business		
State's Planned Risk Response:	The State is open to updating business processes and needs to work closely with the vendor to do so. This will be emphasized during the Business Requirements and Analysis Phase. Our intent is to leverage the solution's functionality to create improved workflows and not simply automate our existing processes, to evolve to more of a licensing generalist using standard workflows, from a specialist using customized workflows for each type of license. The State can make it clear that we expect to test this functionality and have all the training material reflect these improvements.		
Reviewer's Assessment of State's Planned Response	Concur. This is a very good mitigation plan.		

Risk ID: R4	Rating:	15	
	Likelihood:	3	
	Impact:	5	
Finding:	The vendor is relatively small (25 employees). Attrition or competing demands could diminish the vendor's ability to deliver on time.		
Risk Of:	project delay		
Risk domains:	cost		
State's Planned Risk Response:	The project team has discussed the vendor's size and acknowledges this contributes to increased risk. We believe the naming of staff in the contract and closely managing to the project schedule will provide some degree of mitigation.		
Reviewer's Assessment of State's Planned Response	Concur. We also recognize that the proposed vendor has implemented this system in 5 states and the State has received very positive reports in reference checks. The Kentucky Director of Licensure and Certification expressed the opinion that "you should be more worried about whether the state people can keep up with [the vendor]."		

13 ATTACHMENTS

Attachment 1 – Cost Spreadsheet

Attachment 2 – Risk Register

13.2 ATTACHMENT 2 – RISK REGISTER

Double-click on the image below to view the PDF



AOE ELS IR risk
register draft - PaulK

Attachment 1: DOE Educator Licensing IR Cost Spreadsheet ver. 2.0.a - Paul Garstki Consulting - 2023/08/07

Project Name:			VDOL Workforce Development System							Lifecycle Total @ Current Annual Cost	Benefit	
Description	Qty	Unit Price	Implementation	Maintenance & Operation	Maintenance & Operation	Maintenance & Operation	Maintenance & Operation	Maintenance & Operation	Total			
Fiscal Year				FY1	FY2	FY3	FY4	FY5				
Hardware												
Current System Hardware				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
ADS Datamart savings				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Hardware Total				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 55,000.00	\$ 55,000.00
Vendor Implementation Services												
Initiation and Planning			\$ 101,211.30							\$ 101,211.30		
Requirements Gathering			\$ 88,978.50									
Legacy Data Analysis and Migration			\$ 79,793.10									
Development & Testing w/ fixes implemented			\$ 225,079.20									
AOE and ADS System Testing			\$ 158,933.70									
Training and Deployment			\$ 61,628.00									
Retainage			\$ 89,835.00									
Vendor Implementation Services Total			\$ 805,458.80	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 805,458.80	\$ -	\$ (805,458.80)
Vendor Annual Costs												
Application License				\$ 129,380.00	\$ 129,380.00	\$ 129,380.00	\$ 129,380.00	\$ 129,380.00	\$ 129,380.00	\$ 646,900.00	\$ -	
Support and Maintenance Fees				\$ 105,866.00	\$ 105,866.00	\$ 105,866.00	\$ 105,866.00	\$ 105,866.00	\$ 105,866.00	\$ 529,330.00	\$ 375,000.00	
Vendor Licensing Total			\$ -	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 1,176,230.00	\$ 375,000.00	\$ (801,230.00)
Hosting												
Hosting [included in vendor O&M costs]				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Hosting			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 125,000.00	\$ 125,000.00
State-Provided Licensing												
[none]												
State-Provided Licensing Total			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Professional Services												
Independent Review			\$ 17,769.00							\$ 17,769.00		
Professional Services Total			\$ 17,769.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,769.00	\$ -	\$ (17,769.00)
Training												
[included in Vendor Implementation Services above]			0							\$ -		
Training Total			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Implementation Services Additional												
[none]										\$ -		
Implementation Services Total			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
State Personnel¹												
ADS EPMO Project Oversight & Reporting	\$ 164.75	\$ 88.00	\$ 14,498.00							\$ 14,498.00	\$ -	\$ (14,498.00)
ADS EPMO Project Manager for Implementation	\$ 1,697.75	\$ 88.00	\$ 149,402.00							\$ 149,402.00	\$ -	\$ (149,402.00)
ADS EPMO Business Analyst for Implementation	\$ 814.50	\$ 88.00	\$ 71,676.00							\$ -	\$ -	\$ -
ADS Enterprise Architect Staff for Implementation	\$ 275.00	\$ 88.00	\$ 24,200.00							\$ -	\$ -	\$ -
ADS Security staff for Implementation	\$ 20.00	\$ 88.00	\$ 1,760.00							\$ 1,760.00	\$ -	\$ (1,760.00)
Other ADS IT Labor for Implementation	\$ 500.00	\$ 84.00	\$ 42,000.00							\$ 42,000.00	\$ -	\$ (42,000.00)
Reduction in AOE workarounds										\$ 90,000.00	\$ 90,000.00	\$ 90,000.00
ADS Datamart savings										\$ 10,460.00	\$ 10,460.00	\$ 10,460.00
State Personnel Total			\$ 303,536.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 303,536.00	\$ 100,460.00	\$ (203,076.00)
Grand Total			\$ 1,126,763.80	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 235,246.00	\$ 2,302,993.80	\$ 655,460.00	\$ (1,647,533.80)

