

# Independent Review

## Next Generation Licensing Platform

For the  
State of Vermont Secretary of State's Office and  
Department of Information and Innovation

Submitted to the  
State of Vermont, Office of the CIO  
By

Strategic Technology Services

Originally delivered: 3/11/2016  
Updated: 4/27/2016

### Attachments:

1. Project Costing Spreadsheet (FINAL-REVIEW-SOV-SoS-OPR\_NextGenLicensingPlatform-STS\_Cost\_Detail\_FINAL.xlsx)
2. Risk Register (FINAL-REVIEW-SOV-SoS-OPR\_NextGenLicensingPlatform-STS\_Risk\_Register\_FINAL.pdf)
3. PEGA Corporate Summary (Pegasystems-Corporate-Fact-Sheet.pdf)
4. PEGA for Government – Fact Sheet Demonstrating Modernizing Government (Pega-for\_Government\_Jun14.pdf)
5. PEGA Certification and Licensing for Government Product Fact Sheet (Pega-Certification-and-Licensing-for-Government\_Jan14.pdf).
6. PEGA statement of compliance with Section 508 Amendment (Pega-Voluntary-Product-Accessibility-Template\_VPAT.pdf)
7. Gartner Report (Magic Quadrant for BPM-Platform-Based Case Management Frameworks.pdf)
8. Gartner Report (Magic Quadrant for Intelligent Business Process Management Suites.pdf)

# Table of Contents

<b>TABLE OF CONTENTS.....</b>	<b>2</b>
<b>1. EXECUTIVE SUMMARY .....</b>	<b>3</b>
<i>Project Summary.....</i>	<i>3</i>
<i>Vendor Profile .....</i>	<i>5</i>
1.1 <i>Cost Summary .....</i>	<i>6</i>
1.2 <i>Disposition of Independent Review Deliverables .....</i>	<i>6</i>
1.3 <i>Identified High Impact &amp;/or High Likelihood of Occurrence Risks.....</i>	<i>7</i>
1.4 <i>Other Key Issues.....</i>	<i>7</i>
1.5 <i>Recommendation .....</i>	<i>8</i>
1.6 <i>Certification.....</i>	<i>10</i>
1.7 <i>Report Acceptance .....</i>	<i>10</i>
<b>2. SCOPE OF THIS INDEPENDENT REVIEW .....</b>	<b>11</b>
2.1 <i>In-Scope.....</i>	<i>11</i>
2.2 <i>Out-of-Scope .....</i>	<i>11</i>
<b>3. SOURCES OF INFORMATION.....</b>	<b>12</b>
3.1 <i>Independent Review Participants.....</i>	<i>12</i>
3.2 <i>Independent Review Documentation.....</i>	<i>13</i>
<b>4. PROJECT INFORMATION .....</b>	<b>15</b>
4.1 <i>Historical Background .....</i>	<i>15</i>
4.2 <i>Project Goal.....</i>	<i>17</i>
4.3 <i>Project Scope.....</i>	<i>19</i>
4.4 <i>Project Phases, Milestones and Schedule.....</i>	<i>28</i>
<b>5. ACQUISITION COST ASSESSMENT .....</b>	<b>29</b>
5.1 <i>Cost Validation .....</i>	<i>30</i>
5.2 <i>Cost Comparison .....</i>	<i>33</i>
5.3 <i>Cost Assessment.....</i>	<i>33</i>
<b>6. TECHNOLOGY ARCHITECTURE REVIEW .....</b>	<b>34</b>
<b>7. ASSESSMENT OF IMPLEMENTATION PLAN .....</b>	<b>48</b>
7.1 <i>Implementation Readiness.....</i>	<i>48</i>
7.2 <i>Risk Assessment &amp; Risk Register .....</i>	<i>59</i>
<b>8. COST BENEFIT ANALYSIS .....</b>	<b>60</b>
<b>9. IMPACT ANALYSIS ON NET OPERATING COSTS .....</b>	<b>64</b>
<b>APPENDIX 1 - ILLUSTRATION OF SYSTEM INTEGRATION .....</b>	<b>66</b>
<b>APPENDIX 2 - RISK REGISTER.....</b>	<b>68</b>
<b>APPENDIX 3 – LIFECYCLE COSTS AND CHANGE IN OPERATING COSTS.....</b>	<b>68</b>
<b>APPENDIX 4 – TECHNOLOGY INFRASTRUCTURE.....</b>	<b>69</b>

# 1. Executive Summary

*Provide an introduction that includes a brief overview of the technology project and selected vendor(s).*

## Project Summary

1. **Term:** This project contract duration is expected to be 60 months, broken out as follows:
  - a. Implementation of Nursing Licensing is expected to take 4-5 months, at which time that solution will be put into production.
  - b. Development of the remaining professions which is expected to be 8-12 months in duration.
  - c. Application hosting for a total of 60 months. The initial hosting during the Nursing development will be at a lower cost, and will become fully priced when Nursing is put into production.
2. **Cost:** While the contract term is 5 years (60 months), the costs provided below are carried out to 10 years in order to arrive at a 10 year cost model:
  - a. Implementation Costs are expected to be **\$2.2M**
  - b. Operating Costs are expected to be **\$5.6M**
  - c. 10 year cost of **\$7.85M**
3. **Solution:** The solution includes the following\*:
  - a. Licensing of Pegasystems' Business Process Management Suite architecture, known as Pega 7 for up to 75,000 licenses and unlimited user licenses.
  - b. Licensing of Pegasystems' **Licensing and Certification and for Public Sector** application, built on Pega 7.
  - c. Pegasystems to provide professional services to implement the first profession of the Customer's Next Generation Licensing Platform, currently anticipated to be the Nursing profession, via Pegasystems **Licensing and Certification and for Public Sector** application.
  - d. Pegasystems hosting services for 60 months, known as **PegaCloud**:
    - i. **PegaCloud** hosting of 3 environments of Pegasystems software (PegaRULES Process Commander (PRPC) 7.1.9) single-tenant virtual private cloud (VPC) deployment and are operated on a 24x7 basis using AWSGovCloud:
      - Production: an Environment that is designed, built and scaled to accommodate Customer Applications in order to process live and/or real-time data in connection with Customer's ongoing business operations and is deployed within a single geographic region
      - Sandbox Standard Size: service that is intended to be used for research and development, functional/unit testing, UAT testing of Customer Applications and training
      - Sandbox Large Size: service that is intended to support pre-production, staging and testing of the Customer Applications
      - Term: 60 months (5 years), monthly fee in advance: \$10,000.00 per month for the first five months of the term and at a rate of \$18,703.00 for all months thereafter, subject to annual inflation adjustments in accordance with the Agreement.
  - e. Specific items in the contract include items in the following table. Of note but not included in the table: Unlimited number of users are licensed to use the application.
  - f. Data migration from eLicense to Pega solution

4. **Approach:** The approach to the project is as follows:
- Vendor to stand up functionality related to Nursing Licensing as the initial proof of concept and road map for the remaining professions.
  - Vendor to stand up remaining professions based on experience implementing Nursing profession.
  - SoS staff to be trained to modify business rules within the application on a go forward basis, with vendor oversight.
5. **Management:** Senior Business Leadership, Technical Leadership, and Subject Matter Expertise are aligned to complete solution implementation.

\*

<b>Pegasystems Software</b>	Pega for Government Platform (PFG) <ul style="list-style-type: none"> <li>• Pega Licensing and Certification for Public Sector</li> <li>• Pega Web Mashup, for use with 1 Application</li> <li>• Business Intelligence Exchange (BIX), for use with 1 Application</li> <li>• Pega Predictive Diagnostic Cloud, for use with one Large Sandbox and one Production Environment</li> <li>• Project Management Framework, for use with 1 Application</li> <li>• Pega Mobile Client</li> </ul>
<b>Licensed Metric</b>	Professional License Cases
<b>Number of annual Cases</b>	<ul style="list-style-type: none"> <li>• 75,000 Annual Professional License Cases</li> </ul>
<b>Definitions</b>	“Professional License Case” means a submission for the issuance or renewal of a Vermont professional or officiant license.
<b>Number of Services and Connectors</b>	An unlimited number of generally available Services/Connectors for PegaCloud use as of the Effective Date, as published on the Pega Discovery Network (“PDN”)
<b>Number of Environments included</b>	1 Standard Sandbox, for use for Proof of Concept and Production 1 Large Sandbox, for use for Production only 1 Production Environment, for use for Proof of Concept and Production
<b>Production Storage limits</b>	250 GB

## Vendor Profile

### 1. Pegasystems Inc.

- a. Pegasystems Inc., a Massachusetts corporation located at One Rogers Street, Cambridge, MA, 02142
- b. Pegasystems, also referred to as Pega, was founded in 1983 and has annual revenues of \$680 million and over 3000 employees, and is traded under the symbol "PEGA" on NASDAQ.
- c. Pegasystems' products include its Pega Platform for business process management, and strategic applications and technology components that provide purpose-specific or industry-specific functionality that enable customers to efficiently deploy the Pega Platform for specific solutions. These products are comprised of Pegasystems' provided RuleSets that Customer may use to develop Customer Applications comprising one or more new RuleSets for processing and automation of its business, as described in a License Schedule to this Agreement. Customer may integrate these Customer Applications to its other systems through Service and Connector facilities and deploy them on the Pega Cloud.
- d. Recently received CUSTOMER Product of the Year Award Service award for second year in a row for the Pega Customer Service and Pega Marketing CRM Products. The 2016 CUSTOMER Product of the Year Awards recognize vendors advancing the call center, CRM, and teleservices industries. Presented by TMC, a leading business-to-business and integrated marketing media company serving the communications and technology industries, the award recognizes products that enable their clients to meet and exceed customer expectations. <http://finance.yahoo.com/news/pegasystems-receives-two-2016-customer-193000118.html>

#### e. Financials show a slowdown in 2015:

##### i. Year Ending 12/31/2014:

(\$ in '000s)	2014	2014
	GAAP	Non-GAAP
<b>Total Revenue</b>	\$ 590,004	\$ 593,448
<b>License Revenue</b>	\$ 232,336	\$ 233,901
<b>Cloud Revenue</b>	\$ 16,614	\$ 17,332
<b>Net Income</b>	\$ 33,255	\$ 58,167
<b>Diluted Earnings per share (2)</b>	\$ 0.42	\$ 0.74

##### ii. Quarter Ending 9/30/2015:

(\$ in thousands except per share amounts)	2015	2015
	GAAP	Non-GAAP
<b>Total Revenue</b>	\$ 478,340	\$ 478,340
<b>License Revenue</b>	\$ 180,420	\$ 180,420
<b>Cloud Revenue</b>	\$ 21,700	\$ 21,700
<b>Net Income</b>	\$ 15,364	\$ 34,378
<b>Diluted Earnings per share</b>	\$ 0.19	\$ 0.44

## 1.1 Cost Summary

IT Activity Lifecycle:	10 Years		
<b>Total Lifecycle Costs:*</b>	<b>\$ 7.85M</b>		
<b>PROJECT COSTS:</b>	<b>\$2.2M</b>		
<i>Pega Implementation Services</i>	\$2.1M		
<i>Total DII PM/EA Costs:</i>	\$180K		
<b>OPERATING COSTS:</b>	<b>\$5.65M</b>		
<i>Staffing Costs:</i>	\$1.7M		
<i>Hosting Costs (includes software licenses):</i>	\$2.8M		
<i>Software Maintenance, Support, and Security Audit Services:</i>	\$1.15K		
<b>CURRENT OPERATING COSTS:</b>	<b>\$ 1.5M</b>		
Difference Between Current and New Operating Costs:	<b>Increase of \$4.15M</b> (Go forward Operating Cost of \$5.65M less \$1.5M of Current operating cost)		
Funding Source(s) and Percentage Breakdown if Multiple Sources:	OPR Administration Fund Balance: Fund 21150; Program 29200:	\$1,850,000	23.57%
	OPR, Administration Budget: Fund: 21150, Program Code: 29200:	\$4,999,531	63.69%
	SOS Service Fund 21928:	\$427,350	5.44%
	OPR Fund 21150:	\$479,769	6.11%
	HAVA Fund 22025:	\$93,233	1.19%
	<b>TOTAL:</b>	<b>\$7,849,881</b>	<b>100%</b>

## 1.2 Disposition of Independent Review Deliverables

Deliverable	Highlights from the Review <i>Include explanations of any significant concerns</i>
Acquisition Cost Assessment	Costs are high per cost comparison details noted in this report. See Cost Comparison <b>Section 5.2</b> for details.
Technology Architecture Review	The underlying Technology Architecture is sound. See Technology Architecture <b>Section 6</b> for details.
Implementation Plan Assessment	The approach to solution implementation appears sound. See Technology Architecture <b>Section 7</b> for details.
Cost Analysis and Model for Benefit Analysis	Cost analysis provides accurate annual cost. No explicit monetary benefits defined. Project benefits do not offset project costs. See Cost Benefit <b>Section 8</b> for detail.
Impact Analysis on Net Operating Costs	Increase in operating costs per cost spreadsheet detail.

### 1.3 Identified High Impact &/or High Likelihood of Occurrence Risks

Risk Description	State's Planned Risk Response	Reviewer's Assessment of Planned Response
See Risk Register		

### 1.4 Other Key Issues

*Recap any key issues or concerns identified in the body of the report.*

1. No other issues identified.

## 1.5 Recommendation

*Provide your independent review recommendation on whether or not to proceed with this technology project and vendor(s).*

It is recommended the project not proceed until the following items are addressed:

1. Evaluation of the following items by DII and SoS:
  - a. Justification of the need for customized software development in light of availability of COTS solutions. At least 50% of this project is comprised of customized software development which is a large cost driver for both implementation and sustainability/maintenance/operations. There appear to be COTS solutions that meet the requirements defined in the RFP at a much lower TCO.
    - i. *SOS position on this is that this project does not constitute software development, rather, normal maintenance to a COTS solution.*
  - b. Assess whether OPR requires an Enterprise-class solution (to include license management currently supported in OPR, Vermont Board of Medical Practice, ANR (Wastewater Operators), Teachers, Lawyers, etc.) or whether only a Department-level solution for OPR is warranted. The RFP that was issued and resulting solution proposed by Pega addresses an Enterprise-level requirement defined by the RFP. In order for OPR to implement and leverage the power of the proposed Enterprise solution, the Pega platform requires a long runway of time, personnel, and financial resources.
    - i. Are the necessary resources (time, personnel, and financial) available to implement and support an Enterprise-class solution?
    - ii. Will the solution truly be used in an Enterprise manner or for OPR only? Are there other Agencies or Departments expected to adopt this solution? If OPR only, then consider a narrower scope, as building such a broad solution for a narrow use is not cost effective, in that, excess capacity would be built/bought and not used. It is analogous to using a 747 to fly two people. You don't need such a long runway for a smaller plane transporting 2 people. The Pega solution requires large person, time and dollar resources to build, and requires a proprietary, scarce and costly skill set to maintain. Further, the skill set required to maintain a Pega solution is relevant only to the Pega platform.
  - c. Determine if it is prudent to seek bids from COTS software vendors in the Professional and Occupational Licensing space.



**UPDATE AS OF 4/27/2016:** In response to the recommendations above, Office of Professional Regulation has requested a fixed priced solution from Pega as outlined in the email from Steve Mattera below. In short, Pega will perform a short, fixed price project (\$363,755.00 for 6 weeks of effort) to analyze requirements, and from those efforts, then provide a fixed price proposal to deliver all licensing functionality for all professions to Office of Professional Regulation.

-----Original Message-----

From: Mattera, Steve [mailto:steve.mattera@sec.state.vt.us]

Sent: Saturday, April 02, 2016 9:30 AM

To: [dgadway@techstrategy.biz](mailto:dgadway@techstrategy.biz); [Jaye.Johnson@vermont.gov](mailto:Jaye.Johnson@vermont.gov); Betit, Marlene <[marlene.betit@sec.state.vt.us](mailto:marlene.betit@sec.state.vt.us)>; Benjamin, Colin <[colin.benjamin@sec.state.vt.us](mailto:colin.benjamin@sec.state.vt.us)>; Condos, Jim <[jim.condos@sec.state.vt.us](mailto:jim.condos@sec.state.vt.us)>; Winters, Chris <[chris.winters@sec.state.vt.us](mailto:chris.winters@sec.state.vt.us)>; Dessureau, Philip <[Philip.Dessureau@vermont.gov](mailto:Philip.Dessureau@vermont.gov)>

Subject: NGLP Pega IR and Contract Update

In brief, here is the path we are on for our COTS and fixed price to-dos from the last IR meeting. We're are going to do two contracts with Pega.

#### Contract #1 - Scoping

- a. Will be a discrete piece of work, taking ~5-8 weeks.
- b. Actual deliverables to be worked out still.
- c. This contract will be sole sourced and I will be driving it down the fast-track lane.

#### Contract #2 - Implementation

- a. This contract work is on-hold for the moment. As soon as the work for Contract #1 gets started (i.e., deliverables are defined), I will resume VT-Pega legal review (i.e., Steve, Jaye, & Pega counsel) of this contract.
- b. Once #1 is complete, outputs/knowledge from #1 will be used by Pega and VT to inform contract #2's content.
- c. Will be fixed price.
- d. Scope of work will be: implementation of all professions, all requirements for OPR (including Temp Officiants).
- e. Scope of contract will be: implementation, subscription, and maintenance of all licensed products, and include VT's ability to use the Pega platform in the future for Contract workflows, Notaries (or something similar - that VT can substitute for).

#### IR - Next Follow-up

- a. Once Contract #2's draft is complete and stable, Steve will send to David.
- b. Steve and David will verify the Risk Register.
- c. David will coordinate with Phil D., and Steve on when the IR re-group, for Contract #2.

Let me know if you have any questions.

-Steve

2. If the above items are addressed satisfactorily, address the following:

- a. Review and mitigate the Risk Register items, with particular focus on the contract-related items. *(Note: While Independent Reviewer has not been contracted to provide official Procurement and Advisory services, several contract related items have surfaced in the process of conducting the Independent Review.)*

## 1.6 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.

**David Gadway**

Digitally signed by David Gadway  
DN: cn=David Gadway, o=Strategic Technology Services, Inc., ou,  
email=dgadway@techstrategy.biz, c=US  
Date: 2016.04.27 11:25:04 -04'00'

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

## 1.7 Report Acceptance

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

\_\_\_\_\_  
**DII Oversight Project Manager**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**State of Vermont Chief Information Officer**

\_\_\_\_\_  
**Date**

## 2. Scope of this Independent Review

*Add or change this section as applicable.*

### 2.1 In-Scope

The scope of this document is fulfilling the requirements of Vermont Statute, Title 3, Chapter 45, §2222(g):

*The Secretary of Administration shall obtain independent expert review of any recommendation for any information technology initiated after July 1, 1996, as information technology activity is defined by subdivision (a)(10), when its total cost is \$1,000,000 or greater or when required by the State Chief Information Officer.*

The independent review report includes:

- An acquisition cost assessment
- A technology architecture review
- An implementation plan assessment
- A cost analysis and model for benefit analysis
- An impact analysis on net operating costs for the agency carrying out the activity
- A procurement negotiation advisory services contract (as needed)

### 2.2 Out-of-Scope

*If applicable, describe any limits of this review and any area of the project or proposal that you did not review.*

- Review of/comments on/recommendations regarding the vendor contract.

