Independent Review

AOT Construction Management System (CMS) Replacement

For the

State of Vermont

Agency of Digital Services

And

Agency of Transportation

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

Coeur Business Group, Inc.

5/11/2018

e-Signed by John Quinn
on 2018-05-30 19:01:56 GMT

e-Signed by Steve Patterson
on 2018-05-24 15:11:46 GMT

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on 2018-05-23 18:49:24 GMT

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1. Executive Summary

Provide an introduction that includes a brief overview of the technology project and selected vendor(s) as well as any significant findings or conclusions. Ensure any significant findings or conclusions are supported by data in the report.

The Vermont Agency of Transportation (AOT) currently operates a Construction Management System (CMS) that is comprised of a suite of products obtained over 20 years ago from the collaboration between the American Association of State Highway and Transportation Officials (AASHTO) and InfoTech. This suite of products, commonly referred to as AASHTOWare, was developed utilizing client/server technology.

AASHTOWare has begun the process of sun-setting their client/server products. Several of the modules in the suite are already unsupported and the remainder will no longer be supported by the company by June 2019. Eventually, operating system upgrades, interface changes, database changes, and third party tool upgrades will likely cause the client/server products to fail. This is already becoming an issue requiring certain modules to remain on unsupported Windows Server 2003.

AOT has decided to take advantage of this situation by exploring the marketplace to determine what options exist for new systems that would meet their needs while providing a pathway to modern technologies that would provide a more stable operational environment, and an enhanced system that is capable of being more flexible and responsive to changes in business processes.

AOT has solicited competitive sealed fixed price proposals from qualified vendors for a new CMS that includes implementation services, software design and development, and technical support to deliver those Services.

1.1 Cost Summary

In the following Cost Summary table, the light blue color identifies the costs associated with the base portion of the ExeVision proposal which includes licensing, hosting, implementation and configuration. The darker blue color adds to the base an estimation of state labor costs.

ExeVision will reserve 30% of the licensing fees, on an annual basis, that AOT can target toward system enhancement development, and which will be made available on a “use it or lose it” basis. The items colored purple in the following Cost Summary table includes an ***optional*** offer within the ExeVision proposal to provide AOT the opportunity to annually purchase 300 additional system enhancement development hours that would be available in addition to the 30% license reserve. The light purple adds the cost of the 300 hours to the base, and the dark purple adds the state labor estimate.

AOT has made the decision that they will not be exercising the optional system enhancement offering.

IT Activity Lifecycle: (Term of Contract) *	7 Years
Total Lifecycle Costs: (Base System with implementation and Customizations(BSIC) + Licensing and Hosting (LH))	$ 6,052,645

Total Lifecycle Costs: (BSIC + LH + State Related Loaded Labor) **	$ 10,788,044
Total Implementation Costs: 1ST 3 Years (Base System with implementation and Customizations(BSIC) + Licensing and Hosting (LH))	$ 4,159,945
Total Implementation Costs: 1ST 3 Years (BSIC + LH + State Related Loaded Labor) ***	$ 7,216,485
New Annual Operating Costs: (Average annual post implementation system costs for Licensing and Hosting (LH))	$ 473,175
New Annual Operating Costs: (Average annual post implementation system costs for LH + State Related Loaded Labor)	$ 892,889
Current Annual Operating Costs: ****	$ 541,312
Current Annual Operating Costs: (System + Estimated State Related Loaded Labor)	$ 1,279,012
Difference Between Current and New Operating Costs:	$ 68,137
Difference Between Current and New Operating Costs: (Plus State Related Loaded Labor)	$ < 386,123>
Funding Source(s) and Percentage Breakdown if Multiple Sources:	State funds have been budgeted. However, in addition: • A Federal Highway Administration (FHWA) grant has been applied for which would provide $500,000 in each of the first two years of implementation beginning FY19. • AOT plans to develop a proposal that would allow a nominal technological improvement fee to be added to each construction project managed by the system. This fee will be applied to operational costs during the post-implementation contract period (last 4 years).

***** The lifecycle being used for this independent review is 7 years. The rationale for the 7 year lifecycle is that the system being acquired will not result in a permanent State asset and is in effect being leased for the 7 year period. At the end of the initial 7 year contract period, either party would be able to terminate the agreement.

Total Lifecycle Cost

Fiscal Years	Project Totals
Direct Project Cost (contract only)	$6,052,645
VTrans Staff Costs	$3,110,677
Non-VTrans	$364,493
Consultant Services - PM	$803,088
Consultant Services - Other	$457,140
Annual Totals	$10,788,044

** Item includes estimated State Related Loaded Labor costs:

- During implementation = $ 3,056,541
- Four years of post-implementation = $ 1,678,858

Total Estimated State Related Loaded Labor = $ 4,735,399

*** Details of the Total Implementation costs.

Post-Contract Award – Implementation + State Related Loaded Labor

	CMS Contract 3 year implementation			
Fiscal Years	FY2019	FY2020	FY2021	Totals
Direct Project Cost (contract only)	$884,257	$1,224,252	$2,051,436	$4,159,945
VTrans Staff Costs	$485,034	$485,034	$485,034	$1,455,103
Non-VTrans	$113,736	$113,736	$113,736	$341,209
Consultant Services - PM	$267,696	$267,696	$267,696	$803,088
Consultant Services - Other	$152,380	$152,380	$152,380	$457,140
Annual Totals	$1,903,104	$2,243,099	$3,070,283	$7,216,486

Post-Implementation – Operational Costs + State Related Loaded Labor

	CMS Contract 4 year post-implementation				
Fiscal Years	FY2022	FY2023	FY2024	FY2025	Totals
Direct Project Cost (contract only)	$452,400	$465,800	$480,000	$494,500	$1,892,700
VTrans Staff Costs	$413,893	$413,893	$413,893	$413,893	$1,655,574
Non-VTrans	$5,821	$5,821	$5,821	$5,821	$23,284
Consultant Services - PM	$0	$0	$0	$0	$0
Consultant Services - Other	$0	$0	$0	$0	$0
Annual Totals	$872,114	$885,514	$899,714	$914,214	$3,571,558

**** Estimates of Annual Current Operations

- Systems licensing and support = $ 541,312
  (Derived from Licenses and hosting costs, actual and projection for FY18)
- VTrans and Non-VTrans staffing = $ 737,700
  (Identified in the Activity Business Case (ABC) dated 1/9/2017 -
  State labor costs estimated at $55 an hour including benefit load)

  Total = $ 1,279,012

1.2 Disposition of Independent Review Deliverables

Deliverable	**Highlights from the Review** *Include explanations of any significant concerns*
Acquisition Cost Assessment	The AOT anticipates that there will be grant funds approved that will contribute $500,000 in each of the first two years of implementation. Additionally, AOT plans to develop a proposal that would allow a nominal technological improvement fee to be added to each construction project managed by the system. This fee will be applied to operational costs during the post-implementation contract period (last 4 years).
Technology Architecture Review	The proposed solution will take advantage of newer "Web Based" technologies which will result in a "Cloud" implementation which means the State of Vermont will not have to purchase, support, and refresh the underlying hardware and software resources, but rather will pay a monthly hosting fee for that facility. All access to the proposed system will be made via the internet meaning AOT staff and contractors will be able to readily access the new system from any location. Additionally, because of the hosted platform, AOT will be relieved of the need to plan for

	capacity increases and the large budgetary impact that accompany those increases. Provision of additional capacity is built in to the hosted model for moderate increases in the hosting fees.
Implementation Plan Assessment	AOT plans to implement ExeVision's system as a "day forward" implementation meaning there are no plans to migrate production data from the AASHTOWare system to the new system. Rather, the AASHTOWare system will remain operational during the new system implementation to address the completion of in-process projects. New projects will be initiated with the new system. The proposed conversion of historical bidding and project data will be migrated to the State's Enterprise Data Environment (EDE). ExeVision has presented a documented implementation plan that represents a standardized, repeatable, and customizable approach. The available timeline with the State of Vermont is short, because of the deadline associated with the existing system, but appears to be accommodated within ExeVision's performance expectations. ExeVision employs an agile system development life cycle (SDLC) approach that guides the stages of development, testing and implementation. Availability of State staff for participation in the project to meet the desired timeline of this project will be an ongoing concern during the course of the project. State project management staff and the stakeholders have all indicated that staff will be made available as needed
Cost Analysis and Model for Benefit Analysis	All cost elements evaluated and used in this independent review come from the following sources: • ExeVision Proposal • ExeVision – BFAO. • ABC document submitted and approved on Jan 9, 2017. • CMS Replacement Project Cost Worksheets provided by AOT staff.
Impact Analysis on Net Operating Costs	The beginning of implementation of this project has been planned to coincide with the State's new fiscal year. Planning activities for this project have been on-going for the last 18 months. Initially, costs for the first year of implementation are being addressed within the AOT's upcoming fiscal budget plans.

See **Attachment 4** for a detailed review of the ExeVision deliverables for this project.

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

Risk Description	State's Planned Risk Response	Reviewer's Assessment of Planned Response
Selected vendor is a relatively small company and may be challenged by their ability to continue Vermont's support while ramping up to meet the demands of additional state customers.	**Accept** ExeVision claims to have resources on the bench and will hire additional resources if needed. **Mitigation:** Monitor new ExeVision Business and keep channels of communication open. Formalize ExeVision User's Group.	Coeur Group believes that ExeVision is currently financially sound and has demonstrated to be a profitable company over the last 5 years. Maintaining a close working relationship/partnership should allow AOT to foresee potential issues well enough in advance to address with the vendor.
Establishing appropriate State control/input over the cloud hosting platform.	**Accept** The State has built language into the ExeVision contract that the vendor will update the source and configuration code into the Escrow account whenever there is a change, modification or update to the State's software source and configuration code. Contract with the escrow company regarding obtaining source code within 24 hours. The State will develop a contingency plan to address this potential situation. With respect to security, and the ability to control the safety and accessibility to the data, the contract has specific security provisions included that have been approved by the State's Deputy CISO.	This mitigation strategy sounds appropriate to ensuring the on-going viability of the new system. Coeur Group recommends adding additional language to the contract dealing with the off-boarding of AOT's data in whatever format AOT deems usable in the event the contract relationship between AOT and ExeVision fails for any reason.

Ability to accommodate the June, 2019 deadline when the AASHTOWare products will no longer be supported by the vendor and may become inoperable.	**Remediation** AASHTOWare Expedite must be removed from Agency Servers by 6/30/19. Other unsupported AASHTOWare C/S modules can continue to be used after 6/30/19. **Resolution:** The Agency will be upgrading AASHOWare Expedite to Project Bids in late CY18 to eliminate the Risk.	AOT will need to diligently adhere to the project plan timelines and hold ExeVision to delivery dates in order to avoid making this risk any greater than it is.
Current system interface processes tied to an unsupported Windows Server 2003 server.	**Remediation** ADS is evaluating the servers for AOT, and is planning to upgrade and or replace the servers that are critical to this system. All Agency CMS servers are backed up on a regular basis. Mitigation: Maintain an aggressive schedule with ExeVision to implement the replacement CMS. Contingency: ADS IT intervention and pay AASHTOWare/InfoTech and Microsoft to aid in the remediation in the event of server failure.	This remediation strategy appears to be sound. Fix what can be fixed, provide protection for the data assets, and work aggressively with ExeVision to eliminate any slippage in the implementation schedule for the new system.

