



Paul Garstki Consulting

INDEPENDENT REVIEW
OF A PROPOSED
VERMONT HEALTH CONNECT SAAS
REPORTING SOLUTION PROJECT

For the
State of Vermont
Agency of Digital Services (ADS)
And
Agency of Human Services Department of Vermont Health Access

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

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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.

This project would replace the existing Vermont Health Connect (VHC) hosted Oracle Business Intelligence Enterprise Edition (OBIEE) reporting platform with a cloud-hosted Software as a Service (SaaS) solution. A single vendor would supply the entire platform, including hosting and software, as well as maintain and operate it, at a single all-inclusive price consisting of a one-time implementation cost and an annual Maintenance & Operations (M&O) fee. The project cost is significant but reasonable for the benefits gained. The architecture is state-of-the-art, fit for purpose, and much more closely aligned with State IT preferences than the existing system. The implementation plan details are sparse but should be detailed shortly after project commencement.

The chief challenge to this project is the very tight implementation timeline, due to a number of pressures and the need to implement before the 2022 VHC open enrollment period.

1.1 COST SUMMARY

Table 1 - Cost Summary

IT Activity Lifecycle:	5
Total Lifecycle Costs:	\$17,285,692.00
Total Implementation Costs:	\$3,651,220.00
New Annual Operating Costs:	\$2,726,894.40
Current Annual Operating Costs:	\$2,162,150.04
Difference Between Current and New Operating Costs:	\$564,744.36
Funding Source(s) and Percentage Breakdown if Multiple Sources:	Implementation: 67.9% Federal 32.1% State Operating: 71.11% Federal 28.89% State

1.2 DISPOSITION OF INDEPENDENT REVIEW DELIVERABLES

Table 2 - Disposition of Independent Review Deliverables

Deliverable	Highlights from the Review <i>Include explanations of any significant concerns</i>
Acquisition Cost Assessment	Acquisition Costs total \$3,233,116.00. The State will be responsible for 32.1% of this, due to Federal Financial Participation (FFP). Although significant, the costs are reasonable and appropriate given the benefits of the project.
Technology Architecture Review	<p>The proposed architecture is very well chosen, is basically a modernization of the current system to state-of-the-art components, is well-aligned with State preferences, and appropriately puts the responsibility for system performance on the SaaS vendor. The architecture increases State IT autonomy and should make the business process more efficient.</p> <p>The Service Level Agreement (SLA) as attached to the draft contract is extensive, specific, and appropriate in term to the services described.</p>
Implementation Plan Assessment	<p>The implementation timeline is reasonable but very tight, with multiple pressures and constraints. This is the main challenge to the project and will require rigorous project management of both vendor and State, with a strict focus on project management deliverables.</p> <p>The implementation plan itself is very sparse, and currently consists of a single graphic representation in the draft contract. Our review of the plan is based on this single representation. The State acknowledges this and is requiring a detailed plan from the vendor shortly after contract execution. This, along with development of a project Charter now that a project manager is in place, should rectify the situation.</p>
Cost Analysis and Model for Benefit Analysis	<p>The project has a tangible cost of \$6,474,941.80 over the project lifecycle, including both federal and State funds. The intangible benefits are significant, including primarily business process optimizations and better alignment with State IT strategy. All this should result in even better VHC planning and reporting, to the benefit of Vermont citizens.</p> <p>We assess that the intangible benefits of the project significantly outweigh the expected tangible costs.</p>

	We identified a significant cost estimate problem on the IT ABC form, due to the way the form itself calculates totals. We recommend that the State revise the form to prevent this miscalculation from affecting future projects.
Analysis of Alternatives	The main alternative considered was continuation of the currently existing system. The State conducted a rigorous comparison study of the two options, weighing both pros and cons in a range of categories. The conclusion was that the two approaches were about balanced on negative aspects, but that the SaaS solution scored more than twice as high on positive benefits.
Impact Analysis on Net Operating Costs	<p>Given the assumptions made in our cost analysis, (State + FFP) over the lifecycle (\$17,285,692.00) minus the lifecycle total at current cost (\$10,810,750.20) = \$6,474,941.80 net cost.</p> <p>State funds only impact over the same period, assuming same FFP = \$1,987,814.85 net cost</p> <p>As the project has a net cost, there is no breakeven point.</p>
Security Assessment	Affordable Care Act (ACA) exchanges such as Vermont Health Connect, and associated data analysis systems, have stringent security and privacy requirements, overseen by Centers for Medicare & Medicaid Services (CMS). Security for the proposed (and existing) reporting system is governed by the Minimum Acceptable Risk Standards for Exchanges (MARS-E), requiring multiple tests, analyses, validations, and documentations from vendor, State, and third parties. CMS must review the new system, as it expands the security boundaries of the State's reporting system. While there is some pressure on the implementation timeline depending on the results of CMS review, we have no concerns at all about the security <i>per-se</i> of the proposed system.

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

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

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

Table 3 - Identified High Rating Risks

Risk Description	RATING IMPACT/ PROB	State's Planned Risk Response	Reviewer's Assessment of Planned Response
<i>(NONE IDENTIFIED)</i>			

Some identified risks have been assessed as “Moderate” in Likelihood. None have been assessed as “Very Likely.”

Some identified risks have been assessed as “Major” in Impact. None have been assessed as “Extreme.”

Please see the **Risk & Issues Register, in Section 10**, for details.

1.4 OTHER KEY ISSUES

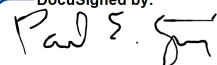
none

1.5 RECOMMENDATION

We recommend that this project proceed as planned.

1.6 INDEPENDENT REVIEWER CERTIFICATION

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

State
DocuSigned by:

493B2479DEA04AE...

11/18/2021

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.