NOTES / ASSUMPTIONS:

Notes:
1.

ATTACHMENT 2 - AOE ELS INDEPENDENT REVIEW -- Risk and Issues Register -- version 2.1.a 2023/12/July -- Paul E. Garstki, JD -- Paul Garstki Consulting

RISKS	What is the finding that leads to identifying a risk? (This is a highly condensed version that is explained more fully in the report narrative)	What are the risks implied by the finding?	What aspects of the project are at risk if the risk(s) are realized?	What is the State's response to the risk?	Does the review have a suggestion for mitigating the risk?	Is the State's response to this risk adequate?	Reviewer's assessment of likelihood risk is realized 1,3,5,7, or 10	Reviewer's assessment of impact if risk is realized 1,3,5,7, or 10	1-9 low
									10-48 medium
Note: Risk ID # list may have gaps, in order to maintain consistency with earlier drafts									
Risk #	Finding	risk of	risk domains	SOV response	Reviewer's Recommendation, if any	Reviewer Assessment of SOV Response	likelihood 1-10	impact 1-10	total rating
R1	Project tasks required of the State during implementation (e.g., acceptance testing, business process descriptions) could be delayed if coinciding with particularly busy times, such as prime renewal period, approximately March-June.	implementation delay	timeline	The project team acknowledges the possibility of overlap and the need to assure all required licensing activity is completed to allow for smooth opening of schools in the fall. Having knowledgeable backups and staggering the demand will reduce the risk.	MITIGATE - Work with vendor to align the implementation schedule with this risk in mind where possible; identify State staff whose time demands are not as severe during prime renewal periods to "backfill" needs on the project and/or on licensure tasks.	We concur with this mitigation plan. The proposed vendor has implemented this solution in 5 other states, and presumably has experienced the annual rhythms of educator licensure, which should help during the implementation planning period.	5	5	25
R2	Expected or unexpected licensure staff turnover could result in a loss of business knowledge during implementation. The State's risk register identifies the mitigation plan as "Institutional knowledge should be captured during vendor discovery and training supports should be developed by the vendor to help support potential new AOE staff users." It isn't clear from the contract draft that the vendor is assigned this particular responsibility.	interfering with staff capability and efficiency	business	The State is open to updating business processes and needs to work closely with the vendor to do so. This will be emphasized during the Business Requirements and Analysis Phase. Our intent is to leverage the solution's functionality to create improved workflows and not simply automate our existing processes, to evolve to more of a licensing generalist using standard workflows, from a specialist using customized workflows for each type of license. The State can make it clear that we expect to test this functionality and have all the training material reflect these improvements.		Concur. This is a very good mitigation plan.	3	3	9
R4	The vendor is relatively small (25 employees). Attrition or competing demands could diminish the vendor's ability to deliver on time.	project delay	cost	The project team has discussed the vendor's size and acknowledges this contributes to increased risk. We believe the naming of staff in the contract and closely managing to the project schedule will provide some degree of mitigation.	ACCEPT -- The vendor has demonstrated timely performance in other implementations, as supported by reference checks. The contract guarantees vendor project roles by individuals' names and function, with a mandatory change process.	Concur. We also recognize that the proposed vendor has implemented this system in 5 states and the State has received very positive reports in reference checks. The Kentucky Director of Licensure and Certification expressed the opinion that "you should be more worried about whether the state people can keep up with [the vendor]."	3	5	15
							0	0	0
ISSUES	Issue Description			State Response					
I1									