### 3. Sources of Information

#### 3.1 Independent Review Participants

*List the individuals that participated in this Independent Review.*

Name	Employer and Title	Participation Topic(s)
Jim Condos	Secretary of State; <b>EXECUTIVE PROJECT SPONSOR</b>	Participated in project kick off meeting
Chris Winters	Deputy Secretary of State	Participated in project kick off meeting; Former OPR Director who may be used as a reference resource on this project
Colin Benjamin	Office of Professional Regulation Director; <b>PROJECT SPONSOR</b>	Discussed functional requirements, desired outcomes, project management, and staffing
Steve Mattera	Secretary of State IT Manager	Discussed project management, vendor technology, vendor approach, product solution features, how product is to be leveraged into the business and desired outcomes
Brian Howard	Secretary of State Project Manager, Technical Lead Role on this project	Project Management and Technical Implementation
Lora Nielsen	Office of Professional Regulation Assistant Director; Project Staff Management	Discussed staffing/resource allocation, project priority in light of other active projects
Marlene Betit	Secretary of State Administrative Services Director, Project Funding Source Administrator	Provided funding source information
Hollis Easter	Office of Professional Regulation; Business Analyst	Discussed business processes and approach to streamlining business process through the proposed solution
Jennifer Silverwood	Office of Professional Regulation; Subject Matter Expert	Discussed how to leverage the proposed solution to improve current licensing and enforcement processes
Danielle Rubalcaba	Office of Professional Regulation; Subject Matter Expert	Discussed how to leverage the proposed solution to improve current licensing and enforcement processes
Rick Steventon	SOV; DII Oversight Project Manager	Project Management Oversight
John Hunt	SOV; DII Chief Technology Officer	Discussed technology architecture and security
John Smith	Pegasystems Consulting Practice Leader	Discussed roles, responsibilities, pricing model, comparable projects, how VT pricing compares to comparable projects, ability to meet security requirements, technical architecture, PM approach, Training approach, Implementation approach, Deployment Approach, Risk Management Approach
Jay Davis	Pegasystems Regional Director, State & Local Government, Vermont Primary Contact	Ditto
Kevin Fray	Pegasystems Consultant	Ditto

### 3.2 Independent Review Documentation

*Complete the chart below to list the documentation utilized to compile this independent review.*

Document Name	Description	Source
Pegasystems_SoW_1_NGLP_Iteration_1_v1.2.docx, Pegasystems_SoW_1_NGLP_Iteration_1_v1.4.docx, Sec_of_State_Pega_NGLP_IT_Contract_vers0-0.doc, and Sec_of_State_Pega_NGLP_IT_Contract_vers0-6.docx	Draft versions of SOW Contract between State of Vermont and Pega	Steve Mattera
<ul style="list-style-type: none"> <li>• SoS NGLP IT RFP.doc</li> <li>• SoS NGLP RFP – Requirements.doc</li> <li>• RFP Response Template 01 - Response Checklist.docx</li> <li>• RFP Response Template 02 - Cover Letter and Summary.docx</li> <li>• RFP Response Template 03 - Vendor References.docx</li> <li>• RFP Response Template 04 - Functional Requirements Approach.docx</li> <li>• RFP Response Template 05 - Non-functional Requirements Approach.docx</li> <li>• RFP Response Template 06 - Implementation Requirements Approach.docx</li> <li>• RFP Response Template 07 - Requirements Mapping.xlsx</li> <li>• RFP Response Template 08 - Acquisition Approach.docx</li> <li>• RFP Response Template 09 - Work Plan.docx</li> <li>• RFP Response Template 10 - Vendor Organization.docx</li> <li>• RFP Response Template 11 - Vendor Staff.docx</li> <li>• RFP Response Template 12 - Proposed Changes to Standard Terms and Conditions.docx</li> <li>• RFP Response Template 13 - Cost Workbook.xlsx</li> <li>• RFP Response Template 14 - Enterprise Considerations.docx</li> <li>• RFP Response Template 15 - SOV_Std_Info_Gathering.xlsm</li> </ul>	RFP and related documents	Steve Mattera
SoS_Office_of_Professional_Regulation_2015_RFI_NGLP.docx	SoS NGLP Request for Information used as basis for RFP	Steve Mattera
SOS_NextGen_Licensing_IT_ABC_Form.pdf	IT ABC Form	Steve Mattera

Document Name	Description	Source
7 Pega RFP Response Template 07 - Requirements Mapping – 20151228.xls 15 Pega RFP Response Template 15 - SIG Lite.xls	Pegasystems Proposal	Steve Mattera
PegaCloud Agreement (Master) 28 Sept 2015.docx	Pegasystems Hosting Master Agreement	Steve Mattera
PegaCloud Production Schedule (with Master) 28 Sept 2015	Pegasystems Hosting Production Schedule, spelling out what is being procured, the terms, size, etc.	Steve Mattera
NGLP Reference Questions.xls	Reference questions to be asked by SoS	Steve Mattera
SOS_IR_Statement_of_Work_09Oct2015.docx	SOW for Independent Review	Peter Kipp
RFP Response virtusa signed.pdf and related documents	Proposal from VIRTUSA, a Pega Partner. SoS elected to pursue discussions with Pega directly vs. through a reseller	Steve Mattera
Pega-Certification-and-Licensing-for-Government_Jan14.pdf, Pega-for_Government_Jun14.pdf, Pegasystems-Corporate-Fact-Sheet.pdf, pegasystems-q3-2015-earnings-release-final.pdf, q4_2014-pega-earnings-release_final.pdf	Relevant information from Pega web site	Pega Web Site, David Gadway IR analysis

## 4. Project Information

### 4.1 Historical Background

*Provide any relevant background that has resulted in this project.*

The Legislature and state agencies look to the OPR for best practice guidance in the implementation of the State's professional licensing. OPR's current business practices and supporting technologies are limiters in the OPR's ability to meet its current statutory responsibilities.

This project is intended to serve the Office of Professional Regulation's (OPR) Licensing and Enforcement functions. OPR's primary functions are to:

1. Identify and license qualified practitioners, businesses, and educational programs;
2. Conduct investigations and inspections to ensure compliance with generally accepted standards of practice, conduct, or safety;
3. Communicate with licensed professionals and the public to effectively inform, verify, educate, and advise;
4. Warn, reprimand, condition, suspend, or revoke licenses when generally accepted standards of practice, conduct, or safety are not met;
5. Process license renewals of practitioners, individuals, and businesses;
6. Manage and properly account for all fees collected;
7. Administer the regulatory programs efficiently;

OPR meets its public protection goals through the performance of the following critical functions, within the confines of its regulatory authority given by the Legislature in Title 3 of the Vermont Statutes Annotated, Chapter 5, Subchapter 3 and in Title 26 of the Vermont Statutes Annotated, Chapters 1-93 (excepting Podiatry, Medicine and Surgery, Plumbers and Polygraph Examiners):

1. Application and renewal (licensing)
2. Inspection
3. Enforcement (investigation, prosecution discipline, and post-discipline monitoring)
4. Communications & Reporting
5. Legislation and Rule Making
6. Administration

OPR is organized by business function, with **separation** between the Licensing and Enforcement units. Licensing functions are managed by 8 Licensing Board Specialists and 2 Licensing Administrators, with responsibilities divided across the 46 professions. The professions licensed by OPR include the following list gathered from the OPR web site (<https://www.sec.state.vt.us/professional-regulation/list-of-professions.aspx>):

1. Accountancy
2. Acupuncturists
3. Alcohol & Drug Counselors
4. Allied Mental Health
5. Applied Behavior Analysts
6. Architects
7. Athletic Trainers
8. Auctioneers
9. Audiologist
10. Barbers & Cosmetologists
11. Boxing Control Board
12. Chiropractic
13. Dental Examiners

14. Dietitians
15. Electrologists
16. Engineering
17. Funeral Service
18. Hearing Aid Dispensers
19. Land Surveyors
20. Landscape Architects
21. Midwives
22. Motor Vehicle Racing Commission
23. Naturopathic Physicians
24. Nursing
25. Nursing Home Administrators
26. Occupational Therapy
27. Opticians
28. Optometry
29. Osteopathic Physicians
30. Pharmacy
31. Physical Therapists
32. Private Investigative & Security Services
33. Property Inspectors
34. Psychoanalysts
35. Psychological Examiners
36. Radiologic Technology
37. Real Estate Appraisers
38. Real Estate Commission
39. Respiratory Care Practitioners
40. Social Workers
41. Speech-Language Pathologist
42. Tattooists & Body Piercers
43. Veterinary Medicine

Currently, the State uses a software product named “ELicense” (aka e-License) by MicroPact as the mechanism to provide its professional licensing public service. The State’s primary uses of this software include license application and renewal for public-facing users (e.g., licensees), and for internal State staff functions related to licensing (e.g., licensing administration, enforcement).

Of note, ELicense was owned by CAVU prior to being acquired by Iron Data in 2010. ELicense then became part of MicroPact when MicroPact and Iron Data merged in August, 2015.

ELicense is used elsewhere within the State of VT, such as Vermont Board of Medical Practice within Agency of Human Services (see <https://webmail.vdh.state.vt.us/CAVU/>).



## 4.2 Project Goal

*Explain why the project is being undertaken.*

The primary objective of this initiative is to support OPR as a licensing regulation center of excellence (COE) in the State of Vermont.

OPR will re-engineer its operations – this includes its organizational model, associated business processes, and supporting technologies in order to achieve the following key business objectives (KBO):

### **KBO #1: On-board new professions easily and efficiently;**

1. Implement a central mail receipt and scanning function/resource to streamline business workflow.
2. Eliminate paper processing entirely by requiring online submittals, and moving all paper submittals to electronic form and storing in the system upon receipt. All verifications of licensure and licenses should be provided electronically via the system.
3. Provide online services in addition to new applications and renewals, such as a chat session for questions, or forms to accept online complaints.
4. Provide self-service functions for licensees to manage their own profile, account, and all information related to their license, such as continuing education or professional work experience information, etc. Ensure licensee understands and accepts responsibility for keeping their contact information up to date.
5. Ensure that web content, professional information, and online services available to public users are intuitive, easy to navigate and find, and fully functional. In addition, ensure that the licensee can view the status of their application, renewal, or case. This will dramatically reduce call volume to staff to address basic questions.

### **KBO #2: On-board new professions with a high degree of quality and consistency;**

1. When future workflows have been designed, evaluate the balance of work effort associated with the current fixed date renewal cycle per profession versus a 2 year renewal cycle based on prior license issuance date.
2. Standardize business workflows across all professions, and cross-train staff on all professions so that work can be delegated and balanced across all staff as needed, for peak processing periods, and coverage for staff absences.
3. Standardize letter templates and forms, to the extent possible, across professions so there is greater consistency at the data storage level, and within business processes.
4. Ensure that workflows are built to maximize business automation and efficiency, leveraging tasks, alerts, notifications, escalations, reporting, etc.

### **KBO #3: Provide regulated professionals with self-service access to all required information;**

1. Provide online applications for all professions, via an intuitive and easy to use web application, where the licensee can easily verify that they have met all of the application criteria, upload supporting documentation and pay licensing and renewal fees online.

### **KBO #4: Provide profession boards with self-service access to all required information;**

1. Provide access to all information they need to perform their oversight and governance functions, and to plan strategically;

**KBO #5: Provide self-service functions for licensees;**

1. Provide ability to manage their own profile, account, and all information related to their license, such as continuing education and professional work experience, and ensure licensee understands and accepts responsibility for keeping their contact information up-to-date;

**KBO #6: Ability to create, extend, and maintain all of OPR's required capabilities using business modelling;**

1. Provide the ability to create new business capability within the Solution without the need for Vendor involvement and software development;

## 4.3 Project Scope

*Describe the project scope and list the major deliverables. Add or delete lines as needed.*

At a summary level, the Project Scope is defined through FUNCTIONAL and NON-FUNCTIONAL requirements as described below.

Data related to its professional licensing public service (i.e., license information, licensee information) will be migrated from the e-License system to the Solution.

The FUNCTIONAL Requirements to be delivered include:

- a. Workflow Management
- b. User Account Management
- c. Contact Management
- d. Document Management
- e. Records Management
- f. Case Management
- g. Reporting, Queries
- h. Solution Administration
- i. Public Portal
- j. Online Services for Registered Users
- k. Manage Licensing Process
- l. Manage Inspection Process
- m. Manage Enforcement Process
- n. Manage Board Meetings, Governance
- o. User Success

The FUNCTIONAL Requirement Details are included as a tab in the attached PROJECT COST spreadsheet. The table below shows the Functional Requirements that have since been excluded from project scope, representing 37 of the 326 requirements.

Requirement Class	Requirement ID	Requirement
3.1 Workflow Management	3.1.3 Task, Workflow Notification	3.3.3.1 The Solution shall notify users when tasks are assigned, completed, or when data or workflow status changes. Users are able to set preferences to filter which events they receive notifications for. Users can elect to receive notifications via email in addition to their system "inbox".
3.2 User Account Management	3.2.3 Instant Messaging	3.2.3.1 The Solution shall provide Public Users with the ability to log into the Solution and "chat" with Staff Users, using instant messaging (IM). The Solution shall track IM messaging, and provide traceability of messaging back to each IM user.
	3.2.5 Manage Preferences	3.2.5.1 The Solution shall provide Public Users with the ability to set their preferences for automated notifications and reminders.
3.3 Contact Management	3.3.4 Manage Contact Activity	3.3.4.1 The Solution shall provide Staff Users with the ability to enter details of a call, or walk-in to the office, with details on the inquiry or topic, and a description of the interaction and any follow up actions.
		3.3.4.2 The Solution shall automatically log all contact details such as date and time for audit tracking purposes.
3.4 Document Management	3.4.1 Create, Send Documents	3.4.1.1 The Solution shall provide Staff Users with the ability create, customize and send documents to Licensees and user types.

	3.4.2 Edit Documents	3.4.2.1 The Solution shall provide Staff Users with the ability to edit and save a new version of a document, and send it to another user.
		3.4.6.2 The Solution shall associate the upload content to the User's identity, and contain date-timestamp of upload, and the source device's ID (i.e., IPaddress) of the source device.
	3.4.9 Search Documents	3.4.9.1 The Solution shall provide Staff Users with the ability to search objects (e.g., documents).
		3.4.9.2 The Solution shall provide the ability to scope the search at varying levels (e.g., system-wide, by document type, by profession, license credential, organization, location). In support of this search capability, the Solution shall perform full-text indexing of all object content (e.g. document fields, keywords, meta data).
		3.4.9.3 The Solution shall maintain a Search History per Staff User that allows the Staff User to essentially instantiate a previous search action without having to re-type the search parameters.
		3.4.9.4 The Solution should provide support for typeahead results that are pickable by the Staff User.
		3.4.9.5 The Solution shall provide support for Boolean operators and wildcard in the search string.
3.8 Solution Administration		3.8.4.6 The Solution shall provide a versioning system that versions each fee value (and associated rules and algorithms) and stamps it with a version number for auditing purposes.
		3.8.4.7 The Solution shall provide an Application Administrator User with the ability to revert to any version of a fee.
		3.8.4.8 The Solution shall provide an Application Administrator User with the ability to define optional start and end dates for each fee.
		3.8.5.2 The Solution shall provide Staff Users with the ability to notify designated users (e.g., Staff User, Business Office Users) of the profession and its corresponding fee schedule.
3.9 Public Portal	3.9.1 Content Management	3.9.1.1 The Solution shall share content and integrate seamlessly with the OPR website CMS. The Solution shall serve as the content system-of-record (SOR) and provide Staff Users with the ability to maintain business content that describes the professional statutory rules and regulations, professions, gives guidance, and provides reports for public consumption.
	3.9.2 Calendar of Events	3.9.2.1 The Solution shall provide a Public Portal capability that allows Staff Users the ability to edit, manage and publish events related to board meetings, public forums, and key dates.
		3.9.2.2 The Solution shall provide Public Users with the ability to access the Calendar of Events through the Public Portal.
		3.9.2.3 The Solution shall provide Staff Users with the ability display this information on a public calendar area of the Public Portal and automatically publish it to the OPR website CMS.
	3.9.12 Chat	3.9.12.1 The Solution shall provide Public Users with the ability to use IM to "chat" with Staff Users.
		3.9.12.2 The Solution shall store all chat session content for future reference, and link the Chat session content to registered user accounts.

3.10 Online Services for Registered Users		3.10.3.2 The Solution shall provide enforcement of Public User profile verification and demographic verification, or verification application information known to the Solution.
3.13 Manage Enforcement Process		3.13.2.4 The Solution shall provide Investigator Users with access to Solution content, when offline at remote sites.
		3.13.8.2 The Solution shall provide Prosecutor Users with the ability to manage the enforcement-related access controls.
3.15 User Success	3.15.1 Self-service	3.15.1.1 The Solution shall provide integrated, context-sensitive help.
		3.15.1.2 The Solution shall provide the ability for user to direct their search to within a contextual area of help content, and across all of the help content. The Solution shall support Boolean operators and wildcards in the search string.
		3.15.1.3 The Solution shall strategically integrate customer service access methods (e.g., IM, email) into the help system.
	3.15.2 Knowledge Base	3.15.2.1 The Solution shall provide the State with the ability to configure a Solution knowledge base (KB) that is version controlled and follows the Solution's releases.
		3.15.2.2 The Solution shall provide the following KB capabilities:
		· WYSIWYG content editor, with support for binary object uploads (e.g., document templates, PDFs)
		· Cross-linking to Help system content;
		· Full-text indexing of KB content;
		· Searchability of KB content with support for Boolean operators and wildcards in the search string;

**The NON-FUNCTIONAL Requirements to be delivered include:**

- a. Strategic Enablement
- b. Product Management
- c. Infrastructure
- d. Architectural Tenets
- e. Architecture Pattern
- f. Architecture Conceptual View
- g. Architecture Deployment View
- h. Deployment
- i. Scalability
- j. Integration Strategy
- k. Integration Points
- l. Integration Design
- m. Database Design
- n. Reliability
- o. Usability
- p. Logging
- q. Capacity and Performance
- r. Security
- s. Operations & Administration
- t. Reliability
- u. Disaster Recovery
- v. Business Rules Engine
- w. Configuration Management
- x. User Platforms
- y. Data Conversion

The NON-FUNCTIONAL Requirement Details are included as a tab in the attached PROJECT COST spreadsheet. The table below shows the Non-Functional Requirements that have since been excluded from project scope, representing 72 of the 358 requirements.

The details include:

Class	Identifier	Requirement
4.1 Strategic Enablement	4.1.2 Information Digitization	4.1.2.1 The Solution shall enable the State’s digitization strategy to eliminate paper end-to-end in its processes, and electronically store representation of documents as a collection of constituent elements. For example, a complete form (or license) that has been issued by the Solution would be stored in the Solution as a collection of discrete data elements that are rendered as a license through a software layer (as opposed to storage of the license as an object itself).
		4.1.2.2 The Solution shall version each discrete data element that comprises a business object, and the business object itself.
4.6 Architecture Conceptual View	4.6.1 Digitization Services	4.6.1.1 The Vendor should provide a Digitization Service (or equivalent) that supports the State’s vision of a Business Integration Center (BIC – refer to 4.11.6 Business Integration Center for additional information) by performing configurable content capture and storage, using OCR and ICR.
		4.6.1.2 The Solution should provide the State with the ability to configure the integration methods, and integration points, of the Digitization Services content.

		· Document Management;
		4.6.6.2 The Solution shall store its models in BPMN v2.0+ format.
		4.6.6.3 The Solution shall provide the State with the ability to export object models into other BPMN v2.0-compliant tools, where they can be edited and exported and then re-introduced (imported) back into the Solution.
4.11 Integration Points	4.11.1 Content as a Service	4.11.1.1 PURPOSE: Required – Content as a Service (i.e., CaaS) or Enterprise Content Management (ECM) integration. The Solution abstracts the CaaS over the following ECM and CMS’:
		· Umbraco;
		· SharePoint;
		Currently the State is moving to AlfrescoOne version5.1, and some SharePoint cloud services (refer to <a href="http://www.azure.microsoft.com">www.azure.microsoft.com</a> ).
		Contractor should describe how the Solution (operating as a client) would leverage the State’s Umbraco CMS, Alfresco server (over CMIS v1.1) and SharePoint as the CaaS for:
		4. Provides digital rights management;
		5. <a href="http://www.sec.state.vt.us">www.sec.state.vt.us</a> web content;
	4.11.2 Web Content Management	4.11.2.1 PURPOSE: Required - Website ( <a href="http://www.sec.state.vt.us">www.sec.state.vt.us</a> ) content and object storage and retrieval using the Umbraco ( <a href="http://www.umbraco.com">www.umbraco.com</a> ) version 6+ web content management system. Designed into and as part of the Solution’s CaaS.
	4.11.3 Social Security Verification	4.11.3.1 PURPOSE: Anticipated - Enterprise Service Bus (ESB) integration to facilitate the exchange of business content across the enterprise. The ESB is Oracle’s product. The first SOA-like service planned, is for OPR to perform Social Security Number (SSN) verification. Forecasted availability of this service is 1HCY16. Other service offerings will follow later in CY16 and beyond.
	4.11.6 Business Integration Center	4.11.6.1 PURPOSE: Future - Business Integration Center (BIC) (i.e., mail processing center). The BIC is expected to be a combination of people and technology services that receive all incoming USPS mail destined for OPR.
		4.11.6.2 The BIC will scan OPR business objects (mail) and send those objects to the Solution through an automated interface. The Solution is responsible for the electronic routing to the appropriate roles (i.e., OPR staff), queuing and workflow triggers. (Contractor budgets for this line item should include mail processing and scanning.)
	4.11.7 State’s Attorney	4.11.7.1 PURPOSE: Anticipated - Push of enforcement-related information and cases.
	4.11.8 Attorney General	4.11.8.1 PURPOSE: Anticipated - Push of enforcement-related information and cases.
	4.11.10 Voice over IP	4.11.10.1 PURPOSE: Future – Solution integration to the State’s Voice over IP (VoIP) telephony service for Staff User “screen pop” based upon caller information provided by VoIP.
	4.11.11 Boards	4.11.11.1 PURPOSE: Anticipated - All HealthCare professionals: Send Workforce data on licenses issue, to Vermont Department of Health.
		4.11.11.2 PURPOSE: Anticipated - Green Mountain Care Board (GMCB): Send labor data from OPR to GMCB.

		4.11.11.3 PURPOSE: Anticipated – State Agency of Administration, Director of Healthcare Reform: Per Vermont Act 2013, No.79 Sec 44,53(a) work force planning data collection. Today it is achieved through self-reporting surveys.
		4.11.11.4 PURPOSE: Anticipated - Midwives and Naturopath: Annual report to State Department of Health on birth-related data.
		4.11.11.5 PURPOSE: Anticipated – Appraisers Foundation and Appraisal subcommittee: Send new licensee content to national organization.
		4.11.11.6 PURPOSE: Anticipated - National Practitioner Databank: healthcare reporting from OPR to federal government on discipline related to healthcare providers. Reporting is event-driven.
		4.11.11.7 PURPOSE: Future – Professional Engineers, <a href="http://ncees.org/">http://ncees.org/</a>
	4.11.12 HIPDB	4.11.12.1 PURPOSE: Required – Lookup to Healthcare Integrity and Protection Data Bank (HIPDB) – federal database of healthcare providers.
	4.11.13 NPDB	4.11.13.1 PURPOSE: Required – Lookup of records in the National Practitioner Data Bank (NPDB) – federal database of healthcare providers.
	4.11.15 Department of Taxes	2. OPR real-time query Department of Tax, via some form of a web service. The query is result is binary value that will indicate the individual or entity is “in compliance” with Tax or “out of compliance”. Tax is undergoing system implementation work and this interface is not expected to be supportable on their end until 4QCY16.
		3. Department of Tax sends Compliance objects to OPR. These objects are signed letters from the Department of Tax indicating they are out of compliance. OPR will consume these letters and develop the logic to associate the letter to the license holder and apply the appropriate business rules as to what that means to the license holder.
	4.11.16 Office of Child Support	4.11.16.1 PURPOSE: Required - Lookup of data from the State’s Office of Child Support (OCS).
	4.11.17 Judicial Bureau	4.11.17.1 PURPOSE: Required – Lookup of traffic violation-related events, non-criminal and for compliance of fines.
	4.11.20 NCIC	4.11.20.1 PURPOSE: Future - Lookup of criminal background information in the National Crime Information Center database.
	4.11.21 VCIC	4.11.21.1 PURPOSE: Future - Lookup of criminal background information in the Vermont Crime Information Center database (VCIC).
	4.11.22 Valcour	4.11.22.1 PURPOSE: Future – Create a complaint in the Valcour Law Enforcement system ( <a href="http://www.crosswind.com/rms/">http://www.crosswind.com/rms/</a> ).
	4.11.23 System Manager	4.11.23.1 PURPOSE: Anticipated – external integration of Solution’s command control and management and monitoring functions into the State’s management and monitoring application. Currently the State uses PRTG (see <a href="https://www.paessler.com">https://www.paessler.com</a> ) for device-level monitoring. In the future it will be moving to a service-management type application.
	4.11.24 OpenData	4.11.24.1 PURPOSE: Future - Publish of selected State data from Solution to State’s OpenData site ( <a href="https://data.vermont.gov/">https://data.vermont.gov/</a> ). This data service is currently provided by Socrata.
	4.11.25 Vermont Department of Health	4.11.25.1 PURPOSE: Required – Vermont Prescription Monitoring System (VPMS) to complete form on VPMS when submitting a new application.
	4.11.27 Vermont IAM	4.11.27.1 PURPOSE: Future – Authentication service anticipated by DII.
	4.11.28 Vermont GIS	4.11.28.1 PURPOSE: Future – Lookup integration to Vermont GIS.