DocuSigned by:

BD58E8A7EC9A476...
ADS Oversight Project Manager

11/18/2021

Date

DocuSigned by:

E4490DF1BEAE444...
State of Vermont Chief Information Officer

11/18/2021

Date

2 SCOPE OF THIS INDEPENDENT REVIEW

2.1 IN-SCOPE

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

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

2.1.2 THE INDEPENDENT REVIEW REPORT INCLUDES:

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

2.2 OUT-OF-SCOPE

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

3 SOURCES OF INFORMATION

3.1 INDEPENDENT REVIEW PARTICIPANTS

Table 4 - Independent Review Participants

Name	Date of first interview	Title	Participation Topic(s)
Marie Schonholtz	10/18/2021	IT Portfolio Manager	Point of Contact, Overall project
Rick Steventon	10/21/2021	IEE Deputy Program Sponsor	Project overview, History
Jon Zehnacker	10/21/2021	IEE Deputy Program Sponsor	Project overview, History
Daniel Fay	10/21/2021	HAEU Deputy Director	Project overview, History
Grant Steffens	10/22/2021	ADS-DVHA IT Manager II	Information Technology
Robyn Stirling	10/22/2021	ADS-DVHA IT Manager	Information Technology
James Willard	10/22/2021	ADS-DVHA IT Manager II	Information Technology
John Hunt	10/22/2021	Enterprise Architect	Enterprise Architecture
Emily Wivell	10/22/2021	ADS Security Analyst	Security
Marie Hayward	10/27/2021	AHS Finance (IAPD)	Finance
Stephen Wisloski	10/27/2021	DVHA Finance (OAPD)	Finance
Daniel McGibney	10/27/2021	IT Project Manager IV	Project Management

3.2 INDEPENDENT REVIEW DOCUMENTATION

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

Table 5 - Independent Review Documents

Document	Source
Change Notification Form for Administering Entity ACA Systems	CMS
IT ABC Data Worksheet Archetype Restatement	State
Archetype SaaS Interface Overview - DRAFT 11Aug21	State
Architecture Assessment_DVAH_Archetype_draft2	State
DVHA SaaS Reporting Labor Costs	State
FW Archetype Experience with Snowflake for Government Entities	State, CMS
AMENDMENT AND RESTATEMENT – Archetype 39933-2 Final	State
ADS SaaS Reporting Labor Costs	State
Open Risks Archetype 10212021	State
Snowflake Data eBook	Snowflake
VHC Reporting Solution Pros-Cons 6-3-21	State
Archetype Stakeholder List	State
IT ABC Form_SaaS_09162021 Signed	State
Archetype Weekly Status Report 10152021	State

4 PROJECT INFORMATION

4.1 HISTORICAL BACKGROUND

The Department of Vermont Health Access (DVHA) Integrated Eligibility & Enrollment Division (IE&E) Health Access Eligibility and Enrollment Unit (HAEEU) Reporting Team reconciles file transactions between the Vermont Health Connect (VHC) case management system, billing system, health insurance issuers, and the State's legacy ACCESS system. They maintain the Unit's data and provide operational reports and data dashboards. They generate Federal and State reports, including 1095A, 1095B, Noticing, CMS Policy-Based Payment Reporting (PBPR), reconciliation, and operational reports.

Currently, for report generation HAEEU uses Oracle products: Oracle Data Integrator (ODI) to build, extract, and maintain data integration; and OBIEE for business intelligence (BI) needs. Since inception of Vermont Health Connect (VHC) HAEEU has had numerous issues in terms of how quickly they could extract data, with delays of 3 to 5 days. In 2020, the State engaged the existing Maintenance and Operations (M&O) vendor, Archetype Consulting, Inc. ("the vendor"), for a development effort to upgrade OBIEE to a better performing environment (OFE), and now generally gets data within 30 hours. This is helpful, but a faster timeframe would be better. The currently available reporting tools are less than ideal in functionality and useability. In addition, because the current system is highly dependent on Oracle products, periodic costly upgrades are required, not only to core system, but also to the databases and data warehouses.

Consequently, the State sought solutions would eliminate the expensive dependence on Oracle products and implement a more efficient, modern reporting tool which could allow using data more effectively, more efficiently, on a faster basis, with better business intelligence and user rules. The vendor presented an option using a cloud infrastructure with BI tools such as Tableau and a reporting solution called Snowflake that would be able to meet those needs and create more software vendor autonomy for the State. Further research and internal State discussions involving DVHA and the Agency for Digital Services (ADS) ensued, and a favorable consensus emerged. ADS suggested pursuing a SaaS contract with the vendor so they could choose what reporting solution could be used by the State, and the vendor recommended Snowflake and Tableau.

The State chose to amend and restate the existing M&O contract with the vendor to include the necessary changes, timeframes, implementation, requirements, and responsibilities for the transition. As the new SaaS solution would require the vendor to operate and maintain the hosted solution compared to the current solution using the State's hosting vendor Optum, the State's security boundaries for these activities would change, requiring review from the Centers for Medicare & Medicaid Services (CMS).

An IT Activity Business Case & Cost Analysis (IT ABC) Form was approved on September 24, 2021, and concurrently the amended and restated contract was sent to CMS for review. CMS sent back their approval for the SaaS contract to SoV on October 26, 2021.

4.2 PROJECT GOAL

To employ the vendor to implement a SaaS model of a suitable reporting platform, and then operate and maintain it. The modernized SaaS platform will dramatically increase data availability, reduce resource constraints, and shift updates and compliance efforts to the vendor.