1.4 Other Key Issues

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

ExeVision is a U.S. company with offices located in South Jordan, Utah. They have a team of sixteen employees that focus on providing web-based Project Development solutions to state departments or agencies of transportation. Software modules included include the following:

- Estimates (including Parametric Estimating)
- Electronic Bidding (including contractor web-based bid preparation and submission)
- Construction Management (including field data collection and synchronization)

- Materials Management (including facility/lab management)
- Civil Rights tracking and reporting

Currently, ExeVision has the following customers:

- Wyoming Department of Transportation
- Iowa Department of Transportation
- Illinois Department of Transportation
- Nevada Department of Transportation
- Texas Department of Transportation
- New Hampshire Department of Transportation

ExeVision does not have a parent company or subsidiaries.

ExeVision is a relatively small company that has been in business since 1994 with a primary focus on Integrated Project Development systems for state transportation agencies since 2001. According to provided financial information, ExeVision has had gross profits in excess of $1.26 million since 2012.

1.5 Recommendation

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

After evaluating the basic system architecture, integration, breadth of functionality, and project approach, Coeur Group believes that the ExeVision system should perform as expected and provide AOT with a solid platform for future operations.

Coeur Group, Inc. recommends that, assuming appropriate agreements for data ownership can be obtained, AOT should continue with the project as reviewed.

1.6 Independent Reviewer Certification

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

_____ _____

Independent Reviewer Signature **Date**

1.7 Report Acceptance

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

_____ _____

ADS 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; and
- An impact analysis on net operating costs for the Agency carrying out the activity
- An overall risk assessment of the proposed solution

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.

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

3. Sources of Information

3.1 Independent Review Participants

List the individuals that participated in this Independent Review.

Name	Employer and Title	Participation Topic(s)
Alan Ellis	AOT – Technician	Subject Matter Expert - Estimation
Andy Willette	AOT – Technician	Subject Matter Expert - Materials
Brent McKinley	ExeVision – Director, Business Dev.	
Brigitte Codling	AOT – Business Manager	Business Lead
Jayna Guilford	ADS/AOT – Portfolio Manager	Project Management Oversight
Keith MacMartin	ADS – Enterprise Architect	Enterprise Architecture
Leonard LeBlanc	AOT - Chief Financial Officer	Financial Management
Lori Valburn	AOT – Civil Rights & Compliance	Subject Matter Expert - Civil Rights
Maureen Parker	AOT – Administrative Services Manager	Subject Matter Expert – Construction Contracts
Mladen Gagulic	AOT – Director, Construction and Materials	
Rick Scott	ADS/AOT – Application Support Manager	
Robert McNeish	AOT – Project Manager	Project Management
Scott Carbee	ADS – Deputy Chief Info Security Officer	Enterprise IT Security
Tim Dailey	ExeVision – Chief Technology Officer	
Tom Buonomo	ADS/AOT – IT Director	
Tom Chase	AOT – Regional Technician	Subject Matter Expert – Construction
Trevor Lewis	AOT – Administrative Services Manager	Contract Administration
Wayne Symonds	AOT – Chief of Highways	Chief Engineer

3.2 Independent Review Documentation

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

Document Name	Description	Source
CMS Business Analysis Plan	Legacy CMS Replacement Plan - RFP Business Analysis Plan	AOT
CMS Replacement Functional Requirements	Initial collection of requirements for inclusion in the RFP	AOT

AOT_CMS Replacement ABC_Jan9	IT Activity Business Case & Cost Analysis	AOT
VTRANS Construction Management System Replacement	Internal AOT Presentation	AOT
CMS Replacement Project Procurement Process – IR	CMS Replacement Procurement Process	AOT
CMS Replacement RFP	RFP issued for CMS procurement	AOT
ExeVision.com	ExeVision's website	Internet
ExeVision Attachment #1 Financial Statements_Confidential	ExeVision's financial statements and last three years federal tax filings	AOT
ExeVision Attachment #3_PPT	VTrans CMS Replacement Response – Executive Summary	AOT
ExeVision Attachment #11_Screen Shots	Solution Screenshots	AOT
ExeVision Exhibit C_Bidder Response Form	ExeVision's Response to RFP Statement of Work	AOT
ExeVision VTrans BAF_final	ExeVision's Best and Final Offer (BAFO)	AOT
CMS Replacement Project Cost Worksheet_Final Draft 3-15-18	AOT Project team analysis of cost comparison between current AASHTOWare system and the pricing provided by ExeVision	AOT
CMS Replacement Project Cost Comparison – 10 year projection	Revised version of the CMS Replacement Project Cost Worksheet with extended forecasting.	AOT

4. Project Information

4.1 Historical Background

Provide any relevant background that has resulted in this project.

In mid 2016, the Vermont Agency of Transportation (AOT) became aware that the Construction Management System (CMS) in use was scheduled for a transition by the vendor from the existing client server architecture to a web based model. This planned transition means that over the course of the next two years, the existing system will no longer be supported by the vendor thus requiring AOT to plan for a transition to the new version of the existing vendor's new system or to entertain a migration to a replacement product available from another vendor.

A project team was assembled of stakeholders and subject matter experts to begin the planning process for this transition. Over the course of the next several months, the project team assessed the needs of a new system and identified systems that are in use at several other states in order to determine whether the best path to the future for AOT was to remain with the existing vendor or to issue a formal Request for Proposal (RFP) to identify opportunities to replace the existing system with a new approach.

The following is an excerpt of the Business Problem documented in the IT Activity Business Case & Cost Analysis (ABC) document which was submitted and received approval in January, 2017.

> The CMS currently used by VTrans is AASHTOWare Project. It is a client server suite of products. Recently these products have been redeveloped by AASHTO using a web platform. VTrans' level of effort for migration to the new AASHTO web platform will be the same as the level of effort to migrate to many of its potential competitors. Additionally, AASHTO has now begun the process of sun-setting the client server products; several components of AASHTOWare Project client server products that VTrans is currently using are no longer supported and the remainder will no longer be supported by June 2019. Eventually, operating system upgrades, interface changes, database changes, and third party tool upgrades will cause the client server products to fail. It is necessary for VTrans to determine if AASHTOWare Project-web or another web-based CMS will meet our needs so that we can begin planning for the transition from the current client server CMS to another web-based CMS.

As is stated above, the project team decided that it was in the best interest of the State of Vermont to issue a formal RFP to identify and evaluate options available in the marketplace to continuing the relationship with AASHTOWare. A modern CMS is expected to offer functionality such as web based access, system module integration, automated business workflows, Informational dashboards, and enhanced document management capabilities.

4.2 Project Goal

Explain why the project is being undertaken.

The Vermont AOT is pursuing the procurement a new Construction Management System (CMS) that will replace the existing AASHTOWare suite of products. This replacement CMS is expected to incorporate modern technical architectures, provide integration of data and business workflow among the various modules and functionalities of the system, and provide an extensible platform to address changes to future business processes.

It is expected that the following systems, tools, and products will be supplanted by the implementation of the new ExeVision products.

- Estimator
- PES/LAS
- Expedite
- DSS
- SAS Foundation
- SiteManager
- Field Manager
- DocExpress
- SYNC Service
- Power Builder Licenses
- Appian Licenses
- Servers

4.3 Project Scope

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

The scope of work to be accomplished in this project as listed in the issued RFP includes procurement of the following:

- **A Software Solution** that addresses the Agency's business needs
- **Professional Services to Perform Technical Work** in support of the implementation
- **Professional Services for Maintenance and Support** of the implemented solution

Additionally, project deliverables outlined in the RFP are mostly involved with artifacts to be produced as a part of the project management process of this project. Therefore, the following identified deliverables will be addressed in two sections. Section 4.3.1 will be focused on the project management deliverables and Section 4.3.2 will be added to address deliverables that are expected from operational improvements from the implementation of the new system.

4.3.1 Major Deliverables (Project Management)

The following are excerpts from the ExeVision proposal that address their Agile project management approach and the deliverables expected during the course of the project. A detailed project plan has been included at **Attachment 5**.

Software development is managed with the Agile methodology, defining and tracking epochs, stories, sprints, etc.

ExeVision's Project Management Plan includes an Introduction, and then focuses on 5 areas that are key to successful delivery and an accurate functional outcome:

- Communication
- Issue Management
- Change Control
- Deliverable Management
- Quality Management

Communication

The Communication Plan defines decision-makers and processes, including decision escalation (if needed). Also defined are meetings, meeting schedules, reporting requirements, and assignment/decision follow-up procedures.

Issue Management

Issue Management definitions set the formal and informal processes for both in-scope and out-of-scope requests by the Agency. It also defines the technology tools to be used for the management, submission, signoff and tracking of issues.

Change Control

The shared goal is to minimize change from the defined specification as much as possible, yet provide sufficient flexibility to deliver the desired product.

Deliverable Management

The term "Deliverable Management" covers a lot of ground and includes, but is not limited to, Project Management Planning Documentation, Project Delivery Schedules and Code Delivery Processes (including testing and acceptance).

Quality Management

The ExeVision Quality Management Plan will define risk management and quality control processes with respect to the development and delivery of the project/product. Risk management includes mitigation and contingency options

4.3.2 Major Deliverables (Operational Outcomes)

The following operational outcomes were documented in the RFP.

1. **Cost Savings -** Over the lifecycle of the new solution, the total costs will be less than the current solution.
   - **a.** Estimated reduction in operating costs by up to 40% through the elimination of redundant systems and improved processing efficiency
   - **b.** Estimated reduction of 75% in staff time spent resolving application and data issues
2. **External User Experience** – A system that provides uncomplicated external access, allowing seamless ability to provide and receive information
3. **Risk Reduction:** The new solution will reduce risk to the Agency by replacing outdated technology that is increasingly becoming unstable as modules are sunset and become unsupported
4. **Usability** – The solution shall be web based and have an intuitive user interface; including mobile access
5. **Business Process Management** – The ideal system will include automated work flows, intelligent dashboards, and e-sign capability
6. **Enhanced Automation** – Automate tasks that employees complete manually today or that require use of spreadsheets and other utilities

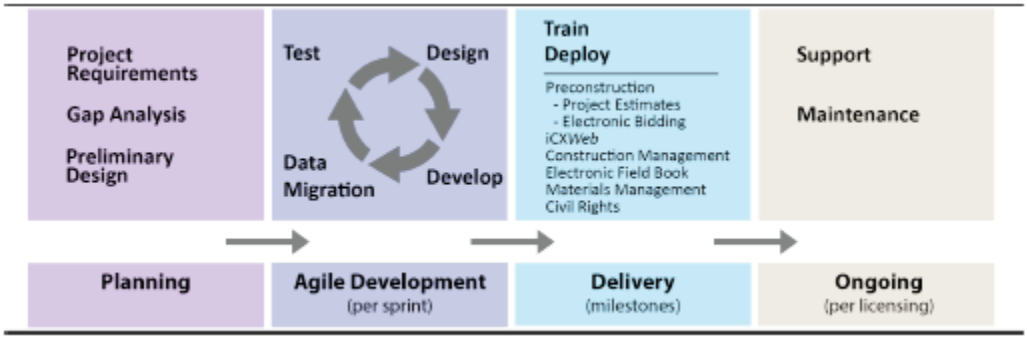
7. **Data Access** – End-user query tools and the ability to easily write custom reports
8. **Security** – Comprehensive role based security for internal and external users, including user groups that limit access to sensitive data where necessary
9. **Stability** – An enterprise-level system which provides 24/7 up time and performance that today's software user's demand
10. **Scalability** – The solution must be scalable to match the future needs of the Agency
11. **Support** – The solution will come with highly responsive support services, including but not limited to Agency specific, timely solutions to reported system issues

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.