	4.11.29 Vermont Digital Archives	4.11.29.1 PURPOSE: Future – Lookup of, and publish to, State’s future digital archive solution.
4.13 Database Design	4.13.6 Performance	4.13.6.1 The Solution shall provide logging of long running queries, with the intent of facilitating the identification and correction of performance issues.
		4.13.6.2 The Solution shall provide summaries and alerts to Vendor SysOps staff at thresholds (extraordinary or informational) of operational relevance. The Solution shall also provide this information using the Solution’s Management and Monitoring application.
4.14 Reliability	4.14.1 User Acknowledgement	4.14.1.1 The Solution shall perform user acknowledgements (positive and negative) to user-related actions inside a transaction wrapper.
4.17 Capacity and Performance	4.17.1 Resource Growth Rate	4.17.1.1 The Solution shall provide auto-scalability of all infrastructure instances, services, and resources across the Solution’s deployment architecture stack and deployment configuration for all State environments (i.e., Production, Stage, and Test).
	4.17.2 Licensees and Types	4.17.2.1 The Solution shall provide initial support for an estimated:
4.19 Operations & Administration	4.19.1 Unified Ops Management Console	4.19.1.1 The Solution shall provide a single-pane view and point of control of all Ops-related management and monitoring functions (up-and-down, and across the software architecture stack, inclusive of the supporting AWS infrastructure services).
		4.19.1.2 The Solution should provide exposure of the Ops Management Console’s essentials capabilities, via an API (or equivalent) for integration into 3rd party Management platforms.
		4.19.1.3 The Solution shall provide the ability to configure the automation of Ops management actions in response to events and conditions. All actions are also schedulable and automatable. For example in the area of auto-scaling, if one of the Solution’s CPU utilization was running “hot” (i.e., sustained at 75%) for an extended period, the Ops automation functions should invoke a set of alarms and possible invoke the creation of new instances. Another example would be in anticipation of an extremely large business event (e.g. profession renewal), the Solution could be scaled horizontally (e.g., Application servers.)
		4.19.1.4 The Solution shall provide alarm reporting based upon discrete event correlation.
	4.19.3 Instrumentation	4.19.3.1 The Solution shall provide instrumentation of its essential technology elements (up-and-down, and across the software architecture stack, inclusive of the supporting AWS infrastructure services) to sufficiently enable:
		· Proactive Ops Management console capabilities;
		· Proactive Application Administration Console capabilities;
		· Proactive Diagnostics (e.g., resource failures);
		· Resource consumption rates;
		· Threshold management;
		· Performance tuning;
		· Analysis of application and system usage patterns;

	4.19.4 Performance Analysis	4.19.4.3 The Solution shall provide the ability to configure the automation of Ops management actions in response to analytic values. For example, if the Solution detects a large number of failed login attempts from a specific IP address, the Ops automation function invoke firewall rules to block the IP address, and send a notice to the Operations staff that such an action was taken.
4.24 User Platforms	4.24.1 Mobile Applications	4.24.1.1 The Solution should provide native mobile applications for Android and iPhone.
		4.24.1.2 The Solution's should provide mobile applications functional coverage used by all State user roles.

### 4.3.1 Major Deliverables

High Level Deliverables include:

1. Pega 7 Business Process Management Suite architecture toolset for developing applications.
2. Pega’s Licensing and Certification for Public Sector application as a starting point for developing functionality to support the Nursing licensing process.
3. 3 hosted environments running on AWS Cloud hosting services.
4. Data migration services.
5. Training on Pega 7 toolset.
6. Implementation of Nursing functionality.

Specific deliverables by phase are described in the following table. This is a work in progress and is being defined in the contract.

Project Phase	Deliverables
Inception	<ul style="list-style-type: none"> <li>• Application Profile, generated by Pega</li> <li>• High Level Project Plan</li> <li>• High Level Requirements, Scope, and Objectives for selected Occupation/Profession</li> <li>• Pega Cloud Development environment provisioned for the State, with baseline Licensing and Certification for Public Sector installed</li> <li>• Project Status Report Template</li> </ul>
Elaboration	<ul style="list-style-type: none"> <li>• Change Control Process</li> <li>• Requirements Traceability Matrix</li> <li>• Governance Model</li> <li>• Detailed Project Plan</li> <li>• Test Plan</li> <li>• Data Migration Plan</li> <li>• Pega Cloud QA/Test and Production environments provisioned for the State, with baseline Licensing and Certification for Public Sector installed</li> <li>• Weekly Project Status Reports</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• Revised Project Plan</li> <li>• Completion of Application Configuration</li> <li>• Completion of required interfaces/integrations</li> <li>• Completion of required reports/dashboards</li> <li>• Weekly Project Status Reports</li> </ul>
Transition	<ul style="list-style-type: none"> <li>• Data Migration Run Book</li> <li>• Final Application Document, generated by Pega</li> <li>• Production Support Plan</li> <li>• Iteration 1 Lessons Learned</li> <li>• SOW for implementation of next Occupation/Profession(s)</li> </ul>

## 4.4 Project Phases, Milestones and Schedule

*Provide a list of the major project phases, milestones and high level schedule. You may elect to include it as an attachment to the report instead of within the body.*

The Nursing Profession Implementation Schedule is expected to be 5 months in duration.

The remaining professions are expected to take 8-12 months to complete.

The chart below illustrates the Nursing Profession schedule.

PHASE	SCHEDULE
Inception (2 weeks)	4/1/2016 – 4/11/2016
Elaboration (5 weeks)	4/14/2016 – 5/15/2016
Construction (8 weeks) (up from 4 weeks per original quote)	5/18/2016 – 7/10/2016
Transition (4 weeks)	7/13/2016 – 8/8/2016
Post-Deployment Support (4 weeks)	8/11/2016 – 9/5/2016

The phases are tied to the “key work accomplished” summarized in the table below. Specific deliverables are not yet defined.

Phase	Key Work Accomplished
Inception	<ul style="list-style-type: none"> <li>Complete next level of detail beyond what is known to date on Use Cases; functional and non-functional requirements; data conversion; system interfaces and interchanges; reports and correspondence; and user access</li> <li><b>Develop a high-level project plan</b> and gain approval for the plan from the project’s governance committee</li> <li>Complete the final Application Profile and Sizing for the agreed to phased deployment plan</li> <li>Provision the Pega Development environment</li> <li>Conduct Phase Readiness Review to prepare to move to Elaboration phase.</li> </ul>
Elaboration	<ul style="list-style-type: none"> <li><b>Conduct a detailed gap review between requirements and current Pega functionality;</b> document the gaps in a Requirements Traceability Matrix</li> <li>Complete application architecture design</li> <li>Define the test strategy and testing process</li> <li>Prototype/elaborate on key Use Cases</li> <li>Define the integration components, correspondences and reports</li> <li>Define Actors, Roles and Organizational Structures</li> <li>Develop database mapping (existing database to Pega database) and Data Migration Plan</li> <li>Provision the Test and Production Pega environments</li> <li>Conduct Phase Readiness Review to prepare to move to Construction phase.</li> </ul>
Construction	<ul style="list-style-type: none"> <li><b>Configure application in a series of iterations</b></li> <li>Complete unit testing</li> <li><b>Test and finalize Data Migration Plan</b></li> <li><b>Perform system and integration testing</b></li> <li>Begin planning for next Occupation/Profession</li> <li>Conduct a Phase Readiness Review to prepare to move to Transition phase.</li> </ul>
Transition	<ul style="list-style-type: none"> <li>Promote application from Dev to QA/Test</li> <li>Complete system and user acceptance testing</li> <li>Issue tracking and resolution</li> <li><b>Promote application into production</b></li> <li>Perform Data Migration</li> <li>Go-Live and Post-Deployment Support</li> <li>Finalize plan for next Occupation/Profession</li> </ul>

## 5. Acquisition Cost Assessment

List all acquisition costs in the table below (i.e. the comprehensive list of the one-time costs to acquire the proposed system/service). Do not include any costs that reoccur during the system/service lifecycle. Add or delete lines as appropriate. Based on your assessment of Acquisition Costs, please answer the questions listed below in this section.

The following chart represents the out of pocket **Acquisition Costs** over a 10 year period. Detailed composition of these numbers are found in the attached project cost spreadsheet.

IT Activity Lifecycle:	10 Years		
<b>Total Lifecycle Costs:*</b>	<b>\$ 7.85M</b>		
<b>PROJECT COSTS:</b>	<b>\$2.2M</b>		
<i>Pega Implementation Services</i>	\$2.1M		
<i>Total DII PM/EA Costs:</i>	\$180K		
<b>OPERATING COSTS:</b>	<b>\$5.65M</b>		
<i>Staffing Costs:</i>	\$1.7M		
<i>Hosting Costs (includes software licenses):</i>	\$2.8M		
<i>Software Maintenance, Support, and Security Audit Services:</i>	\$1.15M		
<b>CURRENT OPERATING COSTS:</b>	<b>\$ 1.5M</b>		
Difference Between Current and New Operating Costs:	<b>Increase of \$4.15M (Go forward Operating Cost of \$5.65M less \$1.5M of Current operating cost)</b>		
Funding Source(s) and Percentage Breakdown if Multiple Sources:	OPR Administration Fund Balance: Fund 21150; Program 29200:	\$1,850,000	23.57%
	OPR, Administration Budget: Fund: 21150, Program Code: 29200:	\$4,999,531	63.69%
	SOS Service Fund 21928:	\$427,350	5.44%
	OPR Fund 21150:	\$479,769	6.11%
	HAVA Fund 22025:	\$93,233	1.19%
	<b>TOTAL:</b>	<b>\$7,849,881</b>	<b>100%</b>

## 5.1 Cost Validation

*Describe how you validated the Acquisition Costs.*

The Acquisition Costs were validated through the following methods:

1. Comparison of Hourly Rates of similar Services
2. Comparison with Projects of Similar Scope
3. Comparison with Other Bidders
4. Comparison with Competitive Solutions

### 1. Comparison of Hourly Rates of similar Services:

Pega has proposed the rate of \$245 for Senior Architect and \$275 for all other roles assigned to this project, including Practice Leader, Engagement Leader, Lead System Architect, Lead Business Architect, and UX Architect.

These rates are high when compared to other recently reviewed projects. Those rates range from \$150 - \$200.

### 2. Comparison with Projects of Similar Scope:

Pega was asked to describe comparable projects in terms of cost, duration and scope of work. Of particular interest are those projects which are completed by Pega, as this implementation is not using 3<sup>rd</sup> party resellers/implementers, rather, it is expected that SOV will work directly with Pega implementers. The following projects were described:

- a. California Department of Public Health (CDPH) purchased Pega's Certification and Licensing application to replace many licensing applications for over 150 different license types across the department.
  - i. The first of these was for Export Food licenses. A license application used to take over 5 weeks to process after the form was completed by hand and mailed or faxed in. Now the online form takes a matter of 5 hours from submittal through to approval of the license. This initial project took **9 months to complete** as it was the first of its kind at CDPH.
  - ii. Phase 2 of the licensing project had two components:
    1. The PERL project for Laboratory Field Services (LFS) e.g. Phlebotomy Licenses, was **implemented in less than 6 months** and covered 23 different license types for LFS for new licenses. Next phase is for license renewals for LFS. Also during this time, the review and approval of the license was brought in house rather than a 3<sup>rd</sup> party service provider.
    2. The PEP project created a common services layer for CDPH overall, enabling the use of re-useable components such as user enrollment; eSignature integration to DocuSign; integration to credit card payment system; connection to their back-end financials system and connection to their license book of record. This was also **completed in 6 months**.
- b. The State of Maine uses Pegasystems software for business process management application solutions. The Office of Information Technology (OIT) replaced the Department of Marine Resource's Licensing and Landings application with a specialized implementation of the Pega Department of Marine Resources Framework. The goal was to create a reusable framework that other Marine Resources departments throughout the United States could leverage to build specialized applications to meet the needs of their licensing process. This project required development in Pega Rules Process Commander (PRPC) version 7.1.X and was based on the Pega Public Sector Certification & Licensing Framework (CLF). This project took **9 months** to complete.

In summary, while Pega would not share specific cost data, but they did allow that the above projects were staffed similarly to this project and were similar in duration. As such, we are not clear whether this project is priced comparably to other similarly scoped projects.

**3. Comparison with Other Bidders:**

There was only one bid received through the RFP process. That bid was for the Pega solution submitted by a 3<sup>rd</sup> party implementer. SoS preferred to work directly with Pega so asked Pega to submit a proposal.

The 3<sup>rd</sup> party implementer's bid came in at nearly the same cost as the costs anticipated for Pega (\$6M).

**4. Comparison with Competitive Solutions:**

We conducted a preliminary market scan and found the following products serving Professional and Occupational Licensing:

- a. Accela Licensing and Case Management (Professional and Occupational Licensing):
  - i. State of Montana Labor and Industry, Professional Licensing
  - ii. City of Lenexa, KS, Business and Professional licensing
- b. Tyler Technologies EnerGov Licensing and Regulatory Suite (Professional License Management):
  - i. British Columbia
- c. Big Picture Software:
  - i. Louisiana Board of Medical Examiners
  - ii. South Dakota Board of Medical Examiners
  - iii. North Dakota Board of Nursing
- d. MicroPact Versa:
  - i. State of Virginia Division of Professional and Occupational Regulation
- e. System Automation MyLicense:
  - i. State of New Hampshire Occupational Licensing
  - ii. State of Utah Occupational and Professional Licensing

At the time of this report, we have been able to gather the following pricing information. 10 year costs (TCO: Total Cost of Ownership) are provided, and all at much lower costs than the proposed Pega solution.

Alternative Pricing Models (* indicates SaaS option):	Full User Fee	Full User Count	Mobile User Fee	Mobile User Count	Portal Fee	Total Software Fee *=annual fee	Annual Maintenance of 20%	10 Year Maintenance Cost	Implementation Fees (1:1.5 software to services)	TCO
Accela Professional and Occupational Licensing	\$2,000	40	\$1,000	20		\$100,000	\$20,000	\$200,000	\$1,000,000	\$2,000,000
Accela Professional and Occupational Licensing*	\$199/month includes access to all Civic Platform modules	40				\$95,520	Included	Included	\$1,000,000	\$1,955,200
Tyler Technologies EnerGov On Premise	\$3,000	40	\$1,000	20	\$20,000	\$160,000	\$32,000	\$320,000	\$1,000,000	\$1,480,000
Tyler Technologies EnerGov SaaS*	\$150/month including portal	40	Included		\$5,000 0annually	\$77,000	Included	Included	\$1,000,000	\$1,770,000
Big Picture Software SaaS*	Annual software fees estimated					\$100,000	Included	Included	\$1,000,000	\$2,000,000
MicroPact Versa*						\$300,000			\$1,000,000	\$4,000,000
System Automation MyLicense*						\$85,000	Included	Included	\$1,000,000	\$1,850,000



## 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)?*

Point of Comparison	Measure
Hourly Rates:	Pega Rates are <b>high</b> compared to market rates
Similarly Scoped Projects with Pega:	Cost data not available from other similarly scoped projects within the Pega client base.
Comparison with other bidders:	Pega Costs are <b>comparable</b> to another bid, but the sample size is small (1 other bid).
Competitive Analysis:	Pega Costs are <b>high</b> when compared to competitive products.

## 5.3 Cost Assessment

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

Costs for the proposed solution are **high** relative to the metrics evaluated as outlined in the Cost Comparison section 5.2.

### Additional Comments on Acquisition Costs:

None.

## 6. Technology Architecture Review

*After performing an independent technology architecture review of the proposed solution, please respond to the following.*

**SUMMARY:** This project calls for developing applications using the Pega 7 platform, leveraging the existing Pegasystems Licensing and Certification for Public Sector application, built on Pega 7, with those applications running on AWS Cloud Hosting Services East Region.

See **Appendix 4** for detailed technology specifications.

**1. State's IT Strategic Plan:** Describe how the proposed solution aligns with each of the State's IT Strategic Principles:

- i. Leverage successes of others, learning best practices from outside Vermont.
- ii. Leverage shared services and cloud-based IT, taking advantage of IT economies of scale.
- iii. Adapt the Vermont workforce to the evolving needs of state government.
- iv. Apply enterprise architecture principles to drive digital transformation based on business needs.
- v. Couple IT with business process optimization, to improve overall productivity and customer service.
- vi. Optimize IT investments via sound Project Management.
- vii. Manage data commensurate with risk.
- viii. Incorporate metrics to measure outcomes.

b. The following describes how this project exploits these principles:

- i. Leverage successes of others, learning best practices from outside Vermont.
  1. *The proposed solution is proven and in place in many other public and private organizations.*
  2. *However, there are similar agencies using COTS solutions at a lower cost, including the list of COTS solution vendors noted above in Section 5.1.*
  3. *and sample clients where available:*
    - a. *Accela Professional and Occupational Licensing:*
      - i. *State of Montana Labor and Industry, Professional Licensing*
      - ii. *City of Lenexa, KS, Business and Professional licensing*
    - b. *Tyler Technologies EnerGov Professional License Management*
      - i. *British Columbia*
    - c. *Big Picture Software:*
      - i. *Louisiana Board of Medical Examiners*
      - ii. *South Dakota Board of Medical Examiners*
      - iii. *North Dakota Board of Nursing*
    - d. *MicroPact Versa:*
      - i. *State of Virginia Division of Professional and Occupational Regulation*
    - e. *System Automation MyLicense:*
      - i. *State of New Hampshire Occupational Licensing*
      - ii. *State of Utah Occupational and Professional Licensing*
- ii. Leverage shared services and cloud-based IT, taking advantage of IT economies of scale.

1. *This solution leverages cloud-based services in that the application will be hosted in AWS Cloud Hosting Services.*
- iii. Adapt the Vermont workforce to the evolving needs of state government.
  1. *The proposed solution is a big evolution in supporting the needs of state government. The capabilities of the proposed solution could be leveraged in many places of state government, but like any project, in order to be successful, clear requirements need to be defined, dedicated and capable project management, subject matter, and technical staff need to be assigned to the effort. SoS does not yet have the technical capacity to leverage the Pega tool within SoS office. Further, in order to achieve a larger benefit, Pega would need to be used across the SOV Enterprise, and that is not currently part of any known or understood master plan.*
- iv. Apply enterprise architecture principles to drive digital transformation based on business needs.
  1. *As the solution relies on AWS architecture for hosting, and as AWS is a proven hosting partner for SOV, this is aligned with SOV.*
  2. *The Pega framework also aligns with SOV in that it is scalable and database agnostic, although Pervasive SQL is the database of choice.*
- v. Couple IT with business process optimization, to improve overall productivity and customer service.
  1. *This initiative improves customer service by improving the accuracy and speed of the licensing service, and the anticipated ability to change business rules quickly. However, what price Customer Service improvement? Customer Service increase comes at a cost of \$1.7M as described here:
    - a. *This solution does not improve productivity, in that, there is an increase of internal staffing costs of \$1.7M as noted in Section 5 above. It is an objective of OPR to reduce staff allocated to supporting licensing and renewal functions, yet this project actually increases staff allocated to licensing and renewal, in that, more staff are now needed in order to support the software application supporting licensing and renewal. It is expected that a software application will required less staff, not more staff.**
- vi. Optimize IT investments via sound Project Management.
  1. *Both the vendor and SOV are expecting to provide sound Project Management services on this initiative.*
- vii. Manage data commensurate with risk.
  1. *The security model is role-based with encryption for data in transit and at rest. So long as the system is configured correctly, it is expected that data risk will be managed as well.*
- viii. Incorporate metrics to measure outcomes.
  1. *There are no specific outcome metrics defined in the scope of work. Defining metrics like reducing customer response time by x% or reducing the time it takes to renew a license by x% should be considered.*

**2. Service Level(s):** What is the desired service level for the proposed solution and is the technical architecture appropriate to meet it?