4.3 PROJECT SCOPE

4.3.1 IN-SCOPE

- Design, Development, and Implementation (DDI) efforts for a Software as a Service (SaaS) Reporting Platform to extract, transform and load reporting data from the existing State transactional databases into a data warehouse, to be functionally accessed by VHC using Tableau.
- Maintenance and Operation of the implemented system

4.3.2 OUT-OF-SCOPE

- Maintenance and Operation of the existing system
- DDI efforts for the existing system

Note: these activities are in-scope for the contract, but not for the project as reviewed.

4.3.3 MAJOR DELIVERABLES

Table 6 - Major Deliverables

Section 4 of the draft contract concerns project management, and lists the following deliverables in Section 4.1.1 "Contractor Project Manager" for M&O of the SaaS solution:
• Configuration Management Plan
• System Logical Design
• Network Diagram Manual
• Disaster Recovery Plan
• Availability Plan
• Baseline Configuration Model
• System Security Plan (SSP and Workbook Documentation)
• System Security Assessment and Auditing

<ul style="list-style-type: none">• Incident Response Plan (IRP)
<ul style="list-style-type: none">• M&O Manual
The following deliverables are listed in Section 4.1.1 for DDI of the SaaS solution:
<ul style="list-style-type: none">• Release Management Plan
<ul style="list-style-type: none">• Services Portal
<ul style="list-style-type: none">• Change Requests
<ul style="list-style-type: none">• Specification Order
<ul style="list-style-type: none">• Project Management Plan
<ul style="list-style-type: none">• Requirements Document
<ul style="list-style-type: none">• Test Plans
<ul style="list-style-type: none">• Certificate of Acceptance
<ul style="list-style-type: none">• Formal Acceptance Sign Off

4.4 PROJECT PHASES, MILESTONES, AND SCHEDULE

Table 7 - Project Milestones

Milestone / Task	Date
SaaS Contract Executed	11/1/2021
Data Engineering / ETL build begins	11/1/2021
Federal Reporting UAT begins	3/1/2022
Data Engineering / ETL build completed	4/15/2022
Test Environment Built	4/15/2022
Security Assessment begins	4/15/2022
Federal Reporting UAT completed	5/1/2022
Security Assessment completed	5/15/2022
Operational Reporting UAT begins	5/15/2022
Documentation begins	5/15/2022
Operational Reporting UAT completed	6/15/2022
Documentation completed	6/15/2022
90-day CMS Review window begins	6/15/2022
Pending Security period begins	8/1/2022
90-day CMS Review window ends	9/15/2022
Pending Security period ends	9/15/2022
Reporting System Go-Live	9/15/2022
UVT Stabilization begins	10/15/2022
UVT Stabilization completed	10/15/2022

Note: the dates shown in the above table reflect the dates as shown in the draft contract. Please see Section 7 Assessment of Implementation Plan, below.

5 ACQUISITION COST ASSESSMENT

Table 8 - Acquisition Costs

Acquisition Costs	Cost	Comments
Hardware Costs	\$0.00	No hardware costs to State
Software Costs	\$0.00	No software costs to State
Implementation Services	\$3,233,116.00	Design, Development, Implementation plus Security Vendor and Enterprise Architecture (EA) services. See attach. 3, Cost Spreadsheet
System Integration Costs	\$400,335.00	See attach. 3, Cost Spreadsheet
Professional Services	\$17,769.00	provided by IR consultant
Total Acquisition Costs	\$3,651,220.00	

Note: Acquisition costs are project totals, including both State and Federal funding. Acquisition costs do not include M&O costs.

5.1 COST VALIDATION: DESCRIBE HOW YOU VALIDATED THE ACQUISITION COSTS.

Implementation Services:

- **Vendor** – Implementation services quoted by vendor and memorialized in contract (\$2,631,996.00) *plus* full amount of implementation contingency as memorialized in contract (\$526,400.00)
- **State Personnel** – percentage Full-Time Equivalent (FTE) for expected positions necessary for implementation were estimated by the State and these multiplied by blended rates.
- **Security Vendor** – quoted cost for implementation activities such as code scan and penetration testing
- **Enterprise Architect Services** – estimated by State for hours needed at existing rate

5.2 COST COMPARISON:

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

As is common and expected in SaaS projects, the bulk of the total cost is the operational cost over the lifecycle of the project. It can be misleading to look only at acquisition costs.

The vendor's costs for both acquisition (as above) and O&M are all-inclusive, in the usual manner of a SaaS solution. Therefore, the costs include not only the vendor's activities but also very significantly hosting –likely to be Amazon Web Services (AWS) but could be Azure – as well as storage/usage for the reporting/data-warehouse tool, Snowflake – and licensing for the BI tool, Tableau. The licensing and other costs for these tools and services at the enterprise level (Snowflake has an “Business Critical” version of the Enterprise Edition with Health Insurance Portability and Accountability Act of 1996 (HIPAA) support and other compliance and functional features relevant to the present project) are well-publicized and likely to be the same for almost all enterprise customers once accounting for scale.

So, aside from any benefits the vendor may or may not gain as a reseller of these products, it is a fair assumption that the State would be paying about the same as others at a similar scale.

Of course, the vendor is also supplying DDI and M&O services using its own personnel, and the State has been generally satisfied with the cost and quality of labor resources in past and ongoing engagements.

5.3 COST ASSESSMENT:

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

Yes. Although significant, they are reasonable and appropriate given the benefits of the project. We have no concerns or issues; the State project team has done a thorough job of identifying costs.