ExeVision Project Approach

The following approach to project implementation was presented in the ExeVision Executive Summary submitted in their RFP response.



PMI-based management processes

- Integration Management
- Scope Management
- Schedule/Time Management
- Resource Management
- Quality Management
- Risk Management
- Cost Management
- Communication Management

Implementation Plan Overview

PLANNING—completed at the beginning of the project

1. Project Requirements/Definition
    a. Current assessment
        i. System challenges
        ii. Inefficiencies
        iii. Broken processes
    b. Future roadmap
    c. Implementation goals
        i. System continuity
        ii. Schedule/phase/sprint review
2. Functional Gap Analysis
    a. Detailed review of RFP requirements and agency use cases with agency SMEs
        i. How does the existing system meet this requirement?
        ii. How will the new system meet this requirement?
        iii. What business rules need to be implemented?
    b. Workflow
        i. What are the interdependencies between stakeholders in the overall process?
        ii. What is the current workflow?
        iii. What are the approval processes?
        iv. Where can we gain efficiency by modifying the workflow?
3. Implementation Strategy
    a. Defines the philosophy and approach of the project implementation
4. Implementation Plan
    a. Environment setup
        i. Create new code branch
        ii. Create new environments in Azure (development, test, QA)
        iii. Deploy initial build to each environment
        iv. Test initial build in each environment
    b. Preliminary design
        i. Organize deliverables into epics and stories based on functional gap analysis
            1. Epics
                a. Organized by subsystem (PCES, EBS, CMS, MMS, etc.)
                b. Separated by major functional deliverables
            2. Stories
                a. Tasks needed to achieve functional deliverables in associated epic
        ii. Developer resources assigned based on approved project schedule

AGILE DEVELOPMENT CYCLE—completed for each sprint in dual sprint sets:
(A) Story sprint to develop requirements
(B) Bug sprint to fix bugs based on UAT and any other customer feedback

    c. Design
        i. Review gap analysis, adjust where applicable based on user feedback
        ii. Approval by agency stakeholders

d. Develop i. Stories ii. Fix bugs iii. Subsystem data migration (reference and historical) e. Test i. Create test plans based on agency use cases ii. Internal Acceptance Testing (IAT) of: 1. Developed stories 2. Resolved bugs iii. Automated Testing (iTEST) iv. User Acceptance (Pilot) Testing (UAT) of: 1. Developed stories 2. Resolved bugs
DELIVERY—completed for each milestone (measurable, deliverable subsystem or feature set)
f. Train i. Online help file development ii. Train-the-trainer iii. Instructor led training 1. Onsite 2. Live web conferencing 3. On demand (recorded) g. Deploy i. Push code from UAT to Production (PROD) ii. Deployment validation and agency notification
ONGOING—as long as license is active
h. Maintenance bug fixes and releases i. Defect resolution i. Support

High-Level Timeline

The following is the deliverable timeline and assumptions drawn from ExeVision's RFP Response Executive Summary.

Module	Subsystems	Duration
1) Preconstruction	• Project Cost Estimate (PCES) • Electronic Bidding (EBS) • Secure*Vault* • Integrated Contractors Exchange (iCX*Web*)	Approximately 12 months **(May/June 2019)**
2) Construction	• Construction Management (CMS) • eField Book	Approximately 8 months **(Jan/Feb 2020)**
3) Materials	• Materials Management (MMS)	Approximately 8 months **(Sept/Oct 2020)**
4) Civil Rights	• Civil Rights (CRS)	Approximately 6 months **(Mar/Apr 2021)**

- Sequential delivery of iPD*Web* and iCX*Web* subsystems
- Project Plan begins 7/2/2018 and concludes 6/30/2021*

*** NOTE:** All dates are preliminary and subject to modification pending gap analysis and final Project Plan creation.

These dates are in line with AOT's stated start date and expected project timeline. A detailed proposed timeline for delivery of specific functionality is included as **Attachment 3** of this document**.**

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 outline One Time implementation costs that are spread over the first 3 years of the contract.

Acquisition Costs	Cost	Comments
Hardware Costs	$	N/A
Software Costs	$	N/A
Implementation Services	$2,840,000	Includes: • System Maintenance Subsystem (SMS), Reporting for Pre-construction Contracting, Construction, and Civil Rights • Project Cost Estimate Subsystem (PCES) • Electronic Bidding Subsystem (EBS) • Integrated Contractors Exchange & Vault (iCX*Web*/Secure*Vault*) • Construction Management (CMS) & Electronic FieldBook (eFB) • Materials Management Subsystem (MMS) • Civil Rights Subsystem (CRS) – w/o prior history **See Table 5A below**
System Integration Costs	$ 715,520	Customizations proposed by ExeVision to be completed during the implementation phase of the project. **Will address creation of acceptable solutions to AOT mandatory requirements** that the iPDWeb and iCXWeb products do not fully meet with the base system. **See Table 5B below.**
Professional Services (e.g. Project Management, Technical, Training, etc.)	$	These services are included in the Implementation Services listed above.
<<Other>>	$	
<<Other>>	$	
Total Acquisition Costs	$3,555,520	

Table 5A

Initial Product Licensing and Implementation Charges

Preconstruction Group	
• System Maintenance Subsystem (SMS), Reporting	$ NC
• Project Cost Estimate Subsystem (PCES)	$ 330,000
• Electronic Bidding Subsystem (EBS)	$ 420,000
• Integrated Contractors Exchange & Vault (iCX*Web*/Secure*Vault*)	$ 190,000
Implementation Cost	**$ 940,000**
Construction Group	
• System Maintenance Subsystem (SMS), Reporting	$ NC
• Construction Management (CMS) & Electronic FieldBook (eFB)	$ 870,000
• Materials Management Subsystem (MMS)	$ 604,000
Implementation Cost	**$ 1,474,000**
Civil Rights group	
• System Maintenance Subsystem (SMS), Reporting	$ NC
• Civil Rights Subsystem (CRS) – w/o prior history	$ 426,000
Implementation Cost	**$ 426,000**
	==========
Total Implementation: all subsystems and functionality	***$ 2,840,000***

Table 5B

CATEGORY	QUESTION #	MANDITORY /OPTIONAL	TOPIC	COST
System Wide	3	M	Hover-over Help	
	5	M	Intelligent Dashboards	
	7	M	Comp. Document Mgt	
	18	O	Message Board, gen alerts	$202,240
Civil Rights	3	M	Field Interviews, Wage Compliance	
	5	M	OJT Tracking/Reporting	
	6	M	FHWA Reporting	$76,800
Contract Provisions	1	M	Track by Category	
	4	O	Link to Spec Book/Pay Items *	$12,800
Project Estimation	2	O	Analyze Construction Data *	
	3	M	Sort on Various Fields	
	6	M	Convert Hist. Data (English to Metric)	
	11	M	Asset Sub Components	$42,240
Contracting	16	M	Email Predefined Lists	$3,840
Electronic Bidding	13	M	Attach Alerts, Announcements, etc.	$1,280
Construction Management	1, #8	M	Share Contractor Schedules	
	2, #8	M	Calculate Pay Items	
	2, #9	M	Review/Approve Calculations	
	2, #18	M	Associate DWR to Asset ID	
	3, #6	M	Withhold Payment on Testing	
	3, #7	M	Release Payment Automatically	
	3, #8	M	Pay Factors by Sub Lot	
	3, #9	M	Apply Pay Factors (pre-established)	
	3, #14	M	Change of Status - Design to Const.	
	3, #16	M	Liquidated Damages	
	4, #4	M	Associate Pay Items etc., to Sub	
	4, #7	M	Change of Design (subcontract)	
	4, #11	M	Assoc. Price Adj/Pay Fact to Sub	
	4, #15	M	Change of Design Excluded	
	4, #18	M	Subcontractor Memos	
	5, #1	M	Contractor Submit Stockpile req.	
	6, #15	M	Trigger Notification - Asset ID	
	7	M	Liquidated Damages	
	8	M	Evaluations	
	10	M	Claims	$207,360
Mobile Inspection	2	O	eField Book on Laptop *	
	13	O	Annotate Photos *	$96,000
Materials Management	10	M	Approved/Qualified Products List	
	11	M	Activate/Inactivate Reqs.	
	12	M	Activate/Inactivate by Date Range	$46,080

	19 24 26 30 32	M M M O M	Tier Approach to Sampling Calculate Unit Conversions Display Pay Item Reqs, Records Log Samples from eField Book Associate Mix Design with Asset ID	
Material Lab	3 5 8 9	M M M M	Specific Lab Assignment Sample Path Lab Forms and Assignment Track Testing Lifecycle	 $26,880
			TOTAL CUSTOMIZATION	**$715,520**

**** These items will not be developed as a part of the initial implementation.***

Cost Validation: **Describe how you validated the Acquisition Costs.**

All cost figures used for this analysis were provided by ExeVision in their proposal, or directly from AOT staff. Cost figures were cross checked between the original proposal, the Best and Final Offer, and numbers received from the State.

Cost Comparison: **How do the Acquisition Costs of the proposed solution compare to what others have paid for similar solutions? Will the State be paying more, less or about the same?**

Attempts to contact other ExeVision customers have been unsuccessful and therefore this analysis could not be completed. However, such an analysis would probably not have proven beneficial due to the fact that up to 25% of the implementation for Vermont will be custom to Vermont's needs and requirements. It is unknown how much customization the other customers needed with their systems.

The ExeVision proposal was the second highest cost proposal of the four respondents to the RFP. The high bidder was eliminated from further consideration on merit and cost. The cost differential between ExeVision and the next highest respondent will achieve a breakeven point within 10 years.

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

The cost proposal is in line with other enterprise class, multi-function ERP style systems. In fact, ExeVision projects only a 3% annual increase in its licensing cost. It is not unusual for "maintenance" costs on acquired software to exceed 10% annually.

Additional Comments on Acquisition Costs:

N/A

6. Technology Architecture Review

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

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

   1) Leverage successes of others, learning best practices from outside Vermont

   The ExeVision system is a Commercial Off the Shelf (COTS) solution with the ability to customize the product to meet the specific needs of each customer.

   2) Leverage shared services and cloud-based IT, taking advantage of IT economies of scale

   The ExeVision system provided as a cloud based Software As A Service (SAAS) solution.

   3) Adapt the Vermont workforce to the evolving needs of state government

   The ExeVision proposal includes user training to prepare them for the new system. The system is also extensible in order to adapt to new business process demands.

   4) Apply enterprise architecture principles to drive digital transformation based on business needs

   The ExeVision system is built upon a rigorous implementation of the Microsoft Azure platform.

   5) Couple IT with business process optimization, to improve overall productivity and customer service

   The ExeVision system is extensible in order to adapt to new business process demands.

   6) Optimize IT investments via sound Project Management

   ExeVision employs PMI based project management to the implementation as well as an Agile SCLC to its development efforts.

   7) Manage data commensurate with risk

   All of the data are managed within the Microsoft Government hosting environment. This environment makes use of at least two data centers which are geographically disperse. The secondary site would be considered a functional hot site maintained via real time replication of the data resources.

   8) Incorporate metrics to measure outcomes

   ExeVision provides Service Level Agreements for availability along with management reports.