The following Service Levels were defined the RFP, and all are met fully, except 4.13.4.2. However, given AWS' redundancy, it is expected to be met, although not contractually:

REQUIREMENT	APPROACH TO MEETING REQUIREMENT
4.13.4.1 The Solution shall provide 99.9% availability target for its database service.	Pega Cloud offers a 99.95% SLA (Service Level Agreement) for the Pega Cloud production environment.
4.13.4.2 The Solution shall provide a mean time to recover (i.e., RTO) of less than 60 minutes for the database service.	Pega Cloud does not contractually commit to RTOs/RPOs. By design, both the Pega Cloud PaaS and the AWS IaaS on which the customer will rely are highly-available, resilient environments, with multiple load-sharing devices, redundant data stores, and replicated databases. Server backups are replicated in near real-time and are spread across multiple Availability Zones for resilient high availability. The AWS IaaS is divided into Regions and Availability Zones (AZs). Essentially, AWS Regions are geographically distant, logically defined, jurisdictionally distinct operating areas. An AWS Region consists of multiple Availability Zones, each of which is commonly managed, logically defined, combinations of redundant but geographically separate and distant physical locations. All this is used to ensure real-time high-availability and resilient failover.
4.13.4.3 The Solution shall provide a maximum data recovery window, or recovery point objective (i.e., RPO) is less than 60 minutes for the database service.	See response on 4.13.4.2.
4.13.4.4 The Solution shall not experience more than four unplanned outage events for the database service within each calendar year, with no more than a one hour duration per outage occurrence, with no single outage resulting in more than one hour worth of data loss.	Pega Cloud offers a 99.95% SLA (Service Level Agreement) for the Pega Cloud production environment. In the event the Subscription does not meet the SLA in any eligible credit period, customer will be eligible to receive a subscription credit.

*Additional Information from Pega:*

### **SYSTEM AVAILABILITY**

Pegasystems will use commercially reasonable efforts to make the Subscription available with a Monthly Uptime Percentage of 99.95% (the “SLA”), as calculated below. For the sake of clarification, the SLA applies to the Production Environment only and does not apply to the Sandboxes nor to the Production Mirror Environment.

$$\frac{\text{Scheduled Availability} - \text{Unavailability}}{\text{Scheduled Availability}} \times 100 = \text{Monthly Uptime Percentage}$$

Where, “Scheduled Availability” means total number of such five-minute periods in the Subscription Month during which the Production Environment was scheduled to be available, subject to sections 1(d) and (e) of this Agreement. If the Production Environment was scheduled to be available for less than a full calendar month, then the Subscription Month is still the preceding calendar month but any days in such month prior to the commencement of available usage of the Production Environment will be deemed to have been available, and

“Unavailability” means that the Production Environment was unresponsive during a five minute period, and Pegasystems was unable to provide Customer access to a replacement Production Environment.

In the event the Monthly Uptime Percentage does not meet the SLA during a Subscription Month, Customer will be eligible to receive a credit equal to 10% of the Subscription fees for such Subscription Month. Pegasystems will apply any SLA credits against Subscription fees due under the applicable Schedule in future months. SLA credits will not entitle Customer to any refund of fees paid for the Subscription nor for any credit against fees due for any other software or services provided by Pegasystems. Customer’s sole and exclusive remedy for the Subscription not meeting the SLA is the receipt of a SLA credit as described in this paragraph. Any Unavailability that is the basis for a SLA credit cannot be the basis for a future claim. To receive a SLA credit, Customer must submit a written request to Pegasystems that includes the dates and times of each incident of Unavailability, within 30 days of the end of the Subscription Month in which the alleged Unavailability occurred. If the Monthly Uptime Percentage is confirmed by Pegasystems not to have met the SLA, then Pegasystems will issue the SLA credit to Customer within one billing cycle following the month in which the request is received.

- 3. Sustainability:** Comment on the sustainability of the solution’s technical architecture (i.e., is it sustainable?).

The platform upon which the solution will run, AWS, is highly sustainable.

The Pega platform has been in use for several years, with consistent upgrades applied to it. Specifically:

Pega was founded in 1983 and initially delivered a PL/1-based solution for DEC VAX machines, allowing organizations like Citibank and Bank of America to design execute and evolve complex exception management process. That solution was rewritten to support VAX and CICS deployments and then later ported to a C++ distributed solution, allowing the growing list of Pegasystems customers to extend their process automation from the back to the front office. In the late 1990’s, Pega engineering began an R&D project to develop the next generation platform, leveraging 15+ years of experience with workflow, case management and business rules, and exploiting the emerging Java and XML technologies that are at the core of today’s enterprise architectures. The result of the development was

PegaRULES Process Commander (PRPC), made generally available in 2001 as version 3.2. Pegasystems' PRPC version 6.1 was released in Q1, 2010, and Version 7, the current version, in 2013.

Given the high number of staff required to develop in and maintain the Pega platform, there is a high cost to sustain the platform. As such, sustainability is in question.

**4. License Model:** What is the license model (e.g., perpetual license, etc.)?

The proposed solution suggests two primary components:

1. Software is licensed as a software subscription model, using both licensee counts and user counts as cost drivers, although the cost per user is not made available by the vendor.
2. Hosting is included in the overall monthly fee to use the software, and pricing is additionally driven by disk space capacity requirements.

**5. Security:** Does the proposed solution have the appropriate level of security for the proposed activity it will perform (including any applicable State or Federal standards)? Please describe.

Yes, the proposed solution has the appropriate level of security for the proposed activity it will perform.

**Security Architecture and Design:** Describe the Vendor's proposed approach to support technical controls and technology solutions that must be secured to ensure the overall security of the System:

**a. Application Security Model**

**i. Authentication**

Pega supports several options for authenticating access to Pega-based applications. Using Pega basic authentication, Pega manages user credentials and user information, such as full name, title, department, etc. in a Pega operator ID record. Pega passwords are encrypted using a one-way hash and support advanced password management capabilities, including the ability to set password length, special characters, timeouts, display CAPTCHAs, and so forth. Instead of managing user credential and information itself, Pega can authenticate users against **an LDAP or Active Directory server**. Both of these modes of authentication rely upon Pega to prompt the user for their credentials and manage the validation of those credentials.

Pega supports custom and standard Single Sign-On (SSO) solutions such as SiteMinder, Tivoli Access Manager, and Windows Claims Based Authentication. Pega also supports container managed authentication via Java Authentication and Authorization Service (JAAS). These approaches authenticate users outside of Pega. After successful authentication, the user's ID or other unique identifier is typically passed in the HTTP header of the request and is parsed by a Pega authentication service. The user identifier is used to locate or create a Pega Operator ID record used during the user's session. During this process it is common for Pega to look up additional user information in an LDAP/AD or custom directory.

Multiple authentication schemes can be used at the same time to support internal users, partners, and customers.

**ii. Authorization**

Pega provides access to application resources through role-based security. Users are identified by Pega Operator IDs, which may be assigned to one or more Pega access

groups. Access groups map users to an application (essentially a defined slice of the situational layer cake at a particular version) and the roles that they may play in the application (developer, user, power user, etc.). Fine-grained authorizations to specific fields, activities or process actions are supported through privileges. In most cases, users are authenticated and authorized at the role-level outside of Pega. The authentication and authorization services allow users authenticated outside of Pega to be dynamically mapped to a model operator based on a role or group identified outside of Pega and for an operator ID to be dynamically generated for them as needed. Operator records can also be created through a batch process. This allows Pega to support a pattern of authorization where coarse-grained authorizations are managed externally, and fine-grained authorizations are managed in the application itself.

## **b. Data Security Model**

### **i. Data protection**

Many applications store and use sensitive data, including Personally Identifiable Information (PII) and other non-public information (NPI) such as social security numbers, driver's license numbers, date-of-birth, etc. With Pega:

- Passwords are automatically encrypted. No additional action is required
- Database connectivity can be encrypted
- Integration services and connectors can be encrypted using the default Pega reversible portable cipher, which is the same across all Pega implementations and requires no additional effort; or the site-specific cipher, which is an encryption scheme implemented by you rather than by Pega.
- Pega provide encryption capabilities for data properties and BLOBs. Using the "password" property or "Text Encrypted" property type, sensitive Single Value, Value List, and Value Group properties will be encrypted. Both types produce encrypted (or hashed) values for the property value within the Pega database, and both types offer some degree of security within the user interface. Optionally, you can enable configuration of the Storage Stream or BLOB (pzPVStream) column for rows of the Pega database corresponding to specific classes. For encrypting properties and BLOBs, Pega provides two working samples that use the following encryption algorithms: Bouncy Castle Blowfish and Java Skipjack.

- ii. Pega Cloud offerings have been certified to higher levels of security and reliability, with SOC 2 certification. Service Organization Controls (SOC) are a series of accounting standards that measure the control of financial information for a service organization. They are covered under both the SSAE 16 and the ISAE 3402 professional standards. Pega Cloud's control architecture meets both industry specific and geographic regulatory requirements, including HIPAA, PCI DSS, FDA 21 CFR Part 11, and European Union Data Privacy. See more at: <https://www.pega.com/about/news/press-releases/pega-cloud-achieves-service-organization-controls-soc-2-certification> .

**Further, Pega indicates they adhere to the following security practices:**

- a. **Access Control:** Maintain access control measures restricting access to applications, data, and software to only those entities that have a documented, current business need. Access to the controlled systems are locked down by subnet, port, protocol, server, role, and User to allow only the access required for the business function.
- b. **Audit Controls:** Implement audit control mechanisms to record, monitor, and examine system activity, including data access activities.
- c. **Authorization Control:** Implement a mechanism for controlling the authorization of individuals, organizations, and roles to access applications, data, and software. Assure supervision of personnel performing technical systems maintenance activities by authorized, knowledgeable persons. Work to train Users, including technical maintenance personnel, in system security.
- d. **Data Authentication:** Create audit trail providing corroboration that data has not been altered or destroyed in an unauthorized manner at the infrastructure layer. The Customer is responsible for this at the application layer.
- e. **Entity Authentication for Instances provisioned:** Implement entity authentication technologies, including automatic logout and unique User identification through a password or equivalent system. Passwords or other user tokens shall be required to follow robust, documented policy requirements including:
  - i. Periodic reset/renewal every 90 days or less (Password ageing)
  - ii. Complexity and length requirements in the case of passwords
    - i. No dictionary words
    - ii. No dates
    - iii. Mixed character types (at least three of lowercase, uppercase, numerals, and punctuation)
  - iii. Lockouts after six unsuccessful authentication attempts
- f. **Encryption at Rest:** Encrypt sensitive data whenever stored on disk using 256-bit AES encryption (except in a Standard Sandbox).
- g. **Encryption in Flight:** Encrypt communications over a network containing sensitive data through TLS or a VPN IPsec tunnel to client endpoint.
- h. **Audits and Policy Compliance:** Upon written request, supply to the Customer documentation regarding the following policy components:
  - i. Pega Cloud Services Written Information Security Program (WISP)
  - ii. Pega Cloud Services Disaster Recovery & Business Continuity Plan
  - iii. Customer's Environment logs that are currently available
  - iv. Executive summary of the security, data backup, and monitoring events for the Customer's Environment(s) that are currently available.
- i. **Assigned Security Responsibility:** Assign and document the assignment of security responsibility to a specific individual or role within the service provider organization. This responsibility would include the management and supervision of the use of security measures and the conduct of personnel.



- j. **Physical Security:** Implement and document physical access controls (limited access) governing the service provider's location(s) that are used to access the Customer Applications, data, and software.

## 6. Hosting Environment

- a. The solution is expected to be hosted by AWS East Region.
- b. Pega Cloud hosting of 3 environments of Pegasystems software (Pega Platform (PRPC) 7.1.9) single-tenant virtual private cloud (VPC) deployment and are operated on a 24x7 basis.
- c. **Production:** an Environment that is designed, built and scaled to accommodate Customer Applications in order to process live and/or real-time data in connection with Customer's ongoing business operations and is deployed within a single geographic region.
- d. **Sandbox Standard Size:** service that is intended to be used for research and development, functional/unit testing, UAT testing of Customer Applications and training.
- e. **Sandbox Large Size:** service that is intended to support pre-production, staging and testing of the Customer Applications.

Pega Cloud Subscription Services			
Service	Standard Sandbox	Large Sandbox	Production Environment/ Production Mirror
Back-up	<ul style="list-style-type: none"> <li>Daily Incremental back Ups</li> <li>Weekly Full Backups</li> <li>4 weeks retention</li> </ul>	<ul style="list-style-type: none"> <li>Daily Incremental back Ups</li> <li>Weekly Full Backups</li> <li>4 weeks retention</li> </ul>	<ul style="list-style-type: none"> <li>Daily Incremental back ups</li> <li>Weekly Full Backups</li> <li>4 weeks retention</li> <li>Near-time data replication to backup database*</li> </ul>
Data Refresh	<ul style="list-style-type: none"> <li>Movement of data sets between systems. Includes uploading sample data files for population into target systems.</li> </ul>	<ul style="list-style-type: none"> <li>Movement of data sets between systems. Includes uploading sample data files for population into target systems.</li> </ul>	<ul style="list-style-type: none"> <li>Movement of data sets between systems. Includes uploading sample data files for population into target systems.</li> </ul>
Database Management	<ul style="list-style-type: none"> <li>Assist in executing DDL's to create custom tables and indices</li> <li>Client has read/write access to database</li> </ul>	<ul style="list-style-type: none"> <li>Assist in executing DDL's to create custom tables and indices</li> <li>Provide database performance statistics</li> <li>Identify and implement performance tuning changes</li> </ul>	<ul style="list-style-type: none"> <li>Assist in executing DDL's to create custom tables and indices</li> <li>Provide database performance statistics</li> <li>Identify and implement performance tuning changes</li> </ul>
Configuration Management	<ul style="list-style-type: none"> <li>Client owned</li> </ul>	<ul style="list-style-type: none"> <li>Moving Customer Application configuration between systems</li> </ul>	<ul style="list-style-type: none"> <li>Moving Customer Application configuration between systems</li> </ul>
Network Access	<ul style="list-style-type: none"> <li>Secure VPN IPSec tunnel between the Environment and Client endpoint</li> <li>HTTPS/HTTP Internet gateway access</li> </ul>	<ul style="list-style-type: none"> <li>Secure VPN IPSec tunnel between the Environment and Client endpoint</li> <li>HTTPS/HTTP Internet gateway access</li> </ul>	<ul style="list-style-type: none"> <li>Secure VPN IPSec tunnel between the Environment and Client endpoint</li> <li>HTTPS/HTTP Internet gateway access</li> </ul>

Environment Monitoring	Yes	Yes	Yes
Application Monitoring	None	Yes	Yes
Load Balancing	None	Yes	Yes
Host Virus Protection	Yes	Yes	Yes
Access Controls	Yes	Yes	Yes
Disk Encryption	None	Yes	Yes
Firewall Management	Yes	Yes	Yes
Vulnerability Management	Yes	Yes	Yes
Server Timezone	GMT	GMT	GMT
User Capacity	15	45	As licensed
Storage Capacity	50 GB	100 GB	As licensed

\* not included in Production Mirror Environment

**7. Compliance with the Section 508 Amendment to the Rehabilitation Act of 1973, as amended in 1998:**

Comment on the solution’s compliance with accessibility standards as outlined in this amendment.

Reference: <http://www.section508.gov/content/learn>

Solution complies. See attached “*Pega-Voluntary-Product-Accessibility-Template\_VPAT.pdf*”.

**8. Disaster Recovery:** What is your assessment of the proposed solution’s disaster recovery plan; do you think it is adequate? How might it be improved? Are there specific actions that you would recommend to improve the plan?

Yes. It is adequate. Please see DR/BC section described in **Appendix 4**.

In summary, using AWS as the foundation of the Pega Cloud, the customer VPC (virtual private cloud) is designed with automated high availability, resiliency, and data backups and recovery. As a result, managed Pega Cloud services typically provide near-real-time recovery.

**9. Data Retention:** Describe the relevant data retention needs and how they will be satisfied for or by the proposed solution.

Yes. It is adequate. Please see DR/BC section and specific backup section described in **Appendix 4**.

- a. Daily Incremental back ups
- b. Weekly Full Backups
- c. 4 weeks retention
- d. Near-time data replication to backup database

**10. Service Level Agreement:** What is your assessment of the service level agreement provisions that the proposed vendor will provide? Are they appropriate and adequate in your judgment?

The RFP did not specifically define required Service Levels/Service Level Agreements. Section 5.4.1, under Maintenance and Support, had this item:

*5.4.1.1 The Vendor and State shall jointly develop detailed maintenance, support and escalation procedures that are incorporated into (or referenced by) and defined in the maintenance and service-level terms of the contract. The detailed procedures shall define roles, responsibilities, protocols, contact information, availability requirements, response time requirements, and representative scenarios.*

As such, the Service Level Agreement will be defined in the contract.

**SUPPORT SERVICE LEVEL AGREEMENT**

The following chart describes the proposed Support Services offering:

<b>Subscription Support Services</b>																	
Coverage	24x7																
Service Desk Support	<p>Provide a single point of contact service desk for support of the Subscription that may be contacted by contacting the Service desk at:</p> <table border="1"> <thead> <tr> <th><b>Country</b></th> <th><b>Phone Number (Toll Free)</b></th> </tr> </thead> <tbody> <tr> <td>US</td> <td>+1 877-311-3244</td> </tr> <tr> <td>Germany</td> <td>800-187-3660</td> </tr> <tr> <td>India</td> <td>000-800-100-7124</td> </tr> <tr> <td>Netherlands</td> <td>800-023-2787</td> </tr> <tr> <td>Spain</td> <td>900-808562</td> </tr> <tr> <td>Thailand</td> <td>001-800-852-8376</td> </tr> <tr> <td>United Kingdom</td> <td>808-189-0002</td> </tr> </tbody> </table> <p>Updated numbers can be found at: <a href="https://pdn.pega.com/pega-cloud/pega-cloud-support">https://pdn.pega.com/pega-cloud/pega-cloud-support</a> .</p> <p>Customer can also complete a webform at <a href="https://pdn.pega.com/pega-cloud-support-desk">https://pdn.pega.com/pega-cloud-support-desk</a></p>	<b>Country</b>	<b>Phone Number (Toll Free)</b>	US	+1 877-311-3244	Germany	800-187-3660	India	000-800-100-7124	Netherlands	800-023-2787	Spain	900-808562	Thailand	001-800-852-8376	United Kingdom	808-189-0002
<b>Country</b>	<b>Phone Number (Toll Free)</b>																
US	+1 877-311-3244																
Germany	800-187-3660																
India	000-800-100-7124																
Netherlands	800-023-2787																
Spain	900-808562																
Thailand	001-800-852-8376																
United Kingdom	808-189-0002																

## Pega Cloud Support

Pegasystems will repair errors or problems with the Subscription so that the Subscription operates in substantial accordance with the Subscription Documentation. Pega Cloud Support includes:

- **Customer’s Designated Contacts:** Customer will provide Pegasystems with up to 10 designated people who may contract Pegasystems’ support (“Designated Contacts”). Customer may change these contacts upon written notice to Pegasystems, and it is the responsibility of Customer to update the contacts (e.g., if one the designated contact is no longer employed by Customer or authorized by Customer to contact Pegasystems’ support).
- **Telephone or Self-service Support:** Pegasystems will accept service requests via telephone or webform notice from the Designated Contacts only and will work with the Designated Contacts to provide relief and/or a permanent solution to problems as well as to provide Pega Cloud Support as described in the table below.
- **Problem Resolution:** Pegasystems will work to perform problem resolution as described in Table A and Table B below:

Support Table A	
Severity Level	Severity Level Description
1	<p>Severity 1 is used when the Subscription is down or otherwise unusable resulting in massive disruption of use.</p> <p>Pegasystems’ goal for providing initial relief (such as an alternative method to restore system operations) for Severity 1 cases is within 4 hours. The timeframe for providing a permanent resolution for Severity 1 issues is dependent upon the specific situation, and is typically jointly determined by Customer and Pegasystems’ support manager. Severity 1 cases are eligible for continuous effort by Pegasystems support personnel, provided that Customer’s resources are made similarly available, until relief is provided.</p>
2	<p>Severity 2 is used with a moderate business exposure that prevents users from performing work or significant portions of their work.</p> <p>The time frame for providing a permanent resolution for Severity 2 issues is dependent on the specific situation, and is typically jointly determined by the Customer and Pegasystems’ support manager.</p>
3	<p>Severity 3 problems include those that involve the failure of a feature or function which results in the Subscription not working as documented, creates low business exposure and/or prevents or delays users from performing some tasks.</p> <p>Severity 3 is Pegasystems’ default severity, and is always used for new cases unless otherwise requested by Customer.</p>
4	<p>Severity 4 problems create minimal business exposure with mild impact on users performing tasks.</p> <p>Severity 4 also covers general questions about Subscription usage/functionality, and non-Subscription issues such as requests for support network web site access, problems using the support network, or other issues that do not impact usability of the Subscription.</p>

<b>Support Table B</b>	
<b>Severity Definition</b>	<b>Initial Response Time Target</b>
Severity 1	15 minutes
Severity 2	1 hour
Severity 3	4 hours
Severity 4	8 hours

Pegasystems will not be responsible for resolving problems or errors caused by

1. Customer-provided software or hardware outside of the underlying architecture and supporting systems of the Subscription;
2. Unauthorized modifications to the Subscription;
3. Customer Applications that are not Guardrail Compliant, or ;
4. Customer’s failure to follow the operating procedures and development guardrails described in the Subscription Documentation. It is out of scope of this agreement for Pegasystems to provide services that resolve or remediate problems, errors or issues that cannot be reproduced under test conditions. Pegasystems may periodically notify Customer about technical or performance issues in the Customer Application. Customer shall be responsible for adjusting the configuration of the Customer Application to address such issues.

### **Subscription Updates**

Subscription Updates support the evolution of the Software and Environments that support the Subscription. They provide new functionality and enhancements within the functional domain of the Subscription. Updates periodically consist of:

- Software Updates: sets of modifications for published generally available Software releases.
- Subscription Updates: updates to the underlying architecture and supporting systems of the Subscription.
- Subscription Documentation Updates: reflect changes to the Subscription policies and documentation.

Critical Subscription Updates will be implemented by Pegasystems. Pegasystems will notify Customer of the availability of non-critical Subscription Updates and Software Updates. These will be implemented upon request of Customer.