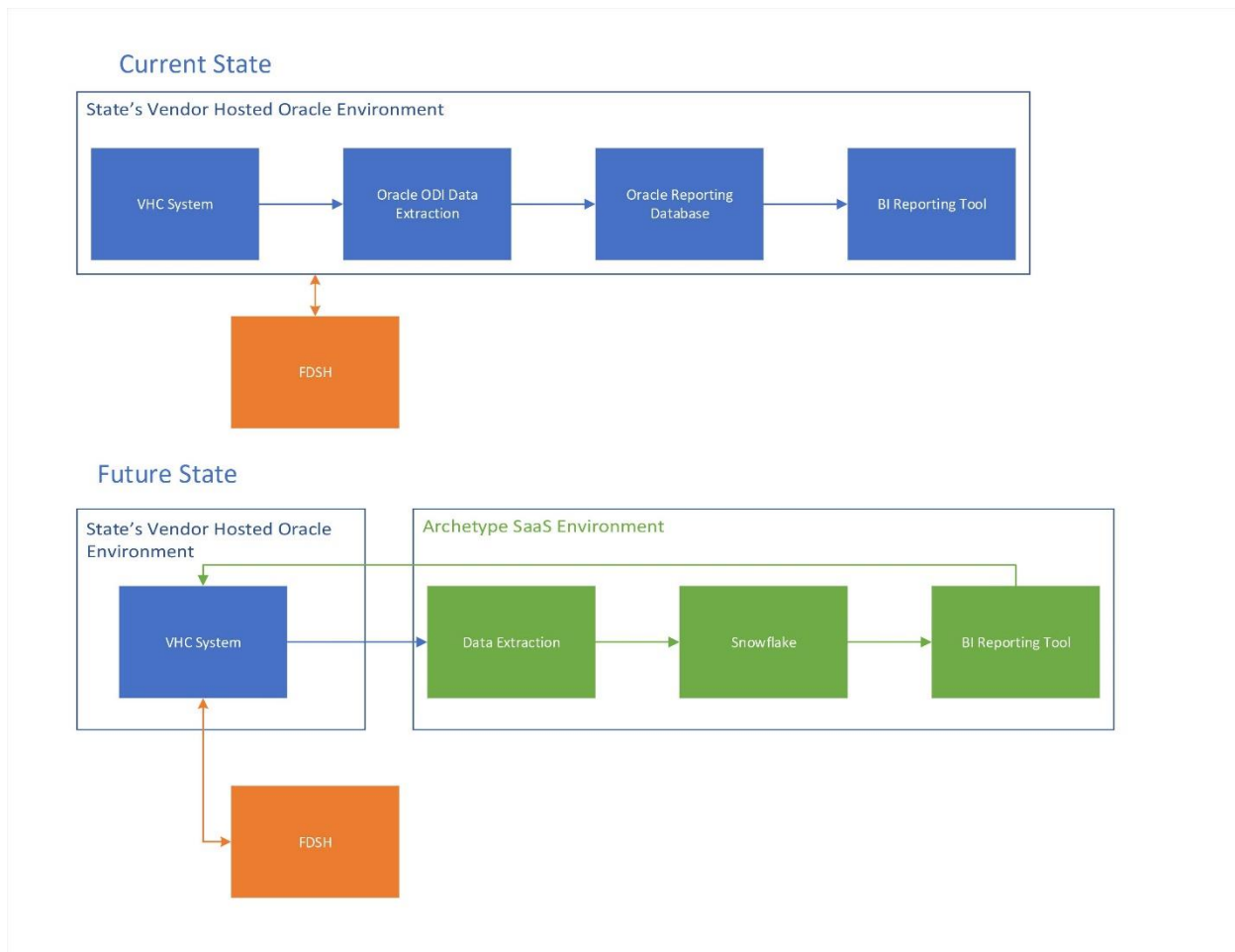
Additional Comments on Acquisition Costs:

The incumbent vendor has an understanding of the State's current needs and has discussed requirements in the contract negotiations for this project. In the ongoing O&M phase of the project, there is always the possibility that the State's needs will increase (such as, for example, the number of Tableau licenses needed), but the contract includes a limit on any charges for such increases to a maximum of \$10,000/month (\$120,000/year), which seems entirely appropriate.

6 TECHNOLOGY ARCHITECTURE REVIEW

In the proposed system, HAEU would use Tableau to access a Software as a Service (SaaS) Reporting Platform as provided by the vendor. The SaaS Reporting Platform extracts, transforms and loads reporting data from the existing State transactional databases into a data warehouse, using the Snowflake data platform. The mechanisms to extract, transform, load, and access State data are provided by the vendor to enable reporting functionality on the VHC system.

The following diagram, provided by the State, shows the current state and proposed future state of the reporting system. (Note: FDSH means Federal Data Services Hub)



The proposed system is a pure SaaS solution, requiring on the State side only compatible browsers for authorized State personnel to access the Tableau software (hosted by the vendor), Virtual Private Network (VPN) gateways connecting State users and State data sources and destinations to the vendor (VPN connections to be provided by the vendor), and associated data interfaces. The vendor's services

are comprehensive, designing, developing, and implementing the system, and then operating and maintaining it for the lifecycle of the project.

The vendor has demonstrated reasonable reliability and competence in past and ongoing DDI and M&O¹ efforts with the State. The vendor chose the proposed system's software components to meet Service Level requirements defined by the State. These software components that comprise the platform as a whole, Snowflake and Tableau, are identified by ADS as "best-of-breed cloud platforms for application modernization," and we agree with this assessment.

In the general descriptions of this project (as in the contract and other project documentation) the Snowflake platform is referred to as the data warehouse (a system that combines data from one or many sources as needed and provides a platform for analysis and reporting). At this time, Snowflake appears to be unique in its architecture, separating storage needs from computing "horsepower," to create a system that is highly scalable (both up and down), and designed in many ways to address the specific performance problems the State has encountered on its current system, such as slow load times and non-open-source data manipulation.

Data load times on the existing system are on the order of 30 hours. This is better than the sometimes 5-day times of the system before a recent DDI effort but is judged by the State to be probably at the limit of improvement. The proposed system promises to offer faster load times, largely because its unique architecture can draw on highly scaled compute resources when needed, and then scale back when not needed (instead of keeping resources dormant).