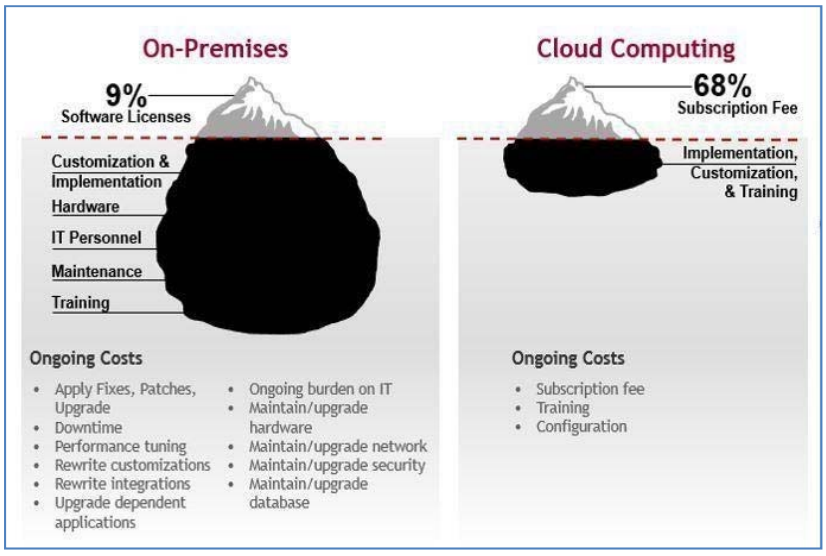
2. **Sustainability:** Comment on the sustainability of the solution's technical architecture (i.e., is it sustainable?).

The following excerpt was extracted from the ExeVision proposal.

> The construction management solution proposed by ExeVision has been developed expressly for state transportation agencies. In its current form as a Commercial-Off-The-Shelf (COTS) application, it largely fulfills the requirements outlined in the Request for Proposal including meeting the specific requirements outlined in 5.4.1 (of the RFP):
>
> - The solution well exceeds the requirement of 80% of all mandatory functional requirements. As outlined in the Mandatory Requirements Summary table at the beginning of Part 2: Functional Requirements, ExeVision meets 99% of the Mandatory Requirements as outlined in VTrans' CMS Replacement RFP (74% exist in the core application, and an additional 25% will be customized at implementation).
>
> - The solution is fully web enabled: ExeVision's iPD*Web* and iCX*Web* solutions are web applications and customized to the specific business processes and requirements of the agency.
>
> - The solution is hosted and managed in a cloud-based environment. ExeVision solutions are hosted in a secure, reliable and resilient cloud environment leveraging Microsoft Azure managed services. This provides 24/7/365 access and unparalleled on-demand resource scaling to meet the most demanding security and performance requirements.

The ExeVision products have been developed using the Microsoft .Net architectural framework and Microsoft Azure SQL Database for the data repository. As stated above, they "leverage Microsoft Azure" to provide the cloud operational foundation. Microsoft will provide the hosting services for this implementation within their Azure Government Hosting Services.

The following diagram depicts the differences in architecture and costs organizations typically experience between traditional on-premise systems vs. the SAAS delivery model that is embodied within the "Cloud" computing model.



3. **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.

   The Federal Risk and Authorization Management Program (FedRAMP) is a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services.

   Microsoft's Government Hosting environment is fully Fedramp compliant.

4. **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

   The ExeVision is designed to be accessed via commonly available internet browsers which have accessibly provisions built in.

5. **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?

   All of the data are managed within the Microsoft Government hosting environment. This environment makes use of at least two data centers which are geographically disperse. The secondary site would be considered a functional hot site maintained with via real time replication of the data resources.

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

   Vermont AOT's specific retention needs will need to be incorporated into the detailed requirements planning at the beginning of the implementation phase of this project.

7. **Service Level Agreement:** What are the post implementation services and service levels required by the State? Is the vendor proposed service level agreement adequate to meet these needs in your judgement?

   Service level agreements need to be negotiated with ExeVision during the contracting phase.

   The following outlines the SLA expectations ExeVision included with their proposal.

   Standard Performance Levels

   Hours of system availability are discussed in more detail in the Service Level Agreement (SLA, Attachment #8), and *Part 7: Hosting, Disaster Recovery*. ExeVision provides solution availability 24/7/365, based on the requirements of the agency. ExeVision works closely with the agency for those infrequent occasions when short maintenance interruptions may occur.

   System Response Time

   - Average response time: < 250ms in current implementations
   - Under full load tested (2500 users in 1 minute): < 6000ms

   Maximum Number of Concurrent Users

- Load tested 500, 1500, 2500
- Time frames tested 1, 3, 5 minutes

Other Relevant Performance Level Information

- Average payload per web transaction: ~ 58k
- Ability to track all web metrics through MS Azure Application Insights including the following:
  - Server Response Time
  - Send Request Time
  - Receiving Response Time
  - Client Processing Time
  - Browser Page Load Time
  - Dependency Calls
  - Dependency Duration
  - Availability
  - Sessions
  - Session Duration
  - All Events
  - Hardware details

The following table outlines system availability SLA parameters identified in the ExeVision proposal.

Availability	Percent Reduction in Monthly Charge
99.5% - 100%	0
99.0% - <99.5%	5
98.5% - <99.0%	10
98.0% - <98.5%	20
97.5% - <98.0%	50
97.0% - <97.5%	60
96.5% - <97.0%	70
96.0% - <96.5%	80
95.5% - <96.0%	90
<95.5	100

TABLE 1: UPTIME AVAILABILITY GOALS AND PENALTIES

The Draft Contract contains language that addresses AOT's position on SLAs in Attachment G. AOT proposes the following definition of service levels, and a revised version of the Uptime Availability Goals and Penalties:

Total Time	The number of minutes in a given month. If the month consists of 30 days, Total Time is calculated as: 30 days * 24 hours/day * 60 minutes/hour = 43,200 minutes.
Maintenance Time	The time the system is down during the scheduled maintenance window (daily from 10PM – 4AM, MST).

Available Time	The number of minutes in a given month during which the iPD*Web* and/or iCX*Web* applications are available for use. Available Time is calculated as: Total Time – Maintenance Time.
Downtime	The number of minutes in a given month, outside of the Maintenance window, during which the iPD*Web* and/or iCX*Web* applications are not available for use.
Availability Percentage	The percentage of Available Time for which the iPD*Web* and/or iCX*Web* applications were available for use. Availability is calculated as: (Available Time – Down Time)/Available Time.

Availability	Percent Reduction in Monthly Charge
>99.98%	0
99.98%	5
99.7%	10
99.6%	20
99.5%	50
99.4%	60
99.3%	70
99.2%	80
99.1%	90
<99.0%	100

TABLE 1: UPTIME AVAILABILITY GOALS AND PENALTIES

For the purposes of Table 1, Availability Percentage is calculated as follows:

Total Time – Maintenance Time = Available Time (measured in 1-minute intervals by web monitoring subcontractor). (Available Time – Downtime) / Available Time = Availability Percentage.

8. **System Integration:** Is the data export reporting capability of the proposed solution consumable by the State? What data is exchanged and what systems (State and non-State) will the solution integrate/interface with*?*

The ExeVision system provides a fully integrated data repository as the underpinning of their system. When discussing the need to move data between disparate systems, ExeVision indicated that they are prepared to build the required interfaces in whatever format needed by the receiving system.

Additional Comments on Architecture:

N/A

7. Assessment of Implementation Plan

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

1. The reality of the implementation timetable

The implementation of the ExeVision system spans a three year period. The sequencing of the module implementation has been organized to address the June, 2019 deadline with the AASHTOWare product operational and support elimination. See the Functionality Roadmap that ExeVision included in their BFAO documentation in **Attachment 3**.

2. Readiness of impacted divisions/ departments to participate in this solution/project (consider current culture, staff buy-in, organizational changes needed, and leadership readiness).

AOT has had a cross functional team working and planning for this project for at least 18 months. In discussing this potential issue with each of the team members, there was a universal acknowledgment of the concern, but all members had the opinion that the outreach activities have been broad and all staff should be fully aware of the pending change. Coupled with the planned training and indoctrination, staff should at least be going into this transition with "eyes wide open". There will always be issues for staff created by the changes in the way things are done, and the dismantling of knowledge silos.

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:

A. Project Management
B. Training
C. Testing
D. Design
E. Conversion (if applicable)
F. Implementation planning
G. Implementation

Coeur Group believes that the level of detail provided by ExeVision will provide AOT with sufficient visibility to provide effective oversight for this project.

See the detailed Functionality Roadmap (**Attachment 3**) and the Project Management plan (**Attachment 5**).

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.

AOT expects that the ExeVision will provide the primary project management support. However, the agency has their own project manager on staff that will work jointly with the ExeVision PM to ensure AOT's interests are addressed, risks are managed, change management will be enforced, and that the project timeline adhered to. The assigned AOT project manager worked closely with Coeur

Group on this independent review and we feel this person possesses the necessary project management acumen to be successful.

Additional Comments on Implementation Plan:

N/A

8. Cost Benefit Analysis

This section involves four tasks:

1) *Perform an independent Cost Benefit Analysis. Information provided by the State may be used, but the reviewer must validate it for accuracy and completeness.*
2) *Provide a Lifecycle Cost Benefit Analysis spreadsheet as an **Attachment 1** to this report. A sample format is provided at the end of this report template..*

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. Be sure to indicate how the costs were independently validated.

   All cost figures used for this analysis were provided by ExeVision in their proposals, or directly from AOT staff. Cost figures were cross checked between the original proposal, the Best and Final Offer, and numbers received from the State.

2. **Assumptions:** List any assumptions made in your analysis.

   N/A

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

   State funds have been budgeted to cover the first year of implementation. However, the following actions have been undertaken:

   - A Federal Highway Administration (FHWA) grant has been applied for which would provide $500,000 in each of the first two years of implementation beginning FY19. **Not yet approved**.
   - Anticipate Federal 80/20 match availability from construction projects operational funds to be applied to cover technological improvement following implementation. **Not yet approved**.

4. **Tangible Costs & Benefits:** Provide a list and description of the tangible costs and benefits of this project. Its "tangible" if it has a direct impact on implementation or operating costs (an increase

= a tangible cost and a decrease = a tangible benefit). The cost of software licenses is an example of a tangible cost. Projected annual operating cost savings is an example of a tangible benefit.

Tangible Cost

• Implementation Services	$2,840,000
• System Integration Costs	$ 715,520
• Operating Costs (Licensing and Hosting 7 year contract period)	$2,497,125
Total Tangible Cost	$6,052,645

Tangible Benefit

• Current Annual Operating Cost	$ 541,312
• Average Post-Implementation Operating Cost	$ 473,175
Annual Tangible Benefit	$ 68,137
X 4	==========
Total Tangible Benefit	$ 272,548

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

   - AOT positioned for the future with modern technology support.
   - Flexibility to accommodate changes in business process.
   - Business need drives system functionality rather than the opposite.
   - New opportunities for data mining with incorporation of the EDE.
   - Streamlined integration between system modules resulting in significant reduction in manual data transfers.
   - Improved Contractor Portal for submitting bids and payment tracking.
   - Support for mobile operations.

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.

   The current system is over 20 years old and has become unresponsive to the changing business climate resulting in the creation of many satellite systems being developed to fill the shortfall. Additionally, the current system is being retired by the vendor within 12 months. If AOT does nothing, they will lose all construction management support technology.

   The cost of this replacement system represents an out of pocket investment in the short term, but enhances operations in the longer term. When compared to the other options that are available, this system provides the best fit for AOT's future, and does indicate a break even

position between the ExeVision product and the next RFP runner-up by the 10th year of operation.