### **Pega Discovery Network (“PDN”)**

The PDN is the primary technical resource for Customer’s Software developers and system administrators. The PDN contains a broad range of technical articles including troubleshooting and "How-To" information, a comprehensive and searchable knowledgebase to help developers and system administrators speed their application development, and a library of shared component examples, and copies of Subscription Documentation and Help systems. The PDN also enables members to access Pegasystems’ on-line support resources in order to submit defect reports and enhancement suggestions, and to review all issues associated with the user's PDN account.

Specific SLAs are described below:

#### TECH SUPPORT - SERVICE LEVEL AGREEMENT

See “BUG FIX” below.

#### SYSTEM RESPONSE TIME - SERVICE LEVEL AGREEMENT

Pega does not offer a response time SLA, as there are elements of performance (ex: speed of the ISP connection; quality of application, etc.) that are outside Pega’s control.

#### SYSTEM AVAILABILITY - SERVICE LEVEL AGREEMENT (3 9s, 4 9s?)

99.95% for Pega Cloud Production.

#### BUG FIX – SERVICE LEVEL AGREEMENT (also noted in “Support Table A” above)

Severity 1 is used when the Subscription is down or otherwise unusable resulting in massive disruption of use. Pegasystems’ goal for providing initial relief (such as an alternative method to restore system operations) for Severity 1 cases is within **4 hours**. The timeframe for providing a permanent resolution for Severity 1 issues is dependent upon the specific situation, and is typically jointly determined by Customer and Pegasystems’ support manager. Severity 1 cases are eligible for continuous effort by Pegasystems support personnel, **provided that Customer’s resources are made similarly available**, until relief is provided. **Initial response time target for Severity 1 issues is 15 minutes.**

Severity 2 is used with a moderate business exposure that prevents users from performing work or significant portions of their work. The time frame for providing a permanent resolution for Severity 2 issues is dependent on the specific situation, and is typically jointly determined by the Customer and Pegasystems’ support manager. **Initial response time target for Severity 2 issues is 1 hour.**

Severity 3 problems include those that involve the failure of a feature or function which results in the Subscription not working as documented, creates low business exposure and/or prevents or delays users from performing some tasks. **Severity 3 is Pegasystems' default severity**, and is always used for new cases unless otherwise requested by Customer. **Initial response time target for Severity 3 issues is 4 hours.**

Severity 4 problems create minimal business exposure with mild impact on users performing tasks. Severity 4 also covers general questions about Subscription usage/functionality, and non-Subscription issues such as requests for support network web site access, problems using the support network, or other issues that do not impact usability of the Subscription. **Initial response time target for Severity 4 issues is 8 hours.**

#### HOSTING SERVICE LEVEL AGREEMENT

See “SYSTEM AVAILABILITY” above.

#### DR/BC DESCRIPTION AND SERVICE LEVEL AGREEMENT

Pega Cloud does not have a contractual SLA for DR/BC, however Pega Cloud offers an **RPO (Recovery Point Objective) target of 15 minutes**. **RTO (Recovery Time Objective)** is more variable and depends on considerations such as database size for example. **Although Pega does not offer a formal RTO, Pega offers a 99.95% availability SLA in the Pega Cloud Production environment.** In the event the Monthly Uptime Percentage does not meet the SLA during a Subscription Month, Customer will **be eligible to receive a credit equal to 10% of the Subscription fees** for such Subscription Month. Pegasystems will apply any SLA credits against Subscription fees due under the applicable Schedule in future months.

**11. System Integration:** Is the data export/reporting capability of the proposed solution consumable by the State? What data is exchanged and what systems will the solution integrate/interface with? *Please create a visual depiction* and include as **Appendix 1** of this report. Will the solution be able to integrate with the State's Vision and financial systems (if applicable)?

The solution will use REST web services when possible, but exact integration methods will be determined on a case-by-case basis.

As this will not be determined until implementation, this has been identified in the Risk Register.

Integration with State's VISION and Financial Systems is not applicable.

**Additional Comments on Architecture:**

None.

# 7. Assessment of Implementation Plan

## 7.1 Implementation Readiness

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

### 1. The reality of the implementation timetable

- a. The overall proposal contemplates a 60 month agreement, consisting of a 5 month period of solution implementation to support Nursing, followed by 55 months of solution usage in a hosted environment.
- b. Other professions are expected to be brought on line following Nursing, and are expected to take an additional 8-12 months to build.
- c. The initial work stream is to be broken down into 5 major tasks, as per the list below. This process will be used for each licensing entity.
- d. See also **Section 4.4** for milestones and related information.

PHASE	SCHEDULE
Inception (2 weeks)	4/1/2016 – 4/11/2016
Elaboration (5 weeks)	4/14/2016 – 5/15/2016
Construction (8 weeks) (up from 4 weeks per original quote)	5/18/2016 – 7/10/2016
Transition (4 weeks)	7/13/2016 – 8/8/2016
Post-Deployment Support (4 weeks)	8/11/2016 – 9/5/2016

### 2. Training of users in preparation for the implementation

The training plan used by the vendor is described below.

SoS is asking Pega to provide training to transition from Pega conducting development to SoS conducting at least maintenance if not full development in the Pega 7 environment to support future professions. This is described below:

This initiative will be led by Pegasystems. One of Pega’s goals is to enable the State’s self-sufficiency on the Pega platform and, over time, to transition project leadership and implementation to the State’s team (at the appropriate time during subsequent projects), while ensuring that the State’s team always has the proper level of Pegasystems support.

Pegasystems offers a comprehensive set of training options through our training outlet, Pega Academy. Pega Academy provides training that is timely, relevant, and cost effective, so that the State can maximize its return on its Pega investment.

The chart below depicts the Pega Academy curriculum paths. It identifies the courses that should be taken by the State’s project team members based upon their project role.















### Basic Technical Skills

The help ensure successful project outcomes, the following are recommended (not required) skills for “business” users:

- Knowledge of business processes, best practices, and policies

To help ensure successful project outcomes, the following are recommended (not required) skills for “technical” users:

- Application development experience
- Knowledge of the State’s business processes, best practices, and policies
- Familiarity with one or more project methodologies
- Familiarity with an integrated development environment (IDE)

 <b>Role Overview</b> 			
Role	Pre-Requisites	Courses	Certification
<b>System Architect</b>	no pre-requisites	System Architect Essentials I System Architect Essentials II	 Certified System Architect
<b>Senior System Architect</b>	 Certified System Architect	Senior System Architect	 Certified Senior System Architect
<b>Lead System Architect</b>	 Certified Senior System Architect	Lead System Architect	 Certified Lead System Architect
<b>Business Architect</b>	no pre-requisites	Business Architect Essentials	 Certified Pega Business Architect
<b>Technical Project Manager</b>	 Certified System Architect	DCO Essentials Running a Pega Project or DCO Project Workshop	 Certified DCO Architect
<b>Business Project Manager</b>	 Certified Pega Business Architect	DCO Project Workshop	 Certified DCO Architect
<b>PRPC Stakeholder</b>	no pre-requisites	PRPC Fundamentals or PRPC Getting Started or PRPC Executive Overview	no certification

Beyond the classroom training and formal coursework, on-the-job training will play a big role in the enablement of the State’s staff. The success of that enablement will be crucial to the long-term success of this project. To help drive this enablement, Pega will mentor and provide additional training to the State’s IT staff. This will help ensure that the State’s staff are prepared for future ownership of Pega implementations at the State.

### 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:

- Project Management
- Training
- Testing
- Design
- Conversion (if applicable)
- Implementation planning
- Implementation

The short answer is yes. The Milestones and associated timeline are outlined in the Milestones Section (**Section 4.4**). Initially there were no clear deliverables defined in the SOW nor were there clearly defined formal acceptance criteria attached to any deliverables. Through the Risk Register vetting process, SoS indicated that they will ensure that the contract’s professional services SOW contains the addition of an Acceptance Criteria in the deliverables for the Elaboration phase, and that the requirements for Nursing will be used as the basis to define the acceptance criteria.

**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 judgement? Please explain.**

- a. SoS plans to utilize two project managers in the following manner:
  - i. SoS has assigned 50% of Brian Howard's time as Project Manager. It is expected that time may bump to 100% at various points of the project and SoS understands this requirement in light of other projects.
  - ii. SoS has Management Consulting funding in the project budget for additional Project Management support for the initial 26 weeks of the project.
- b. In summary, Project Management resources, both time allocation and skill set, are adequate.

This chart below describes the **Project Management Deliverables** expected from Pega by SoS:

Deliverable	Description
Project Charter	The Project Charter provides basic information about the project. It includes a: Scope Statement (what’s in and out of scope); list of Project Deliverables; high level Project Timeline; Key Roles & Responsibilities; known Risks, Assumptions and/or Constraints. It should be signed off on by the State.
Project Management Plan	<p>The Project Management Plan will dictate specifics on how the Contractor Project Manager will administer the project and will include the following documentation:</p> <ol style="list-style-type: none"> <li>1. Change Management Plan (will dictate how changes will be handled including any Service level terms on over/under estimates)</li> <li>2. Communication Management Plan (will dictate what will be communicated, to who, and how often)</li> <li>3. Requirements Management Plan (will dictate the approach that the requirements will be gathered, approved, and maintained)</li> <li>4. Human Resources Management Plan (will dictate what resources will be assigned to the project, for how long, under what allocation, who they report to, and how to handle changes to the resource plan)</li> <li>5. Procurement Management Plan (will dictate how the vendor(s) will interact with the project and expectations regarding vendor relations with State resources)</li> <li>6. Quality Management Plan (will dictate the quality controls over the work being done on the project as well as determine Key Performance Indicators – this document is not limited to deliverables)</li> <li>7. Risk and Issues Management Plan (will dictate how risks and issues will be managed over the course of the project)</li> <li>8. Scope Management Plan (will dictate how the scope will be maintained to prevent “scope creep”)</li> </ol>

Project Plan	A Schedule of the tasks organized by project phase which breaks down the ownership, timeline, and effort associated with each task.
Formal Acceptance Criteria	Criteria that establishes what the acceptance and rejection criteria of each document on this list.
Formal Acceptance Sign Off	Obtain sign-off at the completion of each project deliverable as defined by the formal acceptance criteria.
Change Requests	Formal document which outlines any changes to the Contract scope, schedule, budget, and resources.
Change Requests Log	Tracks the specific change requests approved and their impact to the project scope, budget and schedule.
Budget Log	Outlines original Contract costs by deliverable with billed and paid-to-date information.
Risk Log	A log of all risks (opened or closed) that could impact the project. Risks should be outlined by their impact and their potential to occur. All risks should have an owner.
Issue/Action Items/Decision Log	A Log of open and resolved/completed Issues. Issues should be outlined by their impact, owner, date of occurrence, and remediation strategy.
Decision Log	A log of all decisions made over the course of the project. Decisions should have a date and name of decider.
Requirements Documents	Finalized list of the project requirements to be approved by the State. The approach is dictated by the Requirements Management Plan, listed above, and can include: <ul style="list-style-type: none"> <li>• Stated requirements document (SRD): The SRD contains current state process flows, user stories, and business rules and states the business need at a high level.</li> <li>• Business requirements document (BRD): The BRD contains a medium level of requirements as well as required metrics of project success.</li> <li>• Functional requirements document (FRD): The FRD contains detailed requirements that can be handed off to the Contractor for execution.</li> </ul>
Test Plans	A description of the testing approach, participants, sequence of testing and testing preparations
Test Cases & Results	The specific test cases to be tested and the testing results. Test Cases tie back to the project requirements (to ensure each one has been met).
Implementation Master Schedule	The IMS outlines how the project will go-live and will include a mini-project plan for the exact events that need to occur assigned to the resources that need to do them and the timeframe for when they need to get done. (See Section 4.4 for more detail.)
Project Status Reports	Provides an update on the project health, accomplishments, upcoming tasks, risks and significant issues. The Status Report and the project color being report shall be developed in consultation with the State business lead and State project manager, as set forth in greater detail in Section 4.2.2.
Project Phase Audit/Gate Check	At the end of each Phase, the Contractor Project Manager shall submit an audit of all deliverables and milestones achieved during the Phase to the State Project manager for review.
Meeting Agenda/Minutes	All scheduled meetings will have an agenda and minutes. The minutes shall contain risk issues, action items, and decision logs. Minutes shall be transcribed over to the main logs.
End of Project Metrics	These are metrics that reflect how well the project was performed. Metrics will be outlined in the Quality Management Plan
Lessons Learned	A compilation of the lessons learned having 20/20 hindsight. Lessons learned shall be delivered in an Excel template and collected from each of the State and Contractor project team members to get a full 360 degree view of the project in retrospect.
Closeout Report	This report will include all the lessons learned, project metrics, and a summary of the project's implementation and outcome in operation.

System Turnover Plan	A plan to map out the handoff of all project work, implemented solutions, and all supporting services at the end of the Contractor's Contract, as set forth in greater detail in Section 4.4.
Transition Plan	A plan which shows how and when the transition of all project work, implemented solutions, and all supporting services at the end of the Contractor's Contract will occur, as set forth in greater detail in Section 4.4.

## 5. Readiness of impacted divisions/ departments to participate in this solution/project

- a. OPR staff all appear ready and able to take this project on from a skill set and time availability standpoint.

## 6. Adequacy of design, development, migration/conversion, and implementation plans

This section describes Pega's approach to **design and development**.

In summary, the **design and development** approach has proven effective in terms of duration and quality when used in other projects.

A key item to consider is that SoS will carry much of the workload related to test case development and unit and system testing.

Additionally, neither the data migration nor the data interface/exchange scopes are clearly defined creating cost, schedule and budget uncertainty, as outlined in the Risk Register.

Pega does not use a traditional waterfall method, rather, an **iterative waterfall approach** for Design, Development, and Project Management activities.

The chart below defines their approach. Key items for SoS are highlighted.

Phase	Key Work Accomplished
Inception	<ul style="list-style-type: none"> <li>• Complete next level of detail beyond what is known to date on Use Cases; functional and non-functional requirements; data conversion; system interfaces and interchanges; reports and correspondence; and user access</li> <li>• <b>Develop a high-level project plan</b> and gain approval for the plan from the project's governance committee</li> <li>• Complete the final Application Profile and Sizing for the agreed to phased deployment plan</li> <li>• Provision the Pega Development environment</li> <li>• Conduct Phase Readiness Review to prepare to move to Elaboration phase.</li> </ul>
Elaboration	<ul style="list-style-type: none"> <li>• <b>Conduct a detailed gap review between requirements and current Pega functionality</b>; document the gaps in a Requirements Traceability Matrix</li> <li>• Complete application architecture design</li> <li>• Define the test strategy and testing process</li> <li>• Prototype/elaborate on key Use Cases</li> <li>• Define the integration components, correspondences and reports</li> <li>• Define Actors, Roles and Organizational Structures</li> <li>• Develop database mapping (existing database to Pega database) and Data Migration Plan</li> <li>• Provision the Test and Production Pega environments</li> </ul>

	<ul style="list-style-type: none"> <li>• Conduct Phase Readiness Review to prepare to move to Construction phase.</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• <b>Configure application in a series of iterations</b></li> <li>• Complete unit testing</li> <li>• <b>Test and finalize Data Migration Plan</b></li> <li>• <b>Perform system and integration testing</b></li> <li>• Begin planning for next Occupation/Profession</li> <li>• Conduct a Phase Readiness Review to prepare to move to Transition phase.</li> </ul>
Transition	<ul style="list-style-type: none"> <li>• Promote application from Dev to QA/Test</li> <li>• Complete system and user acceptance testing</li> <li>• Issue tracking and resolution</li> <li>• <b>Promote application into production</b></li> <li>• Perform Data Migration</li> <li>• Go-Live</li> <li>• Post-Deployment Support</li> <li>• Finalize plan for next Occupation/Profession</li> </ul>

**This section describes the detailed mechanics of the DESIGN and DEVELOPMENT activities:**

**Per SOW Contract Draft:**

Based upon experience with hundreds of successful Pega implementations, Pegasystems has created an agile, phased, iterative implementation methodology called Pega Agile. Supplier will use this Pega Agile implementation methodology for this SOW. Pega Agile will enable the State to:

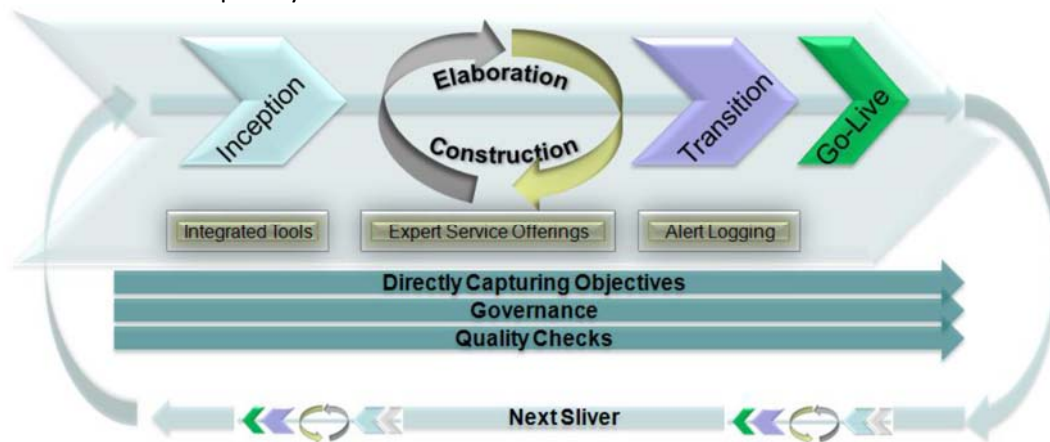
- Reduce risk and overall project durations, while increasing quality of the results obtained.
- Realize new and improved public services in short timeframes.
- Leverage best practices derived from hundreds of Pega implementations.
- Leverage Pega guardrails as a built-in best practices enforcement tool.
- Integrate tightly with the Pega solution.

While most organizations have been trained to create voluminous requirements documents in order to build software applications, Pegasystems Direct Capture of Objectives (DCO) product is integrated into the Pega system to facilitate build for change development regardless of IT or business orientation.

The Pegasystems approach is to **directly capture executable requirements** within the system. The Build for Change™ directive addresses the problems with the traditional software development lifecycle (SDLC) approach. **The Pega Agile approach is an iterative, agile and adaptable methodology** that is supported by its award winning Pega BPM platform. **It provides wizards, constructs, and easy to use forms** to directly capture and execute requirements. Each phase of the methodology depends upon the Pega BPM platform, and the requirements are automatically documented – **always matching requirements to development efforts.**

The Pega Agile methodology is not a single concrete prescriptive process, but rather an adaptable process framework intended to be flexible so that the implementation teams can adapt the methodology to client mandated methodologies of any size project. The Pega Agile methodology uses the following directives to achieve client success in the most efficient manner:

- **Direct Capture of Objectives:** Requirements are directly captured in the Pega 7 platform. This avoids multiple sets of paper documents and reduces conflict and error. This also promotes reuse, as requirements are tied directly to rules and other assets.
- **Apply an Agile and Iterative Process:** Deliver projects in small pieces, and adjust based on feedback. Demonstrate results early and often. By doing so, this allows us to take corrective action and respond to change in real time.
- **Collaborate Across Teams:** Properly assign key project roles and responsibilities to promote self-sufficiency. Ensure that the business and the IT community work collaboratively, and play the solution back frequently to all stakeholders.



The table below describes how Pega is staffing this project. The services will be performed by Pega using the following roles assigned to this project:

- a. Practice Lead
- b. Engagement Leader
- c. Lead System Architect
- d. Senior System Architect
- e. Lead Business Architect

Role	Responsibilities
Engagement Leader	<ul style="list-style-type: none"> <li>• Manage the Supplier’s team and work plan</li> <li>• Escalate risks related to timely completion of tasks in the work plan</li> <li>• Contribute to and manage a single project work plan in conjunction with the State</li> <li>• Manage scope related to Supplier assigned tasks</li> <li>• Identify and escalate scope changes in conjunction with the State</li> </ul>
Lead System Architect	<ul style="list-style-type: none"> <li>• Application design leadership and configuration oversight</li> <li>• Technical product subject matter expert for Pegasystems software.</li> <li>• Design Pega application end-to-end; takes the functional design and creates the technical design, conducts code reviews, develops enterprise class structure</li> <li>• Reviews infrastructure requirements; data architecture definition; reviews data management plan</li> <li>• Drives scope definition workshops and owns delivery of the completed documentation</li> <li>• Overall Solution Design Authority and/or support tasked with alignment of business needs, functional and data architecture and technical designs</li> <li>• Works closely with customer architects to ensure approval</li> <li>• Leads technical team; enables team members and provides knowledge transfer to customer; guides and advises on technical issues</li> <li>• Ensures adherence to the Pega development guardrails as well as the original design principles</li> <li>• Access Pega’s centralized support infrastructure on behalf of the customer</li> <li>• Responsible for the overall quality of the solution</li> <li>• Provide mentoring, knowledge transfer, best practices, and technical guidance on the Pega 7 platform and Licensing and Certification and for Public Sector application to customer technical resources.</li> </ul>
Senior System Architect	<ul style="list-style-type: none"> <li>• Technical subject matter expert for Pegasystems software</li> <li>• Create and modify application flows, decision tables, activities and methods</li> <li>• Implement Supplier’s Services and connectors</li> <li>• Provide mentoring, knowledge transfer, best practices, and technical guidance on the Pega 7 platform and Licensing and Certification and for Public Sector application to customer technical resources.</li> </ul>

Role	Responsibilities
Lead Business Architect	<ul style="list-style-type: none"> <li>• Lead the business team in gathering requirements and choosing the best way to implement those requirements leveraging the Pegasystems software</li> <li>• Facilitates the Direct Capture of Objectives (DCO) sessions and helps business resources prepare for them; ensure the documented Use Cases adequately represent the needs of the business and meet all the requirements</li> <li>• Manages and directs all other Business Architects relative to the tasks and priorities, and ensures the quality of the artifacts being produced</li> <li>• Assist with the class structure design from the perspective of the business needs</li> <li>• Design and configure rules and flows; assist with the draft user interface (“UI”) and draft flow development</li> <li>• Analyze business data</li> <li>• Guide the customer on test and report strategy while maintaining ongoing knowledge transfer to the customer</li> <li>• Ensure the business functions of the solution match customer requirements and create and own the design aspect for the enterprise solution</li> <li>• Provide mentoring, knowledge transfer, and best practices guidance on DCO, the Pega 7 platform and Licensing and Certification and for Public Sector application to customer business analysis resource(s).</li> </ul>

This section describes Pega’s approach to **Conversion/Migration**.