Snowflake employs an open-source approach. Snowflake is a massively parallel processing (MPP) database that is fully relational and processes standard Search Query Language (SQL) natively without translation. This aligns with the State's strong EA preference for open-source solutions, as well as reducing HAAEU's reliance on non-standard Oracle Procedural Language for SQL (PL/SQL). This increases State IT autonomy, decoupling it from the Oracle product "ecosystem," with its attendant costs and resource requirements.

Tableau is a very widely-used data visualization and presentation tool, used by the State in other contexts. It would be the "front-end" for State data workers to access and use the SaaS reporting system to produce reports, dashboards, etc.

The proposed project as negotiated between the vendor and the State is to be "hosting agnostic." At this point in development, it is very likely to be hosted on Amazon Web Services (AWS). An alternative

¹ Vermont Agency of Digital Services, *ADS Ecosystem of Best-of-Breed Cloud Platforms for Application Modernization*, https://digitalservices.vermont.gov/sites/digitalservices/files/doc_library/ADS%20Ecosystem.pdf, Accessed 10/30/2021

would be Microsoft Azure. Either platform would be appropriate; AWS explicitly partners with Snowflake, so there is probably some advantage to that for implementation purposes.

As described more fully in the Interfaces section below, the proposed system does not replace the VHC database itself, nor the federal reporting systems, but exchanges data with them, and separates out the reporting functions, retiring DI and OBIEE (for purposes of this project; we understand these components may continue to be used for other State purposes outside the scope of this review).

To summarize, we think the proposed architecture is very well chosen, is basically a modernization of the current system to state-of-the-art components, is well-aligned with State preferences, and appropriately puts the responsibility for system performance on the SaaS vendor.

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

6.1 STATE'S ENTERPRISE ARCHITECTURE GUIDING PRINCIPLES

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

The solution is well-chosen to fill current federal and State reporting and analysis needs, and to accommodate changes and additions to those requirements. The State received approval of the draft contract on October 26, 2021. At a later stage of implementation, CMS review of the changes in security boundary will be required.

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

The proposed solution would increase State IT autonomy, i.e., reduce dependence on the Oracle product "ecosystem" and allow the State to more broadly choose the tools and solutions for needs that may arise.

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

We expect that the proposed solution would allow for more efficient and timely data analysis and reporting. This increased task throughput would allow the State to more effectively meet federal reporting deadlines and perhaps expose opportunities for new analyses of data for internal State planning needs.

6.1.4 D. ASSESS IF THE TECHNOLOGY SOLUTION WILL OPTIMIZE PROCESS

The proposed project would allow State personnel to focus more on primary functions while reducing the need to dedicate State resources to software update and M&O tasks.

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

Please see section 11 Security, below.

6.2 SUSTAINABILITY

As this is a pure SaaS solution, throughout the lifecycle costs are predictable and updates are automatic and included. The State will not need to dedicate resources to accommodate a software company's upgrade and end-of-support schedules. The system is inherently scalable and the contract allows for transparent upsizing if State needs increase.

We understand that the State has a long-term project considering the creation of a Medicaid Data Warehouse (MDW) in conjunction with the Vermont Health Information Exchange. If that project is realized, the VHC reporting functions of the present proposed project might conceivably be incorporated. However, that MDW project is probably several years from possible completion. The draft contract for the present project is staged so the State has the option to continue or not in the latter years of the lifecycle. We therefore assess that there not a likely conflict with the present project.

6.3 HOW DOES THE SOLUTION COMPLY WITH THE ADS STRATEGIC GOALS ENUMERATED IN THE ADS STRATEGIC PLAN OF JANUARY 2020?

6.3.1 A. Leverage successes of others, learning best practices from outside Vermont

Vermont participates in the Enterprise Medicaid Systems Community (MESC) through its membership in the New England States Consortium Systems Organization (NESCSO). DVHA leadership communicates frequently with their counterparts in other states, as well as with the CMS personnel.

According to the vendor, at least 2 government entities employ a Snowflake-based solution similar to the proposed project, although not specifically for the same functions: California state government, and CMS. The vendor also listed 18 clients with which the vendor has had specific Snowflake experience, many also with the Tableau application.

6.3.2 B. Leverage shared services and cloud-based it, taking advantage of IT economies of scale

The proposed solution is purely cloud-based and SaaS. Snowflake's strength as a platform is its inherent dynamic scalability.

There is no shared-services component to this project.

6.3.3 C. Adapt the Vermont workforce to the evolving needs of State government

The project enhances existing State personnel expertise in more adaptable technologies, such as open standard SQL, increasing the flexibility of the workforce and reducing reliance on outsourced expertise.

6.3.4 D. Apply enterprise architecture principles to drive digital transformation based on business needs

The EA division of ADS conducted a focused Architecture Assessment of the VHC SaaS Reporting Solution as proposed. The report compared architecture of the current system with the proposed system, and specifically looked at the Snowflake data warehouse platform. The report is quite favorable to the proposed system, and states that it would satisfy these State architecture concerns:

- Satisfies the States Technology Strategy to move from on-premises hosted application and solutions to Cloud / SaaS based solutions
- SaaS architecture – Open source.
- Will allow for greater business self-service for report generation and reporting.
- Will allow for adoption of State of Vermont Ecosystem applications and services.
- Snowflake, as a data curation and reporting tool is currently in use in other States.
- Decouples VHC’s Customer Relationship Management (CRM) application, thus allowing SoV to enhance CRM capabilities in the future by integrating proposed solution with the State’s Salesforce platform.
- Can use existing SoV partnership with AWS
- Solution supports SaaS Tableau already in use in HAEEU

6.3.5 E. Couple IT with business process optimization, to improve overall productivity and customer service

Because of limitations with the existing reporting system, as described above, the State has experienced challenges in meeting reporting deadlines for required federal reports. In a sense, the Internal Revenue Service (IRS) and CMS are “customers” of the State for purposes of this project. We assess that the proposed system is very likely to improve the timeliness of these reports. Overall productivity is addressed in 6.1.4, above.