7. **IT ABC Form Review:** Review the IT ABC form (Business Case/Cost Analysis) created by the Business for this project. Is the information consistent with your independent review and analysis? If not, please describe. Is the lifecycle that was used appropriate for the technology being proposed? If not, please explain.
   The business case documented in the ABC form is sound and has been substantiated by the efforts associated to this independent review.

   The only Coeur Group takes exception to is the time frame of the life cycle. The ABC document is built around a 20 expected life cycle. The contract period associated with the ExeVision proposal only covers a 7 year period and leaves AOT with no tangible assets except their data at the end of that period. Unlike the current system, which was essentially purchased with purchased hardware assets installed at the State for its operation, the new system will be a SAAS delivered solution which is effectively a lease scenario. Therefore, Coeur Group believes it is most prudent to focus the evaluation on the 7 year contract timeframe.

   Finally, Coeur Group did perform a 20 year projection of the costs associated with the new system. This shows that the expected Total Lifecycle Costs to be paid by the State would be $1,841,642 less than what was projected on the ABC form.

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

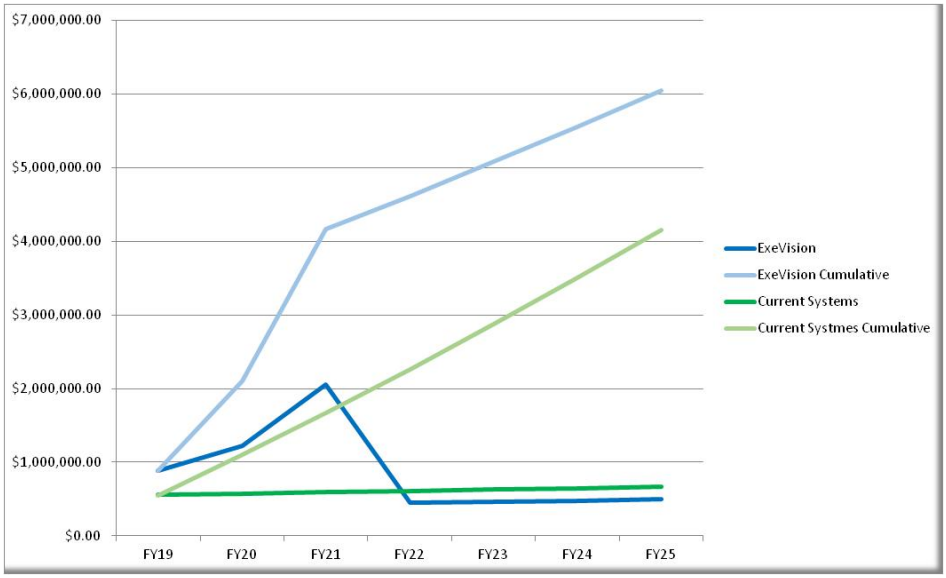
   N/A

9. Impact Analysis on Net Operating Costs

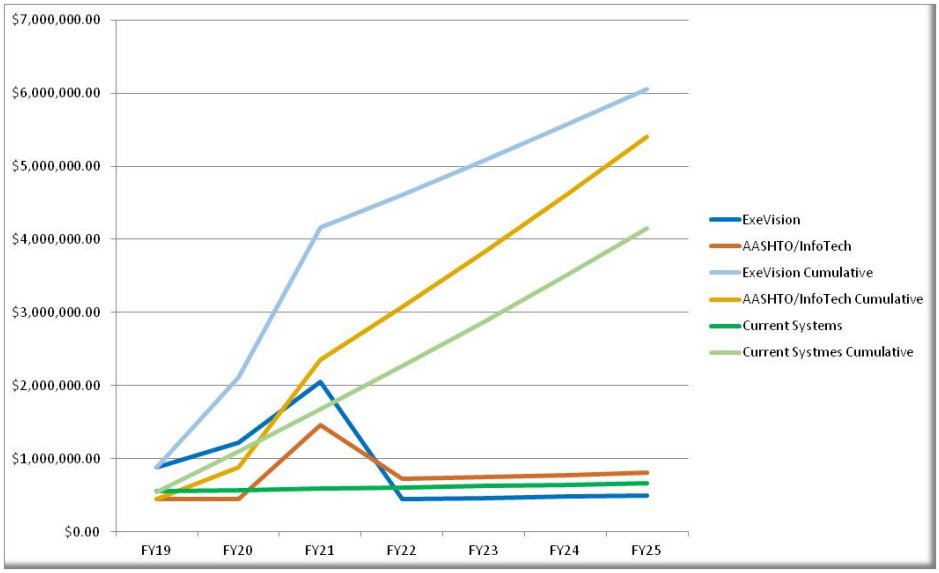
1.) Perform a lifecycle cost impact analysis on net operating costs for the agency carrying out the activity, minimally including the following:
a) Estimated future-state ongoing annual operating costs, and estimated lifecycle operating costs. Consider also if the project will yield additional revenue 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.

1. Insert a table to illustrate the Net Operating Cost Impact.

The following chart provides a visual extrapolation and comparison of the system costs for the existing AASHTOWare products (assuming current system state maintained) and the proposed ExeVision system extended over the proposed 7 year contract lifecycle. As can be seen, if cost were the only factor under consideration, it would be more cost effective to stay with the existing system.



However, the primary issue driving this CMS replacement is that the current AASHTOWare product is being retired and will no longer be available after June 2019. Therefore, it would be more appropriate to assess the comparison of the proposed ExeVision product against the AASHTOWare replacement product which was the runner-up from the RFP evaluation. See following chart:



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

   The cost analysis demonstrated in #1 above resulted from the assessment and comparisons of cost information provided by ExeVision, and AOT staff.

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.

   AOT has applied for a grant that would provide $500,000 a year for the first two years of the implementation of the new ExeVision system. This grant has not been approved by the Feds at this time.

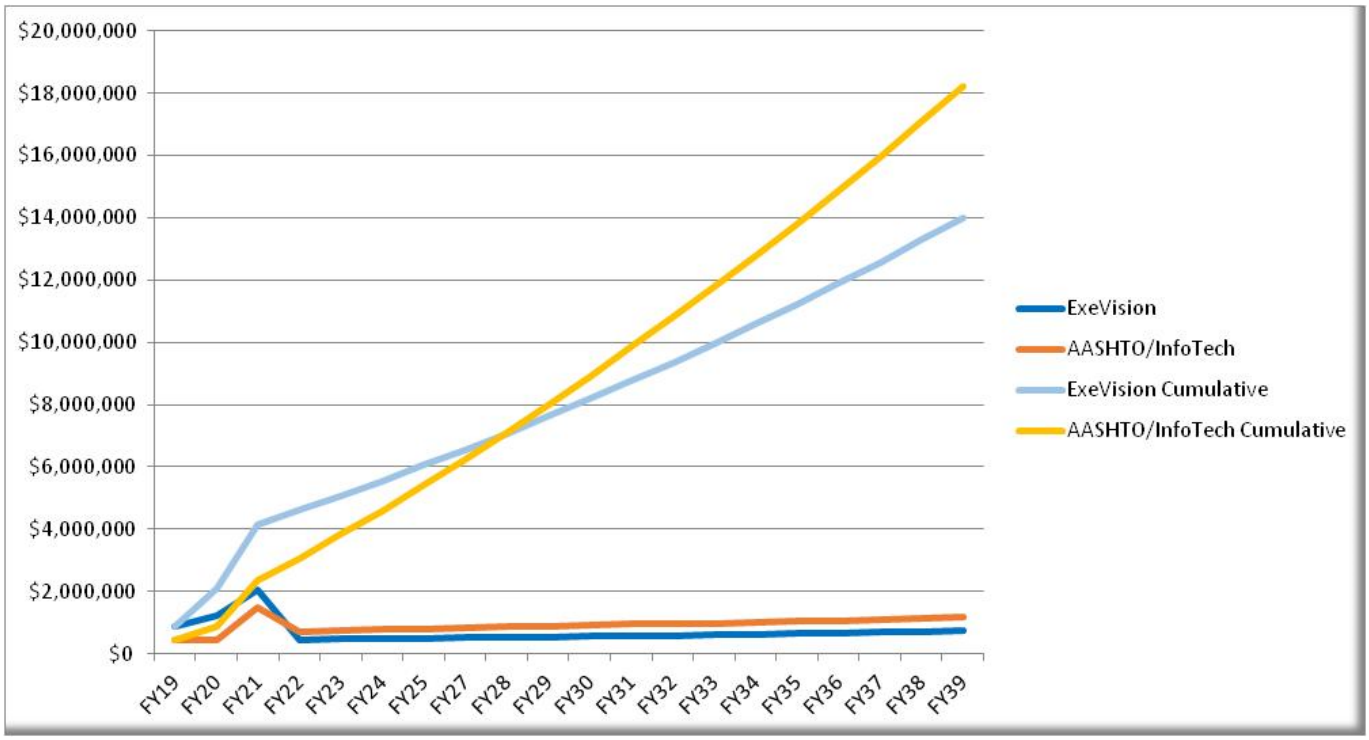
   Additionally, AOT believe that they will be able to take advantage of federal funding (up to 80/20) within the construction projects that are managed by the new system. These federal funds are available under a technology improvement initiative. Again, approval for the use of the federal match funds has not been approved at this time.

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

There is no break-even point when comparing the costs of the existing system and the cost of the new ExeVision proposal. However, since the existing system will not be functional and supportable by June, 2019 this is a bit of a moot point.

It is, perhaps, prudent to look at a break-even position between the ExeVision proposal and the runner-up respondent to the RFP. The current vendor, AASHTO/InfoTech was the runner-up.

It should be noted that for the 7 year contract lifecycle, the cost of the ExeVision exceeds the anticipated cost of the AASHTOWare replacement product. However, if the lifecycle is extended, the following chart shows that the breakeven point between the two products occurs by the 10th year of operation. The ExeVision is more expensive at startup due to the fact that ExeVision will not be able to leverage anything from the existing systems. However, once the implementation phase is over, the ExeVision is a LESS expensive product in all of the projected operational years.



10. Risk Assessment & Risk Register

Perform an independent risk assessment and complete a Risk Register. The assessment process will include performing the following activities:

A. *Ask the independent review participants to provide a list of the risks that they have identified and their strategies for addressing those risks.*
B. *Independently validate the risk information provided by the State and/or vendor and assess their risk strategies.*
C. *Identify any additional risks.*
D. *Ask the Business to respond to your identified risks, as well as provide strategies to address them.*
E. *Assess the risks strategies provided by the Business for the additional risks you identified.*
F. *Document all this information in a Risk Register and label it Attachment 2. The Risk Register should include the following:*

- ***Source of Risk**: Project, Proposed Solution, Vendor or Other*
- ***Risk Description**: Provide a description of what the risk entails*
- ***Risk ratings to indicate**: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)*
- ***State's Planned Risk Strategy**: Avoid, Mitigate, Transfer or Accept*
- ***State's Planned Risk Response**: Describe what the State plans to do (if anything) to address the risk*
- ***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.)*

1. ***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.*

Additional Comments on Risks:

Coeur Group conducted interviews with 15 state staff to identify critical success factors and risks associated with this project. These risks have been document and rated for impact and probability. AOT staff will need to identify mitigation plans for each identified risk.

Please see **Attachment 2** of this document for the results of this effort.

Attachment 1 – Lifecycle Cost Analysis

See sample format provided.

See Below.

The following table identifies ExeVision's base cost proposal projected over a 7 year contract period. The first three years cover implementation. Total base implementation = $6,052,645.