Pega will conduct a thorough analysis of the Customer’s database and data structures in the beginning stages of the project. A detailed migration strategy and plan will be developed at that time.

The Data **Conversion/Migration** scope is not yet defined, creating cost, schedule and budget uncertainty as noted in the Risk Register.



This section describes Pega’s approach to **Implementation**.

In summary, the **Implementation** approach appears sound and adequate.

A high value is placed on Risk Management:

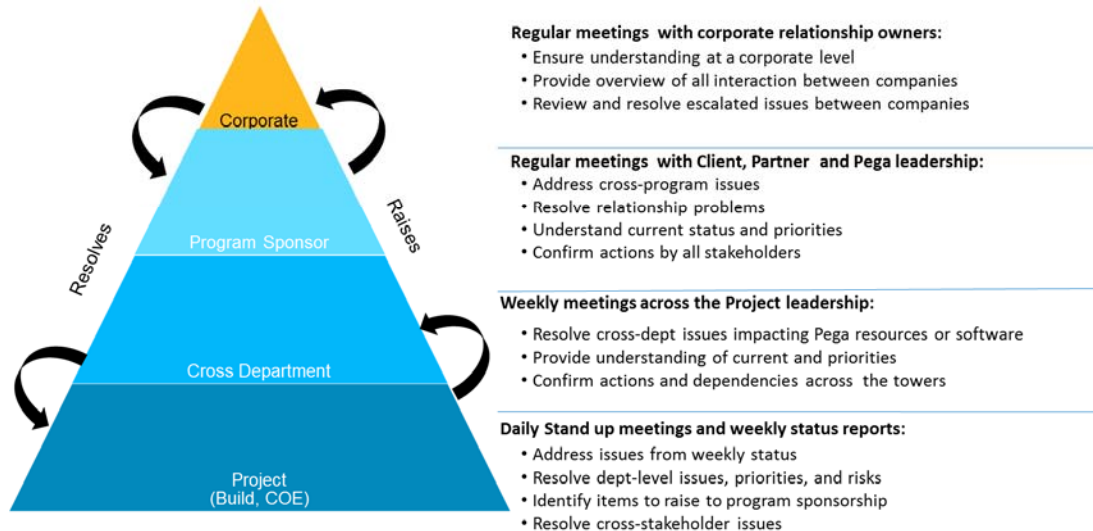
The Pega Agile **implementation methodology** is designed to automatically reduce and manage implementation risk:

- Applications are built through repeated cycles (iterations) and in smaller portions (increments). Breaking the implementation into smaller chunks results in more frequent checkpoints and evaluation points. By demonstrating results early and often, we are able to take corrective action and respond to change in real time, which results in a higher quality end product.
- Promotes and enables collaboration between the business and the developers, ensuring that the end product meets the business needs and objectives.
- Faster time to completion reduces the likelihood that applications that are obsolete before they are completed, due to changes in environmental conditions such as legislative and regulatory mandates and policies.

In addition to the risk-management features built into the methodology, Pega will also institute a **governance structure** to provide periodic oversight and ensure that business objectives and goals are met. The following diagram represents the typical governance structure for Pega projects:

## Multi-Level Governance Overview

Governance should be established at 4 different levels at a minimum to help insure transparency and good communications.



Additionally, there is formal **Change Management** process being defined in the contract and is expected to be used and followed as part of the Implementation Plan.

## 7. Adequacy of support for design, development, conversion/migration, and implementation activities

### a. DESIGN/DEVELOPMENT:

- i. SoS will have adequate Design and Development support, but test case development and testing support is lacking from vendor.
- ii. SoS will need to add development staff above current staffing levels.

### b. CONVERSION/MIGRATION:

- i. Vendor support for data conversion/migration is adequate.
- ii. There is a question on budget, and timing due to unknown scope.

### c. IMPLEMENTATION:

- i. There is adequate vendor support for implementation.

## 8. Adequacy of agency and partner staff resources to provide management of the project and related contracts (i.e. vendor management capabilities)

- a. SoS has assigned 50% of Brian Howard's time as Project Manager. It is expected that time may bump to 100% at various points of the project and SoS understands this requirement in light of other projects.
- b. SoS has Management Consulting funding in the project budget for additional Project Management support.
- c. Vendor Project Manager is not yet named, but vendor track record is strong.
- d. In summary, Project Management resources, both time allocation and skill set, are adequate.

## 9. Adequacy of testing plan/approach

Test plans and test cases will be developed jointly by Pega and the Customer.

As Pega develops these test plans individually for each client, they appear to not leverage their past experiences.

Further, testing itself is up to SoS for this project. Pega does not own any testing role.

In summary, Testing is a weakness for this project.

See additional comments above in Design/Development section.

## 10. General acceptance/readiness of staff

- a. SoS staff assigned to this project all appear ready and able to take this project on from a **time availability** standpoint to address the "readiness" question, and are eager to adopt the new solution, addressing the "acceptance" question.
- b. Technical staff do not yet have the necessary **skill set** to develop applications or modify applications using the Pega tool set. Training may enhance this skill set, but it appears to be a robust and powerful tool, requiring significant training and experience to truly leverage the power of the tool.

## Additional Comments on Implementation Plan:

None.

## 7.2 Risk Assessment & Risk Register

After performing a Risk assessment in conjunction with the Business, please create a **Risk Register** as an **Appendix 2** to this report that includes the following:

1. **Source of Risk:** Project, Proposed Solution, Vendor or Other
2. **Risk Description:** Provide a description of what the risk entails
3. **Risk ratings to indicate:** Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)
4. **State's Planned Risk Strategy:** Avoid, Mitigate, Transfer or Accept
5. **State's Planned Risk Response:** Describe what the State plans to do (if anything) to address the risk
6. **Timing of Risk Response:** Describe the planned timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)
7. **Reviewer's Assessment of State's Planned Response:** Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.

See **Appendix 2**.

### **Additional Comments on Risks:**

None.

## 8. Cost Benefit Analysis

*This section involves four tasks:*

- 1) Perform an independent Cost Benefit Analysis.
- 2) **Create a Lifecycle Cost Benefit Analysis spreadsheet** as an **Appendix 3** to this report. A sample format is provided.
  - a) The cost component of the cost/benefit analysis will include all one-time acquisition costs, on-going operational costs (licensing, maintenance, refresh, etc.) plus internal costs of staffing and "other costs". "Other costs" include the cost of personnel or contractors required for this solution, enhancements/upgrades planned for the lifecycle, consumables, costs associated with system interfaces, and any costs of upgrading the current environment to accept the proposed solution (new facilities, etc.).
  - b) The benefit side of the cost/benefit will include: 1. Intangible items for which an actual cost cannot be attributed. 2. Tangible savings/benefit such as actual savings in personnel, contractors or operating expense associated with existing methods of accomplishing the work which will be performed by the proposed solution. Tangible benefits also include additional revenue which may result from the proposed solution
  - c) The cost benefit analysis will be for the IT activity's lifecycle.
  - d) The format will be a column spreadsheet with one column for each year in the lifecycle. The rows will contain the itemized costs with totals followed by the itemized benefits with totals.
  - e) Identify the source of funds (federal, state, one-time vs. ongoing). For example, implementation may be covered by federal dollars but operations will be paid by State funds.
- 3) Perform an analysis of the IT ABC form (Business Case/Cost Analysis) completed by the Business.
- 4) Respond to the questions/items listed below.

1. **Analysis Description:** Provide a narrative summary of the cost benefit analysis conducted: The approach used was to gather all costs associated with project for a 10 year period, identify revenue sources for the project, and identify tangible and intangible benefits that might also be used as revenue sources or expense reductions.
  - a. **COST COMPONENT:** See the attached spreadsheet referenced in **Appendix 3** to gain an understanding of:
    - i. Source of Funds
    - ii. Use of Funds
    - iii. Change in Operating Costs
  - b. **BENEFIT COMPONENT:**
    - i. See the Tangible and Intangible Benefits described below.
2. **Assumptions:** List any assumptions made in your analysis.
  - a. Staff reductions are not expected or contemplated through the implementation of this solution.
  - b. There is no revenue recovery anticipated.
  - c. Costs are segmented into **Project Cost** and **Operational Costs**
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.
  - a. The primary source of funds include, the following, the detailed amount from which are specified in the attached Project Cost spreadsheet referenced in **Appendix 3:**
    - i. OPR Administration Fund Balance: Fund 21150; Program 29200
    - ii. OPR Administration Fund Budget, Fund: 21150, Program Code: 29200
    - iii. SOS Service Fund 21928
    - iv. OPR Fund 21150
    - v. HAVA Fund 22025
  - b. See the detailed spreadsheet referenced in **Appendix 3** for actual dollar amounts.

4. **Tangible Benefits:** Provide a list and description of the tangible benefits of this project. Tangible benefits include specific dollar value that can be measured (examples include a reduction in expenses or reducing inventory, with supporting details).
  - a. There are no tangible monetary benefits derived from this project.
  
5. **Intangible Benefits:** Provide a list and description of the intangible benefits of this project. Intangible benefits include cost avoidance, the value of benefits provided to other programs, the value of improved decision making, public benefit, and other factors that become known during the process of analysis. Intangible benefits must include a statement of the methodology or justification used to determine the value of the intangible benefit.
  - a. Many of the limitations of the current licensing system (ELicense) require resource allocation to manual staff workarounds and methods. Listed below is a summary description of the staff time allocated to the manual workarounds required by ELicense. OPR believes the time estimates are conservative. Total time cost of limitations with ELicense, in an average week: **223.5 hours per week (5.6 FTE assuming a 37.5 hour week), spread across 35 FTE staff.**
    - i. **7.5 hours/week:** There is a fairly manual voucher approval process which occurs after data is entered into VISION. It is expected that this process is eliminated by the new system.
    - ii. **10 hours/week:** eLicense frequently freezes, requiring OPR staff to close their browsers or reboot their computers before they can continue working.
    - iii. **25 hours/week:** When end-users forget their passwords, they use eLicense's built-in password reset function to unlock their accounts. However, that function does not reset the account until OPR staff approve the password reset. This process unnecessarily requires emailing and phone contact between staff and licensees. Additionally, the system incorrectly displays the account lock status to staff, requiring them to manually re-lock and then re-unlock the account.
    - iv. **76 hours/week:** The current OPR website, which contains informational content on professions and the licensing process, and notifications of upcoming meetings, and the eLicensing system are intertwined but not intuitively, and users have a difficult time finding data or easily accessing the system functions that they need. OPR staff spend significant time each day in phone and email contact with licensees helping to diagnose and clarify issues where licensees misunderstand how to find information across the [secure.vtprofessionals.org](https://secure.vtprofessionals.org) site (eLicense) and the main [www.vtprofessionals.org](https://www.vtprofessionals.org) site. Licensees overwhelmingly visit the secure site looking for information (which is not provided by that site) and then conclude that OPR does not have the ability to help them. The significant frustration on the part of licensees is obviously hard to quantify.
    - v. **8 hours/week:** Current system workflows do not assist the execution of a business process by providing tasks, setting reminders and reporting and therefore provide limited value. Without workflow management tools, OPR staff are forced to rely on manual and paper processes for coordinating and handing off work. This makes it possible for applications, for instance, to get lost temporarily, and staff expend a great deal of extra effort making sure that doesn't happen.
    - vi. **8 hours/week:** OPR staff cannot currently see a queue of tasks that have been assigned to them, and cannot therefore use the system to manage their work. As a result, staff spend significant time each day checking every profession they oversee for new initial applications, renewal applications, change requests, etc. The system takes a long time to make information available to staff, and staff cannot complete other tasks while waiting. The system also frequently throws error messages, causing loss of work and a great deal of wasted time.
    - vii. **3 hours/week:** The report data from eLicense is currently unreliable, and not trusted by OPR staff as it often doesn't reflect the nature of the underlying data. Staff work around this issue by creating manual reports for board meetings and as needed in other areas,

which is time-consuming. In addition, staff are using Microsoft Excel spreadsheets to track and manage data summaries, for example, to manage a list of open cases assigned to them.

- viii. **10 hours/week:** The system does not provide functionality to OPR staff to manage Continuing Education (CE) requirements. Many professions require licensees and applicants to complete CE in order to qualify for licensure. eLicense has limited capacity for handling CE within the system. Among other limitations, the system does not automate document submission and storage. Instead, staff rely on external Excel spreadsheets to document and verify CE, and to conduct required audits.
- ix. **8 hours/week:** When creating letters to send to licensees, eLicense uses a cumbersome mechanism for checking in and checking out Word documents. The file locking system does not allow OPR staff to edit documents once they've been saved, and it does not lock the files in an intuitive way. If staff make a mistake, they must cancel the workflow, delete all files, restart a brand-new workflow, and repeat the process. This leads to duplicate files, a profusion of different versions, and real difficulty with the fact that staff are often required to interrupt their work to serve walk-in or phone customers—requiring significant rework.
- x. **9 hours/week:** The system creates multiple/duplicate contacts per credential if a person has more than one credential, and lets a user create a new account for an email address that is already registered. This creates a large amount of OPR staff work for identifying and merging duplicate contacts; it also creates work in the Secretary of State's Business Office because we frequently have to refund fee submissions (because, e.g., the system allowed a renewal applicant to create a new account and then charged the initial licensure fee rather than the renewal fee).
- xi. **15 hours/week:** Bulk email capacity is limited in the system. OPR staff must often create reports to extract contact email data, and import it to Microsoft Exchange to send email communications. The system is also unreliable about delivering reminder emails to licensees whose renewals are about to become due, requiring significant staff time both up-front (manually emailing licensees in advance) and at the end (dealing with frustrated licensees who did not receive emails that it turns out eLicense never sent).
- xii. **5 hours/week:** It is slow and difficult for OPR staff to build new applications in the system due to the decision logic and business rules that need to be applied in the system forms. In addition, creating new applications often requires custom development from the vendor, which is expensive and depends on the vendor availability. Existing applications are also difficult to update to reflect changes to statutes and administrative rules.
- xiii. **5 hours/week:** When users update their own contact information using the form provided on [secure.vtprofessionals.org](https://secure.vtprofessionals.org), eLicense does not correctly propagate that information into the system. In response, OPR staff must contact licensees by email or phone to confirm and correct their changes.
- xiv. **20 hours/week:** It is not possible to go to one system today and see a full view of all interactions with a licensee, which is a critical issue for enforcement, mandatory licensee audits, statistics and data analysis, and many other parts of OPR's work. It is also not possible to see which emails were sent to which email addresses, nor whether those emails bounced back to the system.
- xv. **10 hours/week:** OPR managers are unable to see what their teams are working on, where time is spent, and which resources are available to help. This makes it very difficult to measure performance, identify bottlenecks, allocate capacity for work, and it also makes it harder to offer help to employees who are struggling under the intense periodic workload that characterizes OPR's business.
- xvi. **4 hours/week:** eLicense does not make it possible to identify licensees by a broad category (e.g., APRNs whose certifications are near their expiration dates) and then contact them

en-masse. Currently, OPR staff must manually go through the licensee list, collect email addresses, and individually email licensees.

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.
  - a. There are no demonstrable benefits that justify the cost for this project.
  - b. There is no monetary value assigned to the intangible benefits.
  
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.
  - a. Reviewed the IT ABC Form (SOS\_NextGen\_Licensing\_IT\_ABC\_Form.pdf) dated 7/1/2015.
  - b. It is a comprehensive and fairly detailed cost analysis. However, the IT ABC Form 10 year cost of \$9.7M exceeds the IR cost analysis of \$7.8M, largely due to Project Costs being higher by ~\$1M and Operational Costs being higher by ~\$1M.

**Additional Comments on the Cost Benefit Analysis:**

No additional comments.

## 9. Impact Analysis on Net Operating Costs

- 1.) Perform a lifecycle cost impact analysis on net operating costs for the agency carrying out the activity, minimally including the following:
  - a) Estimated future-state ongoing annual operating costs, and estimated lifecycle operating costs. Consider also if the project will yield additional revenue generation that may offset any increase in operating costs.
  - b) Current-state annual operating costs; assess total current costs over span of new IT activity lifecycle
  - c) Provide a breakdown of funding sources (federal, state, one-time vs. ongoing)
- 2.) Create a table to illustrate the net operating cost impact.
- 3.) Respond to the items below.

As noted in **Section 1.1** above, the Cost Summary for this project is:

IT Activity Lifecycle:	10 Years		
<b>Total Lifecycle Costs:*</b>	<b>\$ 7.85M</b>		
<b>PROJECT COSTS:</b>	<b>\$2.2M</b>		
<i>Pega Implementation Services</i>	\$2.1M		
<i>Total DII PM/EA Costs:</i>	\$180K		
<b>OPERATING COSTS:</b>	<b>\$5.65M</b>		
<i>Staffing Costs:</i>	\$1.7M		
<i>Hosting Costs (includes software licenses):</i>	\$2.8M		
<i>Software Maintenance, Support, and Security Audit Services:</i>	\$1.15K		
<b>CURRENT OPERATING COSTS:</b>	<b>\$ 1.5M</b>		
Difference Between Current and New Operating Costs:	<b>Increase of \$4.15M</b> (Go forward Operating Cost of \$5.65M less \$1.5M of Current operating cost)		
Funding Source(s) and Percentage Breakdown if Multiple Sources:	OPR Administration Fund Balance: Fund 21150; Program 29200:	\$1,850,000	23.57%
	OPR, Administration Budget: Fund: 21150, Program Code: 29200:	\$4,999,531	63.69%
	SOS Service Fund 21928:	\$427,350	5.44%
	OPR Fund 21150:	\$479,769	6.11%
	HAVA Fund 22025:	\$93,233	1.19%
	<b>TOTAL:</b>	<b>\$7,849,881</b>	<b>100%</b>

1. See the spreadsheet attached in **Appendix 3** to review impact to Operating Costs.
2. Provide a narrative summary of the analysis conducted and include a list of any assumptions.
  - a. The detailed spreadsheet provided with this analysis breaks out costs as follows:
    - i. Implementation (Project) Costs: Costs tied specifically to the Vendor. In other words, those costs that are incurred because we are undertaking the project.
    - ii. Operating Costs: Internal costs, consisting of staffing and telecommunication costs, and external costs consisting of contracted services and on-going use of the software and related hosting.
    - iii. Total Costs: Project Costs plus Operating Costs.
  - b. The TOTAL COSTS are broken out as **IMPLEMENTATION (Project) COSTS** and **OPERATING COSTS**.
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.



- a. All funding is State funding. There is no Federal funding.
  - b. There is a Net Increase in Operating Costs as outlined in the project costing spreadsheet.
4. What is the break-even point for this IT Activity (considering implementation and on-going operating costs)?
- a. There is no break-even measure for this project as the cost of doing this project exceeds the cost of continuing with the current solution.

# Appendix 1 - Illustration of System Integration

## SYSTEM INTEGRATION/INTERFACES

There are several integration points specified for this project, per the chart below:

Class	Identifier	Requirement
4.11 Integration Points		Note 1: The Integration requirements in this section only, are prefaced with a different requirement strength than the rest of the document. Note 2: Each integration should be priced separately, or have a budgetary estimate listed, along with any assumptions.
	4.11.1 Content as a Service	4.11.1.1 PURPOSE: Required – Content as a Service (i.e., CaaS) or Enterprise Content Management (ECM) integration. The Solution abstracts the CaaS over the following ECM and CMS':  · Alfresco; 1. Store electronic forms; 2. Scan and store imaged documents; 3. Object content search;
	4.11.4 Enterprise Resource Planning	4.11.4.1 PURPOSE: Anticipated - Enterprise Resource Planning (ERP) integration to State's Vision solution (PeopleSoft) for ACH, CC, e-Check, cash-related transactions. The integration is for a summary-level exchange of journal entries.
	4.11.5 Payment Provider	4.11.5.1 PURPOSE: Required - Payment Provider integration from State to Authorize.net ( <a href="http://www.authorize.net/">http://www.authorize.net/</a> ).
	4.11.9 Nurse License Verification & License Lookup	4.11.9.1 PURPOSE: Required - Push of content from the State to National Council of State Boards of Nursing - NURSYS integration, refer to <a href="https://www.nursys.com/">https://www.nursys.com/</a> .
	4.11.14 NASBA	4.11.14.1 PURPOSE: Required – Lookup of records in the National Association of State Boards of Accountancy (database of accountancy licensing and disciplinary information). Send a report to Accountancy Licensing Database (ALD).
	4.11.15 Department of Taxes	4.11.15.1 PURPOSE: Required - Data exchange by the OPR and Vermont Department of Tax. Several interfaces are envisioned. Currently, the Department of Tax holds compliance information on individuals and entities in a variety of systems. OPR's priority (because of license volume) is with information related to individuals, followed next by entities
	4.11.18 Active Directory	4.11.18.1 PURPOSE: Required – Single sign-on (SSO) for State staff only. As the first level of Identity and Access Management (IAM) the Solution integrates with the State's Active Directory database using Active Directory Federation Services (ADFS) version 3+, over SAML2.0.  4.11.18.2 For non-State staff, the Solution will provide user authentication.
	4.11.19 Corporations System	4.11.19.1 PURPOSE: Required - Lookup of entity status, entity and trade name via the State's Corporations system. RESTful API lookup – of the following data types: e.g., trade name, entity status, date of incorporation, proper name and address - from Solution to the Corporations system, could be triggered by Solution UI and business rules.