6.3.6 F. Optimize IT investments via sound project management

Please see Section 7.3.1 Project Management, below.

6.3.7 G. Manage data commensurate with risk

The proposed system as implemented would be certified in compliance with the appropriate risk standards (MARS-E), as described in 6.5 Disaster Recovery, below.

6.3.8 H. Incorporate metrics to measure outcomes

The project hopes to realize measurable outcomes in these areas:

- Improved timeliness of accurate data reporting.
- Reduction of vendor Specification Orders (SO's) due to reduced need to support Oracle products
- Proportionately increased task completion by SoV staff due to reduced need to support Oracle projects.

The achievement of these outcomes will likely be evident if the project is successful. We have not seen any baseline data to measure the outcomes, but it is available historically should the need ever arise to justify the project post-hoc.

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

Tableau is capable of producing Section 508-conformant reports assuming the user follows appropriate accessibility guidelines. Tableau publishes an Accessibility Conformance Report for each Tableau version, based on the Voluntary Product Accessibility Template (VPAT) from the Information Technology Industry Council, addressing how Tableau addresses each aspect of the Section 508 requirements.

6.5 DISASTER RECOVERY

The system as implemented will be reviewed, tested, and certified for compliance with CMS Minimum Acceptable Risk Standards for Exchanges (MARS-E). MARS-E is based on NIST Special Publication 800-53, which addresses the broad spectrum of technical, operational, and management standards, including disaster recovery. The hosting solution elected by the State will meet MARS-E standards for disaster recovery.

6.6 DATA RETENTION

As this project is based on a data warehouse and is not the database of record for the data employed, we believe that State data retention periods would not apply. Regardless of this, the proposed system stores all transaction logs for an indefinite period, so the State can retain this information as long as it desires. (The draft contract includes a stipulation that State storage need increase exceeding 10TB in a calendar year may result in increased M&O costs for storage and/or Tableau licenses, not to exceed \$10,000/month.)

6.7 SERVICE LEVEL AGREEMENT

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

The draft contract Attachment A – Exhibit 1, Service Level Agreements includes the following line items and definitions for required Service Levels applying to the system after the Go-Live date:

- 1095A Federal Reporting Service Level
 - Each year the IRS requires 1095A End of Month (EOM) and End of Year (EOY) files be Successfully Submitted by specific Due Dates. Contractor shall achieve Successful Submission by the Due Dates. These Due Dates are typically between January and June of each year but are subject to be delayed by notification of the IRS.
- 1095B Federal Reporting Service Level
 - Each year the IRS requires 1095B EOY file be Successfully Submitted by a specific Due Date. Contractor shall achieve Successful Submission by the Due Date. This Due Date is typically between January and March of each year but are subject to be delayed by notification of the IRS.
- CMS PBPR Federal Reporting
 - Each year CMS requires that a CMS Policy-Based Payment Reporting (PBPR) SBMI [State-based Marketplace Inbound] federal report be Successfully Submitted by specific Due Dates. This Due Date is typically the 10th of each month. Contractor shall achieve Successful Submission by the Due Dates.
- Data Refresh Performance
 - Completed data refreshes are required for federal and operational reporting functionality to be current and accurate. Contractor shall successfully complete data refreshes between the State’s hosted databases and the Contractor managed Reporting Platform.
- Disaster Recovery RTO [Recovery Time Objective] and RPO [Recovery Point Objective]
 - In the event of a Disaster, Contractor shall meet the RPO and RTO to recover the Production, Stage, and Development Environments, as specified in the DRP.
 - Service Level Metric for Production Environments:
 - Recovery Time Objective = 24 Hours
 - Recovery Point Objective = 24 Hours
 - Service Level Metric for all Lower Environments
 - Recovery Time Objective = 48 Hours
 - Recovery Point Objective = 48 Hours
- Plan of Action and Milestones (POA&M) Remediation
 - The POA&M is a remedial action plan which documents weaknesses, risk rankings, and planned progress milestones towards remediation activities. Contractor shall follow

CMS guidance for POA&M documentation Contractor shall complete the exercise prescribed by CMS for every newly identified POA&M item during the term of the Contract within Contractor's responsibility.

The draft contract goes into further detail with each of these, including appropriate definitions, prerequisites, and service level credits for failure to meet agreed service levels.

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

In general, the SLA as attached to the draft contract is extensive, specific, and appropriate in term to the services described. We commend the State for including specific and appropriate remedies (Service Level Credits) for measurable failure of service delivery. We believe this both incentivizes vendor performance and provides a metric-based foundation for discussion if the service is not meeting State needs at any point.

We do note that there is no service level requirement for availability (uptime), as we often see in a SaaS implementation. Although there is a definition of High-Availability in Section 3 of the draft contract, as "99.999% up-time between the hours of 8-6PM EST Monday through Friday," we have not seen an uptime requirement.