Project Name: AOT Construction Management System (CMS) Replacement										
Description	Qty	Unit Price	Initial Implementation	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Total - Initial Contract
Fiscal Year			FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	
Hardware										
Server Hardware										
Network Hardware										
Other - Hosting				$30,850	$61,200	$63,100	$65,000	$66,900	$69,000	$356,050
Hardware Total				$30,850	$61,200	$63,100	$65,000	$66,900	$69,000	$356,050
Software										
Product License				$153,625	$358,750	$389,300	$400,800	$413,100	$425,500	$2,141,075
Product Per-User Charges										
Database										
Operating System Software										
Additional Server Software										
Additional Network Software										
Base Implementation			$645,750	$801,270	$1,392,980					
Customization			$238,507	$238,507	$238,506					
Software Total			$884,257	$1,193,402	$1,990,236	$389,300	$400,800	$413,100	$425,500	$4,812,338
Consulting										
Third-Party - Technical										
Third-Party - Business										
Deployment										
Upgrade										
Other										
Consulting Total										
Training										
Trainer										
Other										
Training Total										
Bid Total (7 Year Life of Contract)			$884,257	$1,224,252	$2,051,436	$452,400	$465,800	$480,000	$494,500	**$6,052,645**

The following table assumes AOT opts to accept the 300 hour Optional Software Enhancement offer in addition to extending the life cycle to 10 years. Adding the Optional Software Enhancement moves the cost of the base contract to $6.431,545 and $8,194,001 extended over 10 years.

Project Name: AOT Construction Management System (CMS) Replacement														
Description	Qty	Unit Price	Initial Implementation	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Total - Initial Contract	Maintenance Estimate (+3% annual)	Maintenance Estimate (+3% annual)	Maintenance Estimate (+3% annual)	Total 10 Year Life
Fiscal Year			FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025		FY 2026	FY 2027	FY 2028	
Hardware														
Server Hardware														
Network Hardware														
Other - Hosting				$30,850	$61,200	$63,100	$65,000	$66,900	$69,000	$356,050	$71,070	$73,202	$75,398	$219,670
Hardware Total				$30,850	$61,200	$63,100	$65,000	$66,900	$69,000	$356,050	$71,070	$73,202	$75,398	$219,670
Software														
Product License				$153,625	$358,750	$389,300	$400,800	$413,100	$425,500	$2,141,075	$438,265	$451,413	$464,955	$3,495,708
Product Per-User Charges														
Database														
Operating System Software														
Additional Server Software														
Additional Network Software														
Base Implementation			$645,750	$801,270	$1,392,980					$2,840,000				$2,840,000
Customization			$238,507	$238,507	$238,506					$715,520				$715,520
Software Total			$884,257	$1,193,402	$1,990,236	$389,300	$400,800	$413,100	$425,500	$4,812,338	$438,265	$451,413	$464,955	$6,166,971
Consulting														
Third-Party - Technical														
Third-Party - Business														
Deployment														
Upgrade														
Other														
Consulting Total														
Training														
Trainer														
Other														
Training Total														
Bid Total (7 Year Life of Contract)			$884,257	$1,224,252	$2,051,436	$452,400	$465,800	$480,000	$494,500	$6,052,645	$509,335	$524,615	$540,354	$7,626,949
Other														
Optional Software Enhancement			$49,500	$51,000	$52,500	$54,000	$55,500	$57,300	$59,100	$378,900	$60,873	$62,699	$64,580	$567,052
Other 2														
Other Total			$49,500	$51,000	$52,500	$54,000	$55,500	$57,300	$59,100	$378,900	$60,873	$62,699	$64,580	$567,052
Project Total			$933,757	$1,275,252	$2,103,936	$506,400	$521,300	$537,300	$553,600	$6,431,545	$570,208	$587,314	$604,934	$8,194,001

Attachment 2 - Risk Register

See Below

Risk Register

Risk ID #	Source of Risk	Risk Description	Impact (Low/Med/ High)	Probability (Low/Med/ High)	Risk Strategy (Accept/Avoid /Remediate)	State Planned Risk Response Description
1	Coeur Group	Selected vendor is a relatively small company and their ability to continue Vermont's support while ramping up to meet the demands of additional state customers.	High	Med	Accept	ExeVision claims to have resources on the bench and will hire additional resources if needed. Mitigation: Monitor new ExeVision Business and keep channels of communication open. Formalize ExeVision User's Group. ExeVision has described their process for controlling their business growth by only adding 1 large client every two years, and enabling oboarding/training and transition of developers across projects to ensure seasoned developers remain on the implementations.
2	AOT	Getting support from contractors which supports desired diversity scenarios.	Med	Low	Accept	The State will address the requirements of Civil Rights unit during the requirements validation and implementation process. Civil rights unit representatives will remain involved on the project team throughout the implementation.
3	AOT	Establishing appropriate State control/input over the cloud hosting platform.	High	Low	Accept	The State has built language into the ExeVision contract that the vendor will update the source and configuration code into the Escrow account whenever there is a change, modification or update to the State's software source and configuration code. Contract with the escrow company regarding obtaining source code within 24 hours. The State will develop a contingency plan to address this potential situation. With respect to security, and the ability to control the safety and accessiblity to the data, the contract has specific security provisions included that have been approved by the State's Deputy CISO.
4	Coeur Group	Establishing satisfactory data custody policies supported by well defined off-boarding procedures.	High	Med	Avoid	The State plans to integrate data with the AOT Enterprise Data Environment (EDE) on a frequency to be determined, reducing the risk of data loss. This would occur more frequently, and not just at the time where we would need it in the event ExeVision were to go out of business or the contract were to be terminated.
5	AOT	System becomes unavailable to AOT in the event the vendor goes out of business.	High	Low	Accept	Mitigation: Monitor ExeVision's Financial Status Contingency: Obtain source code via Software Escrow arrangement. Data risk is mitigated via risk ID #4.

6	Coeur Group	System ability to be "configured" to meet AOT business requirements rather than being customized which creates a unique code base for Vermont.	Med	Low	Accept	ExeVision makes a copy of their base code and configures the system for VT. Anything that cannot be managed through the administrator settings, that requires new functionality to be built and/or code changes is considered configuration. The bulk of the AOT system (90%+) is configuration. There may be a small amount that is considered customization. AOT will evaluate each item that is determined to be "customized" to understand whether AOT business processes can be updated to fit within the system configuration constraints. Mitigation: Maintain clear documentation as to what has been customized for VT. Maintain a regression test suite to run prior to implementing core system upgrades.
7	AOT	Effective Change management practices.	Med	Low	Accept	The CMS Team is addressing Change Management through active communication and outreach. Surveys will be sent out periodically to gauge effectiveness. State has documented a communications management plan to address organizational change. There is a change management plan drafted which describes the approach to managing changes to the project scope, schedule, budget during the implementation. Once the contract is executed, the change management plan will be updated as part of the communications plan. In addition, change management processes are being written into the contract to describe how the State and Vendor will address change requests and subsequent implementation/testing of any changes.
8	AOT	Implementation not achieved before current system becomes completely unsupported.	High	High	Accept	AOT believes the risk here is actually that the current unsupported components of the system could stop working; the Agency is currently using unsupported AASHTOWare modules that function without incident. Certain modules are still minimally supported by InfoTech with limited hours of research and guidance, although fixes would not be included in those support hours. InfoTech could also be paid to work on the system. The Agency is dedicated to completing this project as timely as possible to avoid the contingency plan below. Mitigation: Maintain an aggressive schedule with ExeVision to replace. Contingency: ADS IT intervention and pay AASHTOWare/InfoTech to aid in the remediation in the event of system failure.
9	AOT	Current system interface processes tied to an unsupported Windows Server 2003 server.	High	High	Remediation	Remediation: ADS for AOT is evaluating the servers, and is planning to upgrade and or replace the servers that are critical to this system. All Agency CMS servers are backed up on a regular basis. Mitigation: Maintain an aggressive schedule with ExeVision to implement the replacement CMS. Contingency: ADS IT intervention and pay AASHTOWare/InfoTech and Microsoft to aid in the remediation in the event of server failure.

10	AOT	Staff acceptance and buy-in to the new system.	High	Med	Accept	The project manager is coordinating the activities of the communications plan, including surveys, posters around the Agency & weekly summary/monthly detailed/quarterly Agency wide status reports. Communications and outreach plans with the Association of General Contractors (AGS) are ongoing. Active communication and outreach is generating excitement about the replacement system. Most users of the current CMS are not impressed with the functionality and are looking forward to the replacement system.
11	AOT	Maintaining level of staffing resources for the duration of the implementation.	High	Low	Accept	Project Team: Fully allocated Project Manager, Business Lead, and two Support analysts have been assigned to the project. Functional leads have been named and have engaged on the project for the last several months. ADS Business Analyst to be allocated 25-30%. SME's: Business Lead will be working with management to define addtional SMEs for detailed requirements, Design Reviews, and User Acceptance Testing.
12	AOT	Selected vendor is stable and financially sound.	Med	Med	Accept	Current financial statements suggest the vendor is stable and financially sound. Also see #5 above.
13	AOT	Estimation module fails to meet business requirements resulting in an on-going commitment to the AASHTOWare Estimation system.	Med	Med	Accept	Mitigation: Capture Estimation detailed requirements and perform a gap analysis. Proceed with ExeVision solution if gap can be filled on a timely bases. Contingency: Utilize AASHTOWare Estimation or simliar tool that provides like functionality until ExeVision can fill the gap over time.
14	AOT	Ability to accommodate the June, 2019 deadline when the AASHTOWare products will no longer be supported by the vendor.	High	High	Remediation	AASHTOWare Expedite must be removed from Agency Servers by 6/30/19. Other unsupported AASHTOWare C/S modules can continue to be used after 6/30/19. Resolution: The Agency will be upgrading AASHOWare Expedite to Project Bids in late CY18 to eliminate the Risk.
15	AOT	Ongoing access to old data currently hosted in the AASHTOWare product.	Med	Med	Accept	Risk will be addressed in three ways. 1) Some historical estimating date may be migrated to ExeVision 2) Existing contracts will run out on the current CMS and the system will continue to be available during this time frame to access data. 3) Eventually data will be migrated from the current CMS to the Agency's Enterprise Data Environment (EDE) for historical data mining.
16	AOT	Management commitment to new system implementation from a funding, staffing, and business process improvement perspective.	Med	Low	Accept	The Chief Engineer of the Highway Division is the Business Sponsor of the project. Management from both Highway and Finance and Administration are fully committed to the project.
17	AOT	The unknown functionality of the ExeVision Materials module which is still under construction.	High	Low	Accept	ExeVision is rolling out Materials to NH and this work will be complete prior to vendor kick-off with VT. Mitigation: Capture detailed material and lab business requirements and work closely with ExeVision to ensure functionality meets the Agency's needs.

18	AOT	Sufficiency of the available training for internal staff and external business partners.	High	Low	Accept	Mitigation: An Agency Training Lead has been named. Comprehensive Training Plan will speak to training approach, materials, environment, data needs, and timetable.
19	Coeur Group	Vermont will be the first AASHTOWare customer to convert to the ExeVision system.	Low	High	Accept	We may be the first AASHTOWare state to replace the entire suite of client/server software with the enitre suite of Exevision software but we are not the first state to choose components of Exevision's software either standalone or integrated with components of AASHTOWare software. Wyoming was an unhappy AASHTOWare State prior to migrating to Exevision many years ago; when this occured they replaced a mix of AASHTOWare and home-grown legacy software. Illinois DOT uses some AASTHOWare modules yet opted to deploy the Exevision Preconstruction and Electronic bidding software after going out to RFP. Iowa DOT also uses AASHTOWare, however, they chose Exevision to replace thier Estimation software. There are other States that have replaced pieces of the AASTHOWare suite with Exevision software as well.