	4.11.26 Vermont Address Service	4.11.26.1 PURPOSE: Required – Lookup and use of address verification service. Service design should allow for alternate service suppliers to be swapped in without the driving active development and expense to the State. Initial service suppliers could be Melissa Data, the State’s E911 system, or Vendor-recommended address service.
--	---------------------------------	--

## **Appendix 2 - Risk Register**

See attached document: [FINAL-REVIEW-SOV-SoS-OPR NextGenLicensingPlatform-STS Risk Register FINAL.pdf](#)

## **Appendix 3 – Lifecycle Costs and Change in Operating Costs**

See attached document: [FINAL-REVIEW-SOV-SoS-OPR NextGenLicensingPlatform-STS Cost Detail FINAL.xlsx](#)

# Appendix 4 – Technology Infrastructure

## PROPOSED SOLUTION PER CONTRACT

<b>Pegasystems Software</b>	Pega for Government Platform (PFG) <ul style="list-style-type: none"> <li>• Pega Licensing and Certification for Public Sector</li> <li>• Pega Web Mashup, for use with 1 Application</li> <li>• Business Intelligence Exchange (BIX), for use with 1 Application</li> <li>• Pega Predictive Diagnostic Cloud, for use with one Large Sandbox and one Production Environment</li> <li>• Project Management Framework, for use with 1 Application</li> <li>• Pega Mobile Client</li> </ul>
<b>Licensed Metric</b>	Professional License Cases
<b>Number of annual Cases</b>	<ul style="list-style-type: none"> <li>• 75,000 Annual Professional License Cases</li> </ul>
<b>Definitions</b>	“Professional License Case” means a submission for the issuance or renewal of a Vermont professional or officiant license.
<b>Number of Services and Connectors</b>	An unlimited number of generally available Services/Connectors for PegaCloud use as of the Effective Date, as published on the Pega Discovery Network (“PDN”)
<b>Number of Environments included</b>	1 Standard Sandbox, for use for Proof of Concept and Production 1 Large Sandbox, for use for Production only 1 Production Environment, for use for Proof of Concept and Production
<b>Production Storage limits</b>	250 GB

- It is expected that unlimited users are licensed, although not included in the above chart
- Currently 60,000 licensees are licensed through OPR, so 75,000 licensees are supported with the proposed pricing model, allowing for growth without additional cost

Usage Rights. Customer may use the Subscription on the following terms:

<b>Proof of Concept Licensed Purpose</b>	Vermont may use the PegaCloud platform for developing, testing, concept-proving, and for limited production testing of the Vermont professional licensing issuance and renewal application.
<b>Production Licensed Purpose</b>	Customer may use the PegaCloud platform for developing, testing, concept-proving, and for full production to receive, review, process, approve, issue and renew Vermont professional licenses up to the number and type of licensed Cases.
<b>Development and Testing</b>	Customer may use a copy of the Software for developing, testing, and concept-proving Customer Applications.
<b>Timing of Usage Purchases</b>	When Customer begins development of a new Customer Application, it will allocate usage it has previously purchased or procure additional usage under this Schedule, in each case for the quantity of licenses that Customer reasonably estimates will be required for that Customer Application during the first year of Production use.

During the Term, Customer may purchase additional Production usage as follows:

<b>Additional Usage</b>	<b>Additional Fees</b>
Block of 5,000 additional Annual Professional License cases	\$1,500/month
Use of Pega Co-Browse by up to 43 Users. <ul style="list-style-type: none"> <li>• Use by an additional 21 Users may be purchased for an additional \$1,500/month, for a new total of \$4,500/month for use by up to 64 Users.</li> </ul>	\$3,000/month

During the Term, Customer may purchase additional capacity as follows:

<b>Additional Capacity</b>	<b>Additional Fees</b>
Additional Production Storage 100GB	\$250/month
Additional Standard Sandbox	\$2,750/month
Additional Large Sandbox	\$7,500/month

## **SERVER ARCHITECTURE**

### Application Server:

- Pega is capable of running in an on-premises or cloud model. For Pega Cloud (which is the basis of the proposal to State of Vermont), Pega leverages Amazon Web Services (AWS) as an Infrastructure as a Service (IaaS) provider and uses Amazon Linux (which is based on RHEL). For additional information, please consult the Pega Cloud Service Catalog which represents the key capabilities and offerings currently available for Pega Cloud Production customers.

### Web Server:

- The Pega Cloud Web Application Server utilizes Apache Tomcat. For additional information, please consult the Pega Cloud Service Catalog.

## **DATABASE**

- Pega Cloud deploys **AWS PostgreSQL** as the standard database. Production environment includes a multi-Availability Zone (AZ) RDS deployment that provides synchronous replication to a standby database across Availability Zones for disaster recovery purposes. For additional information, please consult the Pega Cloud Service Catalog.

## **CLIENT**

- Pega Cloud implementations of Pega require only a client workstation running a browser. Both the Pega Designer Studio (for developers) and Pega application end user access is offered via the browser.

## DEVELOPMENT APPROACH

### **Model-Driven Development**

Business models are the components that make up the functionality of a Pega-based application. They include artifacts such as process flows, business rules, user screens, and integration adapters. Business models are created using friendly metaphors that allow you to configure the behavior of individual model types without the need to write code. Models are small and atomic, structured to address a specific policy or procedure, and designed to be assembled together into larger processes and full applications. All of the business models needed for a customer's application are created through a single, browser-based IDE allowing business and IT to author, test, and manage objects in the same design time environment.

A comprehensive model-driven approach applied in a shared "development" environment enables business and IT to collaborate more effectively, facilitates a better understanding of what has been built, minimizes communication issues and allows business to participate in the design and development effort. Ultimately, these benefits improve the organization's ability to create new solutions quickly and adapt existing solutions to changing business conditions whether imposed by new customer demands, competition, or changes in government regulations.

The authoring environment is supported by a fully integrated version control system with check-in/check-out and the ability to rollback to previous versions of individual business models. Checked-out models remain on the server and are tested in context of other models that have been checked-in without affecting other users working on the same application and without having to synch the entire application to a local machine. When checking in new or modified business models, user can elect to configure the Pega environment to execute a custom check-in process before the models become visible to other users. The process can be a simple approval flow or a more complex flow that integrates with external systems and sends correspondence.

The browser-based IDE includes many additional tools that support searching for existing business models, identifying relationships and dependencies between models, and even analyzing execution performance. The business models authored by business users and developers are stored in the Pega enterprise repository. When needed, Pega assembles these models into Java byte code for execution.

## **HOSTING**

Pega leverages Amazon Web Services (AWS) as the Infrastructure as a Service (IaaS) provider. Specifically, Pega Cloud utilizes EC2 computing from AWS: Pega Cloud sizes and provisions the appropriate amount of hardware/infrastructure needed to service the workload specified in our contract with the State of Vermont. For additional information, please consult the Pega Cloud Service Catalog.

Per AWS, two separate FedRAMP Agency ATOs have been issued; one encompassing the AWS GovCloud (US) Region, and the other covering the AWS US East/West regions.

Pegasystems is an Advanced Technology Partner of Amazon Web Services (AWS). AWS provides Pega Cloud the Infrastructure-as-a-Service (IaaS) that is used to provide each customer their own Virtual Private Cloud (VPC) environment.

A VPC is a virtual network logically isolated from other virtual networks. Each customer VPC has a dedicated IP address range, subnets, route tables, network gateways and security settings.

All of the client's Dev/Test, Sandbox and Production environments are deployed into the customer's VPC. Pega works with each customer to allow for access to these subnets via an IPsec-enabled VPN or HTTPS gateway.

The Client VPC will reside in one of the supported AWS geographic regions, which, in the US, include AWS US East (Northern Virginia) and US West (Northern California); note: region is chosen by the customer.

### Monitoring Tools and Methods:

Pega Cloud Production Service actively monitors the environment for failures. This monitoring is for internal purposes only (in supporting your environment), and is not made available to customers. Examples of some of the monitoring services performed include:

- Server responsiveness; CPU utilization; Memory utilization; Disk utilization; Application server accessibility, utilization; Database responsiveness, tablespace utilization, errors, etc;

Pega Cloud also provides customers with Pega Predictive Diagnostic Cloud (PDC), a SaaS-based monitoring capability that allows customers to monitor the health of their Pega applications;

For additional information, please consult the Pega Cloud Service Catalog.



## **DISASTER RECOVERY/BUSINESS CONTINUITY**

Pega Cloud has a formal Business Continuity/Disaster Recovery plan to address Pega Cloud's operational needs. Pega Cloud reviews the Disaster Recovery plan at least annually.

Restoring from backups is also periodically tested during Disaster Recovery testing.

The AWS IaaS, on which Pega Cloud operates, is divided into Regions and Availability Zones (AZs). AWS Regions are geographically distant, logically defined, jurisdictionally distinct operating areas. An AWS Region consists of multiple Availability Zones, each of which are commonly managed, logically defined, combinations of redundant but geographically separate and distant physical locations. This configuration is used to ensure real-time high-availability and resilient failover.

### Data Backup/Restore:

Pega Cloud databases use AWS RDS (Relational Database Service) which includes roll back up capability. In Production environments, Pega additionally implements a multi-AZ (Availability Zone) RDS capability which is a synchronized database in a separate AZ. This is the primary failover mechanism for production environments. For additional information, please consult the Pega Cloud Service Catalog.

Specific details include:

1. Daily Incremental back ups
2. Weekly Full Backups
3. 4 weeks retention
4. Near-time data replication to backup database

## Secretary of State Next Generation Licensing Platform Program

### RISK REGISTER DESCRIPTION:

1. Risk Description: Provide a description of what the risk entails
2. Source of Risk: Project, Proposed Solution, Vendor or Other
3. Risk Rating: Risk ratings to indicate: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)
4. Risk Strategy: State's Planned Risk Strategy: Avoid, Mitigate, Transfer or Accept
  - a. Avoid: Avoid the activity; activities with a high likelihood of loss and large impact.
  - b. Mitigate: Develop a plan to reduce risk to reduce the risk of potential loss; activities with a high likelihood of occurring, but impact is small.
  - c. Transfer: Outsource risk (or a portion of the risk - Share risk) to third party or parties that can manage the outcome; activities with low probability of occurring, but with a large impact. Often times this is transferred back to vendor.
  - d. Accept: Take the chance of negative impact, eventually budget the cost (i.e. a contingency budget line); activities where cost-benefit analysis determines the cost to mitigate risk is higher than cost to bear the risk, then the best response is to accept and continually monitor the risk.
5. Timing of Risk Response: Describes the suggested timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)
6. State's Planned Risk Response: Describe what the State plans to do (if anything) to address the risk (See Risk Response table)
7. Reviewer's Assessment of State's Planned Response: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.

**Department Action Step: Respond to the sections highlighted in yellow (Risk Strategy, State's Planned Risk Response) and send copy back to David Gadway for review**

*NOTE: Hyperlinks are used on the Risk ID. From the Risk Register, CTL-CLICK on a link to see the Risk Response, or from the Risk Response, CTL-CLICK on a link to go back to the Risk Register.*

**RISK REGISTER:**

Risk #:	Risk Description	Source of Risk	Risk Rating: Impact	Risk Rating: Probability	Risk Rating: Overall Risk	State Risk Strategy Summary (Avoid, Mitigate, Transfer, Accept)	Timing of Response	Reviewer Assessment of Response
<a href="#">1a</a>	<p><u>Budget/Funding:</u> There is a commitment to fund the project only in Year 1 from the Secretary of State General Fund, in the amount of \$750K.</p> <p>Subsequent year funding has not been committed and will be requested in the general fund on a year to year basis.</p> <p>Additionally, Year 1 costs are expected to exceed the initial Year 1 funding amount.</p>	Project	High	Low	Low through risk response plan	Avoid	Prior to starting project	Risk Strategy accepted.
<a href="#">1b</a>	<p><u>Budget/Funding:</u> The Implementation services fees estimate proposed by the vendor are not specifically tied to any deliverables.</p> <p>This creates a potential impact to budget.</p>	Project	High	High	Low through risk response plan	Mitigate	Prior to starting project	Risk Strategy accepted.
<a href="#">1c</a>	<p><u>Budget/Funding:</u> The vendor will not provide fixed price fee schedule for fixed deliverables.</p> <p>The Implementation services fee estimates are provided only for Nursing, and as noted, are not fixed price, rather, time and materials.</p> <p>As such, the total cost of ownership is unknown.</p> <p>This creates a potential impact to budget.</p>	Project	High	High	High	Mitigate	Prior to starting project	Will review when revised (fixed price) pricing from Pega is available.

<p><a href="#">2a</a></p>	<p><b>Contract Item:</b> We need to confirm how software is licensed (subscription model?) and pricing model.</p> <p>This creates a potential impact to budget.</p>	Project	Low	High	Low through risk response plan	Avoid	Prior to starting project	<p>Need to see contract v17 to verify: So long as the 3/2/2016 vendor response is included in the contract, and current contract language specifying unlimited user licensing, this risk strategy is accepted.</p>
<p><a href="#">2b</a></p>	<p><b>Contract Item:</b> There are no specific service level agreements defined by SoS as part of the RFP. Is the proposed vendor approach adequate? (see the IR REPORT: Section 6: Technology Architecture Review, Item #10: Service Level Agreements)</p> <p>Is there interest in defining this more clearly in the contract?</p>	Project	High	Medium	Low through risk response plan	Accept	Prior to starting project	<p>Risk Strategy accepted.</p>
<p><a href="#">2c</a></p>	<p><b>Contract Item:</b> In reviewing the contract version "Pegasystems_SoW_1_NGLP_Iteration_1_v1.4.docx", while there has been discussion that the schedule and scope is intended to deliver Nursing functionality, there is no mention of that in the contract, nor is there any mention of the Real Estate nor Pharmacy functionality that has been mentioned to follow Nursing.</p> <p>This creates a potential impact to budget and scope.</p>	Project	High	Medium	High	Mitigate	Prior to starting project	<p>Will review when revised (fixed price) pricing from Pega is available and will also ensure all professions are enumerated in that scope of work.</p>
<p><a href="#">2d</a></p>	<p><b>Contract Item:</b> There is no clearly defined acceptance criteria.</p> <p>This creates a potential impact to budget and scope.</p>	Project	High	Medium	Low through risk response plan	Mitigate	Prior to starting project	<p>Risk Strategy accepted.</p>
<p><a href="#">2e</a></p>	<p><b>Contract Item:</b> In reviewing the contract version "Sec_of_State_Pega_NGLP_IT_Contract_vers0-6.docx", Page 6 indicates a specific project objective of "Completed within budget". This is a Time and Materials project, and as such, the budget is not known.</p> <p>This creates a potential impact to budget and scope.</p>	Project	High	Medium	High		Prior to starting project	<p>Will review when revised (fixed price) pricing from Pega is available.</p>

<a href="#">2f</a>	<p><u>Contract Item:</u> Payment provisions in the contract state that payments are made upon receipt of detailed invoice for services provided and are not tied to deliverables.</p> <p>This creates a potential impact to budget and scope.</p>	Project	High	Medium	High		Prior to starting project	Need to see contract v17 to verify.
<a href="#">3a</a>	<p><u>Vendor Risk:</u> No risk noted.</p>							
<a href="#">4a</a>	<p><u>SOV Service Level/Staffing:</u> The project calls for additional development staffing over and above current SoS staffing levels to build out the application to support professional licensing after the initial Nursing implementation. Those positions have not yet been approved (if new position), or allocated to this project (if existing staff).</p> <p>This creates a potential impact to budget and scope.</p>	Project	Medium	Medium	Medium	Accept	Prior to starting project	Will review when revised (fixed price) pricing from Pega is available and contract reflects fixed price and Pega delivering all functionality.
<a href="#">5a</a>	<p><u>Project Management Staffing:</u> A key contributor to the success of many SoS technology project over the past 4+ years is retiring from State of Vermont service in August, 2016.</p> <p>This creates a potential negative impact to likelihood of project success.</p>	Project	High	High	Low through risk response plan	Mitigate	Prior to starting project	Risk Strategy accepted.
<a href="#">6a</a>	<p><u>Project Schedule:</u> No risk noted.</p>							
<a href="#">7a</a>	<p><u>Infrastructure: Hardware Platform:</u> No risk noted.</p>							
<a href="#">7b</a>	<p><u>Infrastructure: Data Backup:</u> No risk noted.</p>							
<a href="#">7c</a>	<p><u>Infrastructure: Business Continuity/Disaster Recovery:</u> No risk noted.</p>							

<a href="#">8a</a>	<p><b>Functionality:</b> There are two areas of DOCUMENT MANAGEMENT functionality highlighted as critical requirements in the RFP that the solution does not meet. The following are not met by the proposed solution as the solution tracks documents by Case (i.e. Case Management) vs. across the Enterprise. Those requirements are:</p> <ol style="list-style-type: none"> <li>1. The Solution provides a variety of search capabilities of document content and associated metadata. Search capabilities include scoping (i.e., <b>Solution-wide</b> or filtered). Filter capabilities include license name (partial or full), license type, keywords, Boolean operations, and wildcards.</li> <li>2. The Solution provides the capability to automate <b>document archival</b>, through the use of OPR configurable policies and business rules. The Solution provides the ability to define levels of archival with associated behaviors and destinations. For example, may choose different archival actions and archival destinations, based upon profession-specific or content-specific business policies</li> </ol> <p>This creates a potential impact to budget and scope.</p>	Project	High	High	Low through risk response plan	Mitigate	Prior to starting project	Risk Strategy accepted.
<a href="#">9a</a>	<p><b>Interoperability:</b> Regarding System Integration, vendor indicates the solution will use REST web services when possible, but <b>exact integration methods</b> will be determined on a case-by-case basis.</p> <p>This creates a potential impact to budget and schedule.</p>	Project	High	High	Low through risk response plan	Accept	Prior to starting project	Risk Strategy accepted.
<a href="#">9b</a>	<p><b>Interoperability:</b> Neither the data migration nor the data interface/exchange scopes of work are defined.</p> <p>This creates a potential impact to budget and schedule.</p>	Project	High	High	Low through risk response plan	Mitigate	Prior to starting project	Risk Strategy accepted.

<a href="#">10a</a>	<p><b>Compliance/Regulatory:</b>  The following marked as an X (=YES) were answered as such in the ABC form, but as "NO" answers during the IR process. Need clarification on which answer is accurate.  <input checked="" type="checkbox"/> Personally Identifiable Information  <input checked="" type="checkbox"/> Information regarding Credit Card payments  <input checked="" type="checkbox"/> Health related information  <input type="checkbox"/> Tax Information obtained from the Federal government  <input checked="" type="checkbox"/> Information associated with minor children  <input checked="" type="checkbox"/> Other Sensitive, Confidential, or Non-Public Information</p> <p>This creates a potential security risk.</p>	Project	High	High	High	Avoid	Prior to starting project	Risk Strategy accepted.
<a href="#">11a</a>	<p><b>Other:</b>  Vendor assumes no major role in the testing of their application, putting the entire burden on SoS office.</p> <p>This creates a potential impact to schedule and scope.</p>	Project	High	High	Low through risk response plan	Accept	Prior to starting project	Risk Strategy accepted.
<a href="#">11b</a>	<p><b>Other:</b>  State of Vermont has a preference if not a requirement for COTS solutions vs. customized development solutions as a mechanism to obtain and deploy software solutions.</p> <p>It is estimated that this project will be at least 50% customized development.</p> <p>This creates a potential impact to SOV technology standards.</p>	Project	High	High	High		Prior to starting project	Will review when revised (fixed price) pricing from Pega is available and contract reflects fixed price and Pega delivering all functionality.

## RISK RESPONSE:

Risk #:	State's Planned Risk Response and Reviewer's Assessment of State's Risk Response
<a href="#">1a</a>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>In discussions with Marlene Betit on this item.</p> <p><b>REVIEWER'S ASSESSMENT:</b> Ms. Betit has explained the entire funding model and source of funds, and fully expects this project to be fully funded.</p> <p>Risk strategy accepted</p>
<a href="#">1b</a>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>This is a time-and-materials proposal for Pega professional services. This work will be focused on meeting all of the NGLP requirements that are needed for the Nursing profession.</p> <p>The Pega proposal for Nursing identifies person hours per phase. Within each phase, Pega identifies the deliverables being developed.</p> <p><b>REVIEWER'S ASSESSMENT:</b> The vendor has now provided the detail not available when this risk was initially identified.</p> <p>Risk strategy accepted</p>
<a href="#">1c</a>	<p><b>STATE'S RISK RESPONSE:</b></p> <p><b>Initial Response:</b> The State has selected the Nursing profession as the first profession because it is the superset of functional and non-functional requirements for any given NGLP profession. Subsequently, Pega analysts currently estimate that once the Nursing profession is implemented, NGLP will have realized 90% of all its requirements. The State is using a pessimistic expense model and is assuming the Pega 90% estimate is optimistic, and internally SoS is planning on Nursing meeting only 75% coverage. In addition, SoS is also putting its own % of Management Reserve on top of all the Pega services.</p> <p>Pega and SoS management have discussed the commercial approaches at great length. The conclusion of those discussions was that T&amp;M for implementation of the initial profession would be in the best interest of Vermont (from a cost perspective). Once the initial profession (i.e., Nursing) is done, Pega's analyst would be better informed to accurately size and provide the State with the most cost-effective fixed price work in all other subsequent profession iterations.</p> <p><b>Revised Response (3/28/16):</b> The State will establish a contracted fixed price for professional services that will convert all professions from its current legacy system to the Pega solution.</p> <p><b>REVIEWER'S ASSESSMENT:</b> <b>Initial Assessment:</b> This plan helps provide contingency funding. However, total cost of ownership is still unknown.</p> <p><b>Revised Assessment (3/28/16):</b> Will review when revised (fixed price) pricing from Pega is available.</p>
<a href="#">2a</a>	<p><b>STATE'S RISK RESPONSE:</b></p>



Response: The software is licensed on a subscription basis. The pricing of the product elements is outlined in the Contract's appendices. In those appendices is the Pega Cloud Agreement.