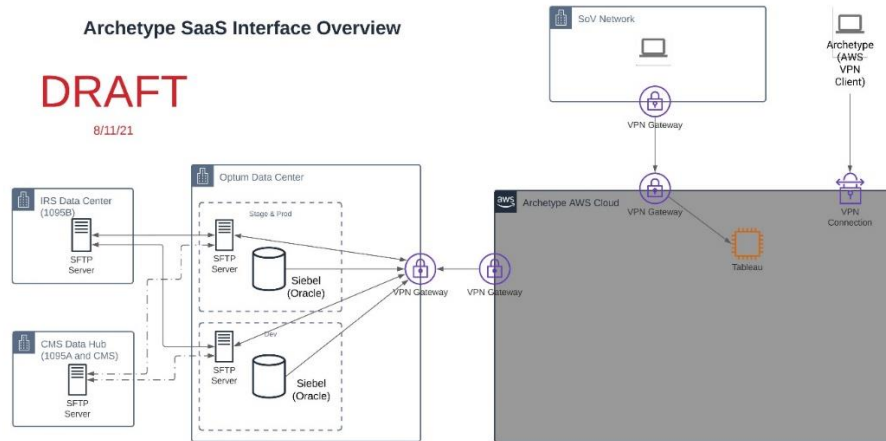
6.8 SYSTEM INTEGRATION

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

Yes, this is the explicit function of the proposed project.

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

The diagram below, provided by the vendor to the State, shows a high-level draft view of the interfaces for the proposed system. It also shows some interfaces external to the reporting system *per-se* for clarity. Note that the reporting system does not deliver reports directly to the Federal Data Services Hub (FDSH) for IRS and CMS data. Instead, it delivers the reports to the SFTP servers in the VHC system, which in turn continue to deliver the reports to federal agencies as before.



Additional Comments on Architecture:

Some of the database components used by the State to exchange data with the proposed system, as shown in the diagram above, will soon reach their end of support (EOS) date. The State does not wish to upgrade those components until the proposed SaaS project implementation effort is completed, because that would require the State to update additional databases and do additional validations. Since the SaaS system will not be validated against the updated system, data transfer issues could arise when the database update actually occurs. We identify this as a Risk **RISK_ID# _R2_** to system performance.

The State's response is to Mitigate:

"Do not upgrade until SaaS effort is completed. Then, when upgrade takes place, facilitate additional QA and coordination between vendors to assure no issues with data access using the new reporting system. At this point, State assesses that updates to the database appear minor, which should minimize compatibility issues."

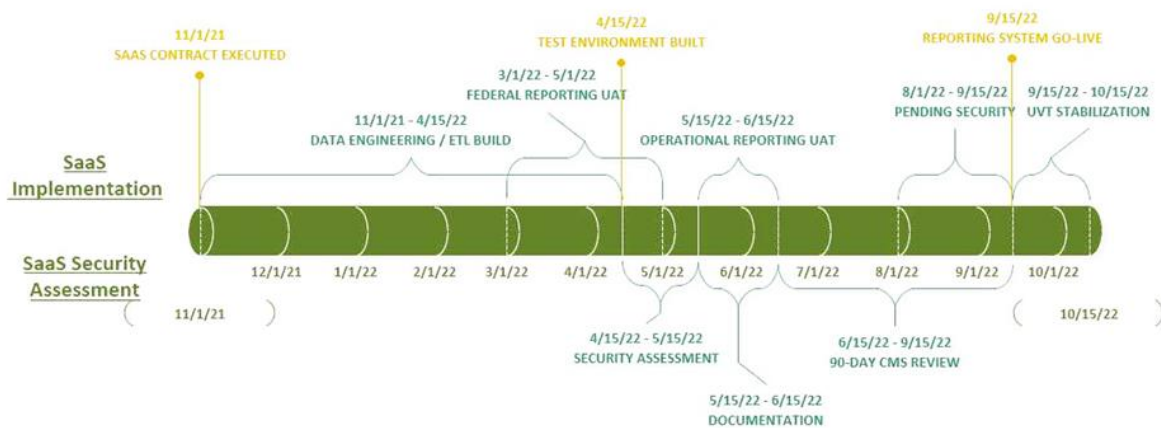
We concur with this mitigation.

7 ASSESSMENT OF IMPLEMENTATION PLAN

In our review of project documentation, including the draft contract, it emerged that there was no explicit implementation plan for the SaaS solution. Section (Task) 5.3.4 does contain a single graphic representation of a high-level timeline. Several of the labels on this graphic are not referenced elsewhere in the contract draft. The graphic is included at the end of Section 5.3.4, and refers to “these activities,” but Task 5.3.4 refers to a period beginning with SaaS Go-live and primarily refers to contingency triggers, and in the DDI Budget table several pages later, this is also the case. Aside from that graphic, the contract draft does not appear to have a timeline for SaaS Implementation with phases/milestones and corresponding dates or date ranges. The DDI Budget table includes SaaS Implementation but does not refer to any contract Task number. We identified this as a risk **RISK_ID# R5**. In response, the State chooses to mitigate, by drafting a clause in the Deliverables section of the contract that stipulates a project/implementation plan will be created within 2 weeks upon execution of the contract.

We concur, and assess this to be a sufficient response, given that the State has reasonable confidence in, and experience with, the vendor; and that the proposed project is tight pressure to complete on time (see 7.1 below).

The project does not currently have a Project Charter, although we expect the team will develop one now that there is an assigned project manager in place. This, combined with the above, means there is no official list of phases, milestones, and dates, aside from the graphic in the contract, shown below. We recommend and expect that, with a project manager now in place, a project Charter will be developed to the State template.



Using the above graphic, we can extract the timeline table with dates as below. (This table is duplicated in Section 4.4, above)

Note that the timeline start, which is the anticipated date of contract execution, has shifted by one month, (Dec. 1, 2021 rather than Nov. 1, 2021) while the anticipated Go-Live date has not, which necessarily compresses the timeline shown. The table uses the original dates.