Attachment 3 – ExeVision Functionality Roadmap

Section	Item	Expected Date	Description
Civil Rights	OJT Tracking and Reporting	March-18	Convert OJT from client-server to web application
Civil Rights	Certified Payroll	April-18	Allow contractors to upload certified payroll information
CMS	Add Pay Factor Calculations	April-18	Add pay factor calculations
Civil Rights	Field Interviews for Wage Compliance	April-18	Add page to Civil Rights to collect field interview information
General System	Dynamic Workflow Enhancements	May-18	Enhance user interface to support workflow components
General System	Enhanced Document Management	June-18	Documents integrated into workflow (tracking, searching, and reporting)
General System	English/Metric Conversion	July-18	Convert item quantities between metric and English units
Estimate	Update Item Price Lookup Window	July-18	Enhance functionality to include compound items, additional filters, and UI changes
Estimate	Allow Bulk Update of Prices	July-18	Allow user to update all item prices based on specified historical price filters
Estimate	Identify Filters Used for Item Prices	July-18	Identify for user the filter configuration used for the unit price estimate for each item, including supplemental description
Estimate	Add Additional Filters to Item Price Lookup	July-18	Add filters, including season of letting, number of bidders, etc.
General System	Expanded Logging	July-18	Recording of detailed interaction of communications between iCX and iPD
General System	Enhanced Document Management	July-18	Create documents available for workflow based on iPD reports
General System	Message Board	August-18	Messages sent to groups or subgroups of users
General System	Specification Book Updates	August-18	Link pay items to the specification book
iCX	Messaging Bulletins	August-18	Send bidders alerts and other messages
General System	Enhanced Document Management	August-18	Search for documents using tags
General System	Configurable Logging	September-18	Allow DOT to determine which logging is enabled
Estimate	Supplemental Descriptions	September-18	Add supplemental descriptions for items
General System	Enhanced Document Management	September-18	Support comments on documents
General System	Enhance Distribution List Support	October-18	Improve flexibility and UI for distribution lists
General System	Enhance Organizational Access	October-18	Create hierarchical structure for organizations
CMS	Support for Secondary Materials and Component Materials	October-18	Allow testing frequencies and passing values to be defined for secondary materials and component materials
CMS	Add Tests/Certificates tab	October-18	Displays all samples and/or certificates and associated tests for the pay item
CMS	Support Material Quantities	October-18	Show calculated material and allow user to identify the actual amount of the material
General System	Enhanced Document Management	November-18	Version control
General System	Contractor Evaluations	November-18	Add contractor evaluation page
iCX	Workflow Updates	November-18	iCX*Web* Dashboard entries
General System	ASP.NET/MVC Migration	December-18	In-place migration of ASP.NET to ASP.NET/MVC
eFieldBook	Materials Data Collection	December-18	Allow users to enter sampling data for materials
eFieldBook	Annotate Images	December-18	Allow users to annotate on photos and other images

Materials Management	Unit Conversions (e.g. Tonnage to Square Yards)	December-18	Set up conversion factors on material-pay item matching page
General System	Optimize AJAX Calls	- Ongoing -	Identify under-performing AJAX call and replace
CMS	Update Subcontracts to Show Project and Categories	2019-Q1	Update subcontracts to show project and categories
Estimate	Add Inflation Factors	2019-Q1	Add inflation factors to historic prices to compare current prices more accurately
General System	Enhanced Document Management	2019-Q1	Folders and views
CMS	Display Pending Change Orders in Item Summary	2019-Q1	Display change order and impact on selected item and list on contract level
CMS	Support Adding Unique Items to Change Orders	2019-Q1	Allow users to add unique items to the change order
CMS	Clean up Display of CO Items After Completed	2019-Q1	Collapse items that are not changed after change order is complete
General System	Enhanced Document Management	2019-Q2	Search for documents using document content
eField Book	Android Release	2019-Q2	Release eFB on android tablets
eField Book	Civil Rights Data Collection	2019-Q2	Allow users to collect OJT and field interviews
Estimate	Construction Data Analysis	2019-Q2	Allow comparison of estimated costs against actuals
Materials Management	Next Generation Mix Design	2019-Q2	Upgrade current mix design feature
Materials Management	Lab Accreditation	2019-Q2	Allows labs to be accredited for specific types of tests, similar to current functionality for testers
Materials Management	Enhance Chain of Custody	2019-Q2	Make chain-of-custody more flexible
Materials Management	Add Material Production Roles	2019-Q2	Define the roles required for a material when used on a project
CMS	Liquidated Damages	2019-Q3	Convert liquidated damages from client-server to web application
CMS	Claims	2019-Q3	Convert claims from client-server to web application
iCX	Contractor Communications	2019-Q3	Allow contractors to send documentation (e.g. schedules) and general Q&A (e.g. stockpile requests) through iCX*Web*
iCX	Add Material Data Collection	2019-Q3	Allow contractors to enter sampling and testing data for materials
Materials Management	Support Tiered Material Testing	2019-Q3	Support different test requirements based on material attributes.
CMS	Add Testing Information to Daily Work Reports	2019-Q4	Include samples and tests
Civil Rights	FHWA Reporting	2020-Q1	EEO Reporting (1391 and 1392)
Civil Rights	FHWA Reporting	2020-Q1	Wage Reporting (1494)
Materials Management	Product Brands	2020-Q1	Identify a specific company's material by brand name to be referenced differential for testing requirements

Attachment 4 – RFP Deliverables

Deliverable	Description	Primary Responsibility	Update Frequency
Project Planning Documents	The Project Planning Documents will dictate specifics on how the Project Managers will administer the project and will include the following deliverables:		
	1. Project Plan - The Project Plan outlines the tasks, deliverables, and milestones that are assigned to the resources that need to do them and identify the timeframe for when they need to get done. (See **Section 5.3** for more detail.)	State	Ongoing
	2. **Requirements Management Plan** - will dictate the approach as to how the detailed business requirements will be gathered, approved, and maintained	Contractor	Once unless there are changes
	3. **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	State for state resources, Contractor for contractor resources	Once unless there are changes
	4. **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	Contractor	Once unless there are changes
	5. **Scope Management Plan** - will dictate how the scope will be maintained to prevent "scope creep"	Contractor	Once unless there are changes
	6. **Test Plan** - A description of the testing approach, participants, sequence of testing and testing preparations. Plan will address Unit Testing, QA Testing, and User Acceptance (UAT) Testing	Contractor	Once unless there are changes

	7. **Training Plan** - A formal document that lays out how State user training will be delivered by the Contractor. 8. **Deployment Plan** - A formal document that lays out how the developed solution will be deployed into test and production environments. 9. **Data Migration Plan** - A formal document that identifies the data in the State's current solution that will be migrated to the replacement solution.	Contractor Contractor Contractor	Once unless there are changes Once unless there are changes Once unless there are changes
Acceptance Criteria Document	Criteria that establishes what the acceptance and rejection criteria of each Contractor generated document on this list.	Contractor	Once
Acceptance Sign Off Log	Obtain sign-off at the completion of each project deliverable as defined by the formal acceptance criteria.	Contractor	Once per deliverable
Change Requests	Formal document which outlines any changes to the Contract scope, schedule, budget, and resources.	Contractor	As needed
Change Requests Log	Tracks the specific change requests approved and their impact to the project scope, budget and schedule.	State	Ongoing
Budget Log	Outlines original Contract costs by deliverable with billed and paid-to-date information.	Contractor	Ongoing
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, a mitigation plan, and a contingency plan.	State	Ongoing
Issue Log	A Log of open and resolved Issues. Issues should be outlined by their impact, owner, date of occurrence, due date, date of resolution, and remediation strategy.	State	Ongoing
Action Items Log	A Log of open and resolved Action Items. Action Items should be outlined by their owner, date of occurrence, due date, date of resolution, and resolution approach.	State	Ongoing

Decision Log	A log of all decisions made over the course of the project. Decisions should have a date and name of decider.	State	Ongoing
Requirements Documents	List of Requirements project deliverables to be approved by the State. The approach is dictated by the Requirements Management Plan (See **Section 5.1.1**), and can include: • **Current State Mapping:** The Current State Mapping contains current state CMS process flows, Pain Points, and opportunities for improvement. • **Business Requirements Document (BRD):** The BRD contains detailed business requirements as well as required metrics of project success. • **Gap Analysis:** The Gap Analysis identifies the differences between the State's Functional and Technical Requirements and the out of the box functionality of the Contractor's Solution. • **Functional Specifications Document (FSD):** The FSD contains detailed specifications that can be handed off to the technical resources for execution and will trace back to the BRD. The FSD contains future state process flows, user stories, business rules (including KPIs), and data field specifications • **Technical Specifications Document (TSD):** The TSD contains technical configuration and development details and will trace back to the FSD.	State Contractor Contractor Contractor Contractor	Once unless there are changes
Traceability Matrix	A formal document (spreadsheet) that traces the BRD requirements through the FSD and the TSD.	Contractor	Once unless there are changes
Data Mapping Document	To support necessary migration of data from the State's current solution to the replacement solution. Document identifies field level attributes for both the source and	Contractor	Once

	target systems. This documentation may be included in the TSD.		
Test Cases & Results	The specific test cases to be tested, expected results, and the actual test results. Test Cases tie back to the defined project requirement documents (to ensure each one has been met). Unit testing tests against the TSD, QA testing tests against the FSD, and User Acceptance testing (UAT) tests against the BRD.	Contractor for Unit and QA, State for UAT	Create once then update with results
Training Materials	Materials that will be used during training.	Contractor	Once
User Guide	Documentation that describes the functionality of the solution. Prefer on-line help.	Contractor	Once
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 Contractor Project Manager, as set forth in greater detail in **Section 5.2.3**.	State with input from Contractor	Weekly
Project Phase Gate document	At the end of each Phase, the Contractor Project Manager shall submit an audit of all tasks, deliverables, and milestones achieved during the Phase to the State Project manager for review.	Contractor	Once per phase
Meeting Agenda/Minutes	All scheduled meetings will have an agenda and minutes. The minutes shall reference any updates to risks, issues, action items, and decision logs.	Meeting organizer	Per occurrence
Lessons Learned	A compilation of the lessons learned having 20/20 hindsight. Lessons learned shall be collected from the State and Contractor project team members. Lessons learned should lead to actionable changes for the remaining phases and future projects.	State	Ongoing, at least once per phase
End of Project Metrics	These are metrics that reflect how well the project was performed. Metrics will be outlined in the Quality Management Plan	Contractor	Once
Closeout Report	This report will include all the lessons learned, project metrics, and a summary of	Contractor	Once

	the project's implementation and outcome in operation.		