**As of 3/2/2016:** Vendor agrees to a licensing model of Licensee count, and no longer using User Count as a pricing component. Steve Mattera confirmed this by asking the following: "Since we simplified the subscription and made it Licensee-centric, there no language in it about OPR headcount adjustments - up or down. We're going to assume there is no adjustment-associated expense for our headcount since the focus is on licensees (i.e., cases). Please confirm."

**Vendor response was:**

From: Cooney, Julian [Julian.Cooney@pega.com]  
Sent: Wednesday, March 02, 2016 9:47 AM  
To: Mattera, Steve; Benjamin, Colin  
Cc: Davis, Jay; Lowe, Denny; Markman, Peter  
Subject: RE: Subscription language  
Hi Steve and Colin,

Jay forwarded me your question below regarding headcount adjustment related expenses and asked that I reply. Per the most recent proposal, your assumption is correct. There would only be an additional fee for an increase in the number of Cases beyond the 75,000 annual cases, which can be purchased according the additional purchase options.

In addition, there is an option to purchase Pega Co-Browse, which would come with a User metric, but only relating to the use of Co-Browse.

Please let me know if this answers your question or if you have any others.

Kind regards,  
Julian

**REVIEWER'S ASSESSMENT:**

I need to see the software pricing model and actual prices. I do see pricing for x number of cases and \$ for additional cases. What is not provided is pricing for additional users.

So long as the 3/2/2016 vendor response is included in the contract, and current contract language specifying 40 users is removed, this risk strategy is accepted.

**Revised Assessment (3/28/2016):** Need to see contract v17 to verify.

My question on the contract is as follows:

Hi Steve,

I am not sure I read this as unlimited users in a Production Environment (as opposed to a Proof of Concept environment).

a. Term:

The initial term of this Schedule will begin upon the of the Proof of Concept period. The duration is 65 months consisting of: (a) the Proof of Concept period during which the Subscription may be used by up to 15 Users using 1 Standard Sandbox and unlimited Users using a Production Environment subject to the **Proof of Concept Licensed Purpose**, and (b) the remaining 60 months following successful completion of the Proof of Concept period during which the Subscription may be used to the full capacity described in section 1 subject to the **Production Licensed Purpose**.

	<p>I read it to perhaps mean unlimited users in the <b>Proof of Concept Licensed Purpose</b>, defined as: “Customer may use the PegaCloud platform and Software including Pega Co-Browse for developing, testing, concept-proving, and for limited production testing of the Vermont professional licensing issuance and renewal application.”</p> <p><b>Production Licensed Purpose</b> is defined as: “Customer may use the PegaCloud platform for developing, testing, concept-proving, and for full production to receive, review, process, approve, issue and renew Vermont professional licenses up to the number and type of licensed Cases.”</p> <p>Letter “a” above defines the term (5 months) and number of users in a Proof of Concept mode.</p> <p>Letter “b” defines the term (60 months) of Production Licensed Mode <b>but does not define how many users may use the system in that mode.</b></p>
<p><a href="#">2b</a></p>	<p><b>STATE’S RISK RESPONSE:</b> SoS Office accepts the SLAs as proposed by PEGA.</p> <p>There are no SLA specific requirements from the RFP. From our experience with vendors there was too much variation in practices and specifics that it made no sense to enumerate it in the RFP. Instead, we would use the vendor’s as the starting point for discussion and negotiation. See the Vendor Subscription Agreement, Exhibit 3. Also, there are requirements for RTO, RPO in the case of outages.</p> <p>The SLAs defined in the proposal will be in the Contract and adopted by the State.</p> <p><b>REVIEWER’S ASSESSMENT:</b> SoS has deemed the vendor proposed SLAs as acceptable. The Independent Reviewer has seen the SLAs and they seem reasonable and acceptable.</p> <p><b>Risk strategy is acceptable.</b></p>
<p><a href="#">2c</a></p>	<p><b>STATE’S RISK RESPONSE:</b></p> <p><b>Initial Response:</b> The professional services portion of the SOW within the contract will be modified to identify Nursing as the initial implementation. Subsequent professions will be identified and estimated at fixed-price following conclusion of the Nursing profession.</p> <p><b>Revised Response (3/28/2016):</b> The State will establish a contracted fixed price for professional services that will convert all professions from its current legacy system to the Pega solution.</p> <p><b>REVIEWER’S ASSESSMENT:</b> <b>Initial Assessment:</b> This plan clarifies the scope risk. The budget and total cost of ownership is still unknown.</p> <p><b>Revised Assessment (3/28/16):</b> Will review when revised (fixed price) pricing from Pega is available.</p>
<p><a href="#">2d</a></p>	<p><b>STATE’S RISK RESPONSE:</b></p> <p>The Pega Implementation work for Nursing will occur against the Requirements needed for Nursing, and that are identified in the contract as being “In-scope”. It is the requirements that will drive the Acceptance Criteria. The State will ensure that the contract’s professional services SOW contains the addition of an Acceptance Criteria in the deliverables for the Elaboration phase.</p> <p><b>REVIEWER’S ASSESSMENT:</b> <b>Risk strategy is acceptable.</b></p>

<p><a href="#">2e</a></p>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>The State will establish a contracted fixed price for professional services that will convert all professions from the current legacy system to the Pega solution.</p> <p><b>REVIEWER'S ASSESSMENT:</b> Will review when revised (fixed price) pricing from Pega is available.</p>
<p><a href="#">2f</a></p>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>In the current version of the contract, there are, and the state will continue to tie, payments to measurable progress/deliverables or milestones.</p> <p><b>REVIEWER'S ASSESSMENT:</b> Need to see contract v17 to verify.</p>
<p><a href="#">3a</a></p>	<p><b>STATE'S RISK RESPONSE:</b> N/A. No risk noted</p> <p><b>REVIEWER'S ASSESSMENT:</b></p>
<p><a href="#">4a</a></p>	<p><b>STATE'S RISK RESPONSE:</b></p> <p><b>Initial Response:</b> With OPR's business process harmonization occurring before the start of work, and with Pega's analysis thus far, Pega indicates that by the time the first three professions have been implemented (Nursing, Real Estate, and Pharmacy), we would have effectively built out all of the NGLP in-scope requirements. From that point forward, a smaller planned contingent will be used. It will be 2 SoS IT people part-time, 2 OPR people part-time, and some ongoing (initially tapering and then levelling-off) Pega consultant capacity. That team is expected to be sufficient for SoS to complete rollout of the remaining professions. These estimates will be assessed and revised as part of the initial implementations.</p> <p>In the event, OPR and SoS look to go beyond the initial professions in terms of capability, the above estimates will need to be adjusted. SoS has already anticipated in its FY18 budget plans, the possibility of allocating 1-2 FTE Pega-knowledgable IT people if the Pega platform capabilities looks to be extended within OPR or SoS, or outside of SoS altogether.</p> <p>As to changing existing headcount, a significant amount of OPR staff time is currently expended administering e-License, and providing workarounds to customers because of e-License shortcomings. It is expected that that time in aggregate will be re-purposed into OPR administrative and Pega activities resulting in a wash for headcount and staff time with this new NGLP project. This risk will be mitigated by SoS and OPR through active monitoring as professions are cut-over. This might address OPR headcount, but the risk does not mention OPR headcount. It addresses IT headcount.</p> <p><b>Revised Response (3/28/2016):</b> We will use existing OPR and IT staff to administer the solution.</p> <p><b>REVIEWER'S ASSESSMENT:</b></p> <p><b>Initial Assessment:</b> The plan appears sound. However, the plan still creates a potential impact to budget beyond what is being budgeted (i.e. 1-2 FTE Pega-knowledgable people are not budgeted) and/or scope, in the event staffing is inadequate, thus, less work gets completed.</p> <p><b>Revised Assessment (3/28/16):</b> As discussed and agreed to in the Independent Review presentation meeting, SoS will now request a fixed price solution to have Pega deliver all licensing functionality for all professions under OPR. This will address the lack of fixed price contract and will remove SoS staff from having any development responsibility in delivering the solution.</p>

	Will review when revised (fixed price) pricing from Pega is available and contract reflects fixed price and Pega delivering all functionality.
<a href="#">5a</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p>SoS office plans to hire Steve Mattera on a contract basis to mitigate the risk. The funding for this contract position is included in the project costing model.</p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p> <p>Given Mr. Mattera's track record of successfully completing projects, the plan adequately addresses the risk.</p>
<a href="#">6a</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p>N/A. No risk noted</p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p>
<a href="#">7a</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p>N/A. No risk noted</p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p>
<a href="#">7b</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p>N/A. No risk noted</p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p>
<a href="#">7c</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p>N/A. No risk noted</p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p>
<a href="#">7d</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p>
<a href="#">8a</a>	<p><b><u>STATE'S RISK RESPONSE:</u></b></p> <p>During management planning and system planning meetings between SoS and Pega, it was determined that Risk item #1 (Requirement ID = 3.4.9.2) Document Management capability was best provided outside of the Pega solution as an external service. The conclusion was that SoS is leaving the requirement on its Solution roadmap but it was de-scoped from NGLP and Pega's-related Implementation services.</p> <p>As to Risk Item #2 (Requirement ID = 4.16.4.2), the requirement is in-scope, and thus will be realized as part of Pega's or SoS' planned implementation services.</p> <p><b><u>REVIEWER'S ASSESSMENT:</u></b></p>

	<p>This plan addresses the risks noted, in that, the initial functional requirement item noted (3.4.9.2) is now out of scope, and the second item (4.16.4.2) has been clarified by the vendor as available functionality.</p> <p><b>Risk strategy is acceptable.</b></p>
<p><u>9a</u></p>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>The Non-functional Requirements "External Integrations" (4.11.1 through 4.11.29) identify each possible integration point, its method, and their status (i.e., in-scope or not, etc.). For those In Scope, they will be realized as part of Pega's planned implementation services and therefore will be built as part of the Nursing professional services contract as T&amp;M or will be built for a fixed price in subsequent contracts for the second and third professions.</p> <p>The risk to Schedule will be accepted for Nursing, and the Elaboration phase will be used to explicitly assess the probability and impact of this risk. The risk to Cost will be mitigated for Nursing using the overall management reserve. After Nursing, Pega will have established a deeper and wider understanding of any integration issues and factored them into their fixed-price service contracts for the second and third professions.</p> <p><b>REVIEWER'S ASSESSMENT:</b>  <b>Risk strategy is acceptable assuming a time box type of approach is used in order to maintain budget limits.</b></p>
<p><u>9b</u></p>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>The Non-functional Requirements "Migration" (4.25.1 through 4.25.3) identify each action required of Pega. For those In Scope, they will be realized as part of Pega's planned implementation services for Nursing and the second and third profession or by the SoS team, depending on when the given profession needing it is implemented.</p> <p><b>REVIEWER'S ASSESSMENT:</b>  Detail related to this item was not available initially, and is now available and is being defined the contract.</p> <p><b>Risk strategy is acceptable.</b></p>
<p><u>10a</u></p>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>SoS does process this kind of information and it has driven some of our requirements. However, HIPAA does not drive requirements on our IT systems, so dedicated hardware is not requirement. We will run as a single tenant.</p> <p><b>REVIEWER'S ASSESSMENT:</b>  Analysis shows Pega Cloud does in fact support HIPAA and PCI: <i>Pega Cloud's control architecture meets both industry specific and geographic regulatory requirements, including HIPAA, PCI DSS, FDA 21 CFR Part 11, and European Union Data Privacy. See more at: <a href="https://www.pega.com/about/news/press-releases/pega-cloud-achieves-service-organization-controls-soc-2-certification">https://www.pega.com/about/news/press-releases/pega-cloud-achieves-service-organization-controls-soc-2-certification</a>.</i></p> <p>However, when researching this point, the following key information was discovered regarding Pega HIPAA compliance from <a href="https://aws.amazon.com/compliance/aws-compliance-case-study-pegasystems/">https://aws.amazon.com/compliance/aws-compliance-case-study-pegasystems/</a>: "Pega incorporated the Amazon Elastic Compute Cloud (Amazon EC2) <b>Dedicated Instances</b> option into the Pega Cloud HIPAA Edition. <i>Dedicated Instances are Amazon EC2 instances that run in a virtual private cloud on hardware that's dedicated to a single customer. AWS Dedicated Instances are physically isolated at the host hardware level from instances that aren't Dedicated Instances and from instances that belong to other AWS accounts.</i>"</p> <p><b>Is SoS contracting for this Dedicated Instance?</b></p> <p><b>Revised Assessment (3/28/2016):</b> As HIPAA does not drive requirements, the AWS Dedicated Instance is not required. However, SoS will employ a single-tenant model of AWS. <b>Risk strategy is acceptable.</b></p>

<a href="#">11a</a>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>The vendor has responsibility for testing and QA of their platform and all of their layered products. The Pega Professional Services Statement of Work (State Contract Appendix Attachment A - Exhibit 5) identifies their testing activities in the Construction phase. The State expects to be responsible for functional testing against its functional requirements.</p> <p><b>REVIEWER'S ASSESSMENT:</b></p> <p>The vendor has provided additional detail related to who is responsible for testing what. In short, the vendor is responsible for unit testing, system functional testing, and integration testing. The State is responsible for functional testing AND creating all test plans.</p> <p>Risk strategy is acceptable.</p>
<a href="#">11b</a>	<p><b>STATE'S RISK RESPONSE:</b></p> <p>The Pega solution will be COTS.</p> <p><b>REVIEWER'S ASSESSMENT:</b></p> <p>As discussed and agreed to in the Independent Review presentation meeting, SoS will now request a fixed price solution to have Pega deliver all licensing functionality for all professions under OPR. This will address the lack of fixed price contract and will remove SoS staff from having any development responsibility in delivering the solution.</p> <p>Will review when revised (fixed price) pricing from Pega is available and contract reflects fixed price and Pega delivering all functionality.</p>







<b>TOTAL INTERNAL OPERATIONS-RELATED COSTS</b>						\$117,250	\$181,450	\$174,450	\$174,450	\$174,450	\$174,450	\$174,450	\$174,450	\$174,450	\$174,450	\$1,694,300
--	--	--	--	--	--	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-------------

<b>TOTAL COSTS (PROJECT and OPERATIONS)</b>						\$1,297,745	\$1,382,994	\$647,394	\$654,537	\$578,465	\$604,583	\$630,928	\$657,508	\$684,329	\$711,398	\$7,849,881
---	--	--	--	--	--	-------------	-------------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-------------

**USE OF FUNDS - END**

**SOURCE OF FUNDS - START**

Revenue Source:				Year 1 (FY16)	Year 2 (FY17)	Year 3 (FY18)	Year 4 (FY19)	Year 5 (FY20)	Year 6 (FY21)	Year 7 (FY22)	Year 8 (FY23)	Year 9 (FY24)	Year 10 (FY25)	TOTAL
														\$0
<b>Assume Year 1 and 2 are Implementation related, Years 3-x are Operations related</b>														
<b>CARRYOVER ONE TIME FUNDING: OPR Administrationund Balance, Fund: 21150, Program Code: 29200</b>	Try to keep balance at \$4M; Added ~\$400K to fund last year; @ \$5.1M balance now	Vendor expenses and OPR Staff	Fund Source Key											
OPR Administration Budget: Fund 21150; Program 29200		Vendor expenses and OPR Staff	A	\$1,100,000	\$750,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,850,000
SOS Service Fund 21928	0.4272	IT Staff	B	\$145,095	\$527,694	\$542,094	\$549,237	\$473,165	\$499,283	\$525,628	\$552,208	\$579,029	\$606,098	\$4,999,531
OPR Fund 21150	0.4796	IT Staff	C	\$22,492	\$44,984	\$44,984	\$44,984	\$44,984	\$44,984	\$44,984	\$44,984	\$44,984	\$44,984	\$427,350
HAVA Fund 22025	0.0932	IT Staff	D	\$4,907	\$9,814	\$9,814	\$9,814	\$9,814	\$9,814	\$9,814	\$9,814	\$9,814	\$9,814	\$479,768
			E											\$93,233
<b>TOTAL:</b>				<b>\$1,297,745</b>	<b>\$1,382,994</b>	<b>\$647,394</b>	<b>\$654,537</b>	<b>\$578,465</b>	<b>\$604,583</b>	<b>\$630,928</b>	<b>\$657,508</b>	<b>\$684,329</b>	<b>\$711,398</b>	<b>\$7,849,881</b>

**Summary by State and Federal:**

<b>State Funding:</b>	<b>\$7,849,881</b>	\$1,297,745	\$1,382,994	\$647,394	\$654,537	\$578,465	\$604,583	\$630,928	\$657,508	\$684,329	\$711,398
<b>Federal Funding:</b>	<b>\$0</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**SOURCE OF FUNDS - END**

**PROJECT CASH FLOW - START**

	Year 1 (FY16)	Year 2 (FY17)	Year 3 (FY18)	Year 4 (FY19)	Year 5 (FY20)	Year 6 (FY21)	Year 7 (FY22)	Year 8 (FY23)	Year 9 (FY24)	Year 10 (FY25)	TOTAL
Use	\$1,297,745	\$1,382,994	\$647,394	\$654,537	\$578,465	\$604,583	\$630,928	\$657,508	\$684,329	\$711,398	\$7,849,881
Source	\$1,297,745	\$1,382,994	\$647,394	\$654,537	\$578,465	\$604,583	\$630,928	\$657,508	\$684,329	\$711,398	\$7,849,881
Net Cash by Fiscal Year:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Cash Flow:</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
Potential Revenue Recovery:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Cash by Fiscal Year:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Cash Flow:</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**CASH FLOW - END**

**NET CHANGE IN OPERATING COSTS - START**

Year 1 (FY16)	Year 2 (FY17)	Year 3 (FY18)	Year 4 (FY19)	Year 5 (FY20)	Year 6 (FY21)	Year 7 (FY22)	Year 8 (FY23)	Year 9 (FY24)	Year 10 (FY25)	TOTAL
---------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------	----------------	-------

Proposed Operating Costs:												
Total Operating Costs	Internal Staffing, Hosting, Vendor Ops and Support	\$176,250	\$414,886	\$633,619	\$640,554	\$566,697	\$592,055	\$617,633	\$643,438	\$669,478	\$695,759	\$5,650,369
<b>Total: Proposed Operating Costs:</b>		<b>\$176,250</b>	<b>\$414,886</b>	<b>\$633,619</b>	<b>\$640,554</b>	<b>\$566,697</b>	<b>\$592,055</b>	<b>\$617,633</b>	<b>\$643,438</b>	<b>\$669,478</b>	<b>\$695,759</b>	<b>\$5,650,369</b>
Current Operating Costs:												
Staffing	No staff allocated to E-License	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Maintenance of Current Solution		\$127,913	\$132,774	\$137,819	\$141,954	\$146,212	\$150,599	\$155,116	\$159,770	\$164,563	\$169,500	\$1,486,220
WAN Costs	Not quantified as they don't change	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total: Current Operating Costs:</b>		<b>\$127,913</b>	<b>\$132,774</b>	<b>\$137,819</b>	<b>\$141,954</b>	<b>\$146,212</b>	<b>\$150,599</b>	<b>\$155,116</b>	<b>\$159,770</b>	<b>\$164,563</b>	<b>\$169,500</b>	<b>\$1,486,220</b>
<b>Net Operating Cost Decrease/(Increase)</b>		<b>(\$48,337)</b>	<b>(\$282,112)</b>	<b>(\$495,800)</b>	<b>(\$498,601)</b>	<b>(\$420,485)</b>	<b>(\$441,456)</b>	<b>(\$462,516)</b>	<b>(\$483,668)</b>	<b>(\$504,915)</b>	<b>(\$526,259)</b>	<b>(\$4,164,149)</b>

**Summary of Net Change in Operating Costs among Funding Sources: 3**

STATE:												
Proposed State Funding Source		\$176,250	\$414,886	\$633,619	\$640,554	\$566,697	\$592,055	\$617,633	\$643,438	\$669,478	\$695,759	\$5,650,369
Current State Funding Source	100% of current operating costs	\$127,913	\$132,774	\$137,819	\$141,954	\$146,212	\$150,599	\$155,116	\$159,770	\$164,563	\$169,500	\$1,486,220
<b>STATE Net Operating Cost Decrease/(Increase)</b>		<b>(\$48,337)</b>	<b>(\$282,112)</b>	<b>(\$495,800)</b>	<b>(\$498,601)</b>	<b>(\$420,485)</b>	<b>(\$441,456)</b>	<b>(\$462,516)</b>	<b>(\$483,668)</b>	<b>(\$504,915)</b>	<b>(\$526,259)</b>	<b>(\$4,164,149)</b>
FEDERAL:												
Proposed Federal Funding Source		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Current Federal Funding Source	0% of current operating costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>FEDERAL Net Operating Cost Decrease/(Increase)</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**NET CHANGE IN OPERATING COSTS - END**

**NOTES / ASSUMPTIONS:**

- 1 OPR Seats: OPR Users: 40 Regular users; It is not clear whether other user types will be required; OPR Licensees: 70,000 licenses annually; Need additional detail as to how the USER COUNT and DATA VOLUME drive price here
  - A "User" is a person who uses the Software in a particular month.
  - A "Sporadic User" is a person that uses the Software during less than 10 hourly periods in a calendar month.
  - An "Occasional User" is a person that uses the Software during between 10 and 50 hourly periods in a calendar month.
  - Any person other than a Sporadic User or Occasional User that uses the Software in a calendar month, or that has the privilege to modify rules or processes, is a "Regular User".
- 2 Need to account for expected staffing level allocation changes through this project
- 3 No federal funding expected

Funding Shortage:

\$0