Attachment 5 – Detailed Project Plan

See below

Task #	Task Name	Duration	Start	Finish	Predecessors
1	**VTrans Project/Work Plan**	**783 days**	**Mon 7/2/18**	**Wed 6/30/21**	
2	**Initiation & Planning**	**14.5 days**	**Mon 7/2/18**	**Fri 7/20/18**	
3	Kick-Off Meeting	0.5 days	Mon 7/2/18	Mon 7/2/18	
4	**Project Management Plan**	**14 days**	**Mon 7/2/18**	**Fri 7/20/18**	**3**
5	Project Charter	**14 days**	Mon 7/2/18	Fri 7/20/18	
6	Change Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
7	Communications Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
8	Requirements Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
9	Human Resources Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
10	Procurement Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
11	Quality Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
12	Risk Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
13	Issues Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
14	Scope Management Plan	**14 days**	Mon 7/2/18	Fri 7/20/18	
15	Project Milestones and Deliverables	**14 days**	Mon 7/2/18	Fri 7/20/18	
16	**Requirements Documentation**	**14 days**	**Mon 7/2/18**	**Fri 7/20/18**	**3**
17	Stated Requirements Document (SRD)	**14 days**	**Mon 7/2/18**	Fri 7/20/18	
18	Business Requirements Document (BRD)	**14 days**	**Mon 7/2/18**	Fri 7/20/18	
19	**Define (Functional Gap Analysis & Preliminary Design)**	**110 days**	**Fri 7/20/18**	**Fri 12/21/18**	**4,16**
20	**Validation of Requirements (On-Site Meetings)**	**70 days**	**Fri 7/20/18**	**Fri 10/26/18**	
21	**On-Site Meetings for Preconstruction**	**15 days**	**Fri 7/20/18**	**Fri 8/10/18**	
22	<Tasks for each group of requirements>	15 days	Fri 7/20/18	Fri 8/10/18	
23	**On-Site Meetings for Construction**	**10 days**	**Fri 8/24/18**	**Fri 9/7/18**	**30**
24	<Tasks for each group of requirements>	10 days	Fri 8/24/18	Fri 9/7/18	
25	**On-Site Meetings for Materials**	**10 days**	**Fri 9/21/18**	**Fri 10/5/18**	**31**
26	<Tasks for each group of requirements>	10 days	Fri 9/21/18	Fri 10/5/18	
27	**On-Site Meetings for Civil Rights**	**5 days**	**Fri 10/19/18**	**Fri 10/26/18**	**32**
28	<Tasks for each group of requirements>	5 days	Fri 10/19/18	Fri 10/26/18	
29	**Requirements Analysis & Documentation (FSD, TSD, Traceability Matrix)**	**85 days**	**Fri 8/10/18**	**Fri 12/7/18**	
30	Build Gap Requirements for Preconstruction	10 days	Fri 8/10/18	Fri 8/24/18	21
31	Build Gap Requirements for Construction	10 days	Fri 9/7/18	Fri 9/21/18	23
32	Build Gap Requirements for Materials	10 days	Fri 10/5/18	Fri 10/19/18	25
33	Build Gap Requirements for Civil Rights	10 days	Fri 10/26/18	Fri 11/9/18	27
34	Build Gap Requirements for Other General and Technical Requirements	10 days	Fri 11/9/18	Fri 11/23/18	33
35	Sign-off/Approval for Preconstruction Gap Requirements	10 days	Fri 8/24/18	Fri 9/7/18	30
36	Sign-off/Approval for Construction Gap Requirements	10 days	Fri 9/21/18	Fri 10/5/18	31
37	Sign-off/Approval for Materials Gap Requirements	10 days	Fri 10/19/18	Fri 11/2/18	32
38	Sign-off/Approval for Civil Rights Gap Requirements	10 days	Fri 11/9/18	Fri 11/23/18	33

39	Sign-off/Approval for Other General and Technical Gap Requirements	10 days	Fri 11/23/18	Fri 12/7/18	34
40	Update and Baseline Project Plan	5 days	Fri 11/23/18	Fri 11/30/18	34
41	Process Requirements & Business Rules	20 days	Fri 11/23/18	Fri 12/21/18	34
42	Data Definition Configuration Detail	20 days	Fri 11/23/18	Fri 12/21/18	34
43	System Configuration	20 days	Fri 11/23/18	Fri 12/21/18	34
44	Architecture Blueprint/Data Mapping	20 days	Fri 11/23/18	Fri 12/21/18	34
45	Data Migration/Conversion Plan	20 days	Fri 11/23/18	Fri 12/21/18	34
46	Deployment/Implementation Plan	20 days	Fri 11/23/18	Fri 12/21/18	34
47	**Test Plans**	**20 days**	**Fri 11/23/18**	**Fri 12/21/18**	**34**
48	Unit Test Plan	20 days	Fri 11/23/18	Fri 12/21/18	
49	QA Test Plan	20 days	Fri 11/23/18	Fri 12/21/18	
50	User Acceptance Testing Plan	20 days	Fri 11/23/18	Fri 12/21/18	
51	Integration Testing Plan	20 days	Fri 11/23/18	Fri 12/21/18	
52	Training Plan	20 days	Fri 11/23/18	Fri 12/21/18	34
53	**Environment Setup**	**11 days**	**Mon 7/2/18**	**Tue 7/17/18**	**3**
54	Install Development Environment	5 days	Mon 7/2/18	Mon 7/9/18	
55	Install Testing Environment	5 days	Mon 7/2/18	Mon 7/9/18	
56	Deploy Initial Builds	1 day	Mon 7/9/18	Tue 7/10/18	55
57	Test Initial Builds	5 days	Tue 7/10/18	Tue 7/17/18	56
58	**Development & Delivery**	**627 days**	**Fri 9/7/18**	**Tue 2/2/21**	
59	**Epic 1 (Project Cost Estimate)**	**85 days**	**Fri 9/7/18**	**Fri 1/4/19**	**35**
60	Gap review	5 days	Fri 9/7/18	Fri 9/14/18	
61	**Build (Story) and Test (Bug) Sprints**	**55 days**	**Fri 9/14/18**	**Fri 11/30/18**	**60**
62	<Build (story) sprints for each requirement or group of requirements>	40 days	Fri 9/14/18	Fri 11/9/18	
63	<Acceptance Test (bug) sprints for each requirement or group of requirements>	15 days	Fri 11/9/18	Fri 11/30/18	62
64	**Build and Test Conversion & Interfaces for Epic 1**	**50 days**	**Fri 9/14/18**	**Fri 11/23/18**	**60**
65	Build Conversion & Interfaces	30 days	Fri 9/14/18	Fri 10/26/18	
66	Integration test Conversion & Interfaces	10 days	Fri 10/26/18	Fri 11/9/18	65
67	Acceptance test Conversion & Interfaces for Epic 1	10 days	Fri 11/9/18	Fri 11/23/18	66
68	**Delivery**	**25 days**	**Fri 11/30/18**	**Fri 1/4/19**	**61**
69	Full Integration Test	5 days	Fri 11/30/18	Fri 12/7/18	
70	Full & Final Epic 1 Acceptance Test	15 days	Fri 12/7/18	Fri 12/28/18	69
71	Epic 1 Training	5 days	Fri 11/30/18	Fri 12/7/18	
72	Epic 1 Deployment	5 days	Fri 12/28/18	Fri 1/4/19	70
73	**Epic 2 (Electronic Bidding, SecureVault & iCXWeb)**	**103 days**	**Fri 1/4/19**	**Wed 5/29/19**	**59**
74	Gap review	5 days	Fri 1/4/19	Fri 1/11/19	
75	**Build (Story) and Test (Bug) Sprints**	**70 days**	**Fri 1/11/19**	**Fri 4/19/19**	**74**
76	<Build (story) sprints for each requirement or group of requirements>	50 days	Fri 1/11/19	Fri 3/22/19	
77	<Acceptance Test (bug) sprints for each requirement	20 days	Fri 3/22/19	Fri 4/19/19	76

	or group of requirements>				
78	**Build and Test Conversion & Interfaces for Epic 2**	**50 days**	**Fri 1/11/19**	**Fri 3/22/19**	**74**
79	Build Conversion & Interfaces	20 days	Fri 1/11/19	Fri 2/8/19	
80	Integration test Conversion & Interfaces	15 days	Fri 2/8/19	Fri 3/1/19	79
81	Acceptance test Conversion & Interfaces for Epic 2	15 days	Fri 3/1/19	Fri 3/22/19	80
82	**Delivery**	**28 days**	**Fri 4/19/19**	**Wed 5/29/19**	**75**
83	Full Integration Test	5 days	Fri 4/19/19	Fri 4/26/19	
84	Full Acceptance Test	18 days	Fri 4/26/19	Wed 5/22/19	83
85	Epic 2 Training	5 days	Fri 4/19/19	Fri 4/26/19	
86	Epic 2 Deployment	5 days	Wed 5/22/19	Wed 5/29/19	84
87	****Preconstruction & Bidding Complete****	0 days	Fri 5/31/19	Fri 5/31/19	73FS+2 days
88	**Epic 3 (Construction Management)**	**182 days**	**Fri 2/15/19**	**Tue 10/29/19**	**36,59FS+30 days**
89	Gap review	5 days	Fri 2/15/19	Fri 2/22/19	
90	**Build (Story) and Test (Bug) Sprints**	**145 days**	**Fri 2/22/19**	**Fri 9/13/19**	**89**
91	<Build (story) sprints for each requirement or group of requirements>	100 days	Fri 2/22/19	Fri 7/12/19	
92	<Acceptance Test (bug) sprints for each requirement or group of requirements>	45 days	Fri 7/12/19	Fri 9/13/19	91
93	**Build and Test Conversion & Interfaces for Epic 3**	**65 days**	**Fri 2/22/19**	**Fri 5/24/19**	**89**
94	Build Conversion & Interfaces	30 days	Fri 2/22/19	Fri 4/5/19	
95	Integration test Conversion & Interfaces	20 days	Fri 4/5/19	Fri 5/3/19	94
96	Acceptance test Conversion & Interfaces for Epic 3	15 days	Fri 5/3/19	Fri 5/24/19	95
97	**Delivery**	**22 days**	**Fri 9/27/19**	**Tue 10/29/19**	**90FS+10 days**
98	Full Integration Test	5 days	Fri 9/27/19	Fri 10/4/19	
99	Full Acceptance Test	12 days	Fri 10/4/19	Tue 10/22/19	98
100	Epic 3 Training	4 days	Fri 9/27/19	Thu 10/3/19	
101	Epic 3 Deployment	5 days	Tue 10/22/19	Tue 10/29/19	99
102	****Construction Complete****	0 days	Fri 1/31/20	Fri 1/31/20	88FS+68 days
103	**Epic 4 (Materials Management)**	**209 days**	**Fri 9/13/19**	**Thu 7/2/20**	**37,90**
104	Gap review	7 days	Fri 9/13/19	Tue 9/24/19	
105	**Build (Story) and Test (Bug) Sprints**	**180 days**	**Tue 9/24/19**	**Tue 6/2/20**	**104**
106	<Build (story) sprints for each requirement or group of requirements>	120 days	Tue 9/24/19	Tue 3/10/20	
107	<Acceptance Test (bug) sprints for each requirement or group of requirements>	60 days	Tue 3/10/20	Tue 6/2/20	106
108	**Build and Test Conversion & Interfaces for Epic 4**	**60 days**	**Tue 9/24/19**	**Tue 12/17/19**	**104**
109	Build Conversion & Interfaces	25 days	Tue 9/24/19	Tue 10/29/19	
110	Integration test Conversion & Interfaces	20 days	Tue 10/29/19	Tue 11/26/19	109
111	Acceptance test Conversion & Interfaces for Epic 4	15 days	Tue 11/26/19	Tue 12/17/19	110
112	**Delivery**	**22 days**	**Tue 6/2/20**	**Thu 7/2/20**	**105**
113	Full Integration Test	5 days	Tue 6/2/20	Tue 6/9/20	
114	Full Acceptance Test	12 days	Tue 6/9/20	Thu 6/25/20	113