Table 9 - Implementation Timeline

Milestone / Task	Date
SaaS Contract Executed	11/1/2021
Data Engineering / ETL build begins	11/1/2021
Federal Reporting UAT begins	3/1/2022
Data Engineering / ETL build completed	4/15/2022
Test Environment Built	4/15/2022
Security Assessment begins	4/15/2022
Federal Reporting UAT completed	5/1/2022
Security Assessment completed	5/15/2022
Operational Reporting UAT begins	5/15/2022
Documentation begins	5/15/2022
Operational Reporting UAT completed	6/15/2022
Documentation completed	6/15/2022
90-day CMS Review window begins	6/15/2022
Pending Security period begins	8/1/2022
90-day CMS Review window ends	9/15/2022
Pending Security period ends	9/15/2022
Reporting System Go-Live	9/15/2022
UVT Stabilization begins	10/15/2022
UVT Stabilization completed	10/15/2022

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

7.1 THE REALITY OF THE IMPLEMENTATION TIMETABLE

Given the timeline as described above and the good working relationship between the State and the vendor, we think the implementation timetable is realistic. However, it is very tight due to multiple pressures and constraints, including:

- Oracle will end extended support for the Oracle Database component on March 31, 2022. ADS Chief Information Security Officer (CISO) office has agreed to a maximum of 6 months in which it can remain unsupported while the new solution is being implemented. An upgrade is undesirable and would be very costly in time and resources. (See Issue1 below)
- The relevant VHC open enrollment period begins November 1, 2022, and complications would arise were the new system not fully up and running, well-tested, and with State personnel confident in its operation.
- The vendor's proposed timeline has already been compressed by a month.
- The CMS review period, which is embedded in the implementation timeline, has a maximum length of 90 days. It might in fact take less time, but the State wisely must assume the maximum.
- The extent of security documentation and remediation that will be required by CMS is unknown at this point (see R4 below)

We have combined these findings to identify an overall risk **RISK_ID#_R1** of project delay. The State accepts the risk and responds in detail:

"Accept.

The IE&E Steering Committee, which includes ADS security, reviewed the proposed timeline to implement the Reporting SaaS project. After review, they agreed there is not enough time to pursue an Oracle upgrade after Reporting SaaS implementation and before Open Enrollment code freeze. Based on this the Oracle upgrades were delayed until after Open Enrollment to quarter 1 to quarter 2 of 2023.

While this isn't an optimal situation, it ultimately was a business decision based on assessed risks and impacts to State workers and end users of the application during their busiest time of year.

It was found to upgrade the Oracle Database version for VHC which is reaching end of support, the Siebel component also must be upgraded due to the new version of Database being incompatible with the existing version of Siebel.

The State is actively reviewing the option of pursuing part of the upgrade, the required Siebel component, prior to 2023 to reduce the scope of the Oracle database upgrade effort. The State has previously had risks related to out of support Oracle products in VHC and is familiar with the resulting impacts.

To the note of the vendor's proposed timeline being compressed, this will be reviewed further upon receipt of and review of the project plan with the vendor and adjust accordingly."

We acknowledge that the project team, the vendor, and relevant State leadership have all been paying close attention to timeline pressures throughout project development. Assessment of all these issues has been ongoing in the regular project status meetings. We find that the State has the knowledge and resources to optimize the likelihood of success. Given the significant benefits of this project, we assess that the State's acceptance of this risk is appropriate.

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

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

We found strong enthusiasm and readiness at all levels of this project. It would modernize reporting tools, building on existing staff strengths while removing many distractions. It would improve business processes and address leadership worries (such as reporting timeliness). The organization structure is appropriate and already in place.

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

7.3.1 A. PROJECT MANAGEMENT

Section 4 of the draft contract concerns project management, and lists the following deliverables in Section 4.1.1 "Contractor Project Manager" for M&O of the SaaS solution:

- Configuration Management Plan
- System Logical Design
- Network Diagram Manual
- Disaster Recovery Plan
- Availability Plan
- Baseline Configuration Model
- System Security Plan (SSP and Workbook Documentation)
- System Security Assessment and Auditing
- Incident Response Plan (IRP)
- M&O Manual

The following deliverables are listed for DDI of the SaaS solution:

- Release Management Plan
- Services Portal
- Change Requests

- Specification Order
- Project Management Plan
- Requirements Document
- Test Plans
- Certificate of Acceptance
- Formal Acceptance Sign Off

All of these project management deliverables have descriptions in the draft contract and are to be delivered “as required.” The descriptions are each sufficiently detailed, and the deliverables as a whole are appropriate to the project and reasonably comprehensive.

The State has indicated that there have been some performance issues with the vendor in the past; although performance has improved since, given the tight timeframe of the implementation, we suggest that it will be very important to hold the vendor strictly to the PM deliverables defined in the draft contract.

7.3.2 B. TRAINING

The vendor will provide the following Migration Support Services

- Provide documentation and training materials on how to log into the SaaS Reporting Solution.
- Provide the State with Tableau published documentation and training materials on how to operate the software including, but not limited to:
 - Dashboard creation;
 - Report creation;
 - Exporting reports;
 - Publishing reports; and
 - Process automation.
- Provide working sessions and knowledge transfer sessions to the DVHA HAEEU reporting team for the following:
 - Transitioning DVHA HAEEU operational reports from OBIEE to the SaaS reporting solution, such as providing demos, answering questions.
 - Provide basic training on how to optimize transformations into Tableau.
 - Provide knowledge transfer sessions when Tableau has functional changes that impact how the state creates, publishes, or sends reports/dashboards.

7.3.3 C. TESTING

Testing takes place at various times and by various entities. The vendor and State will conduct User Acceptance Testing and User Validation Testing. The State security team will conduct assessments

informed by the CMS Security Review. A third-party security vendor will conduct code scans and perform penetration tests.

The contract delineates testing responsibilities for State and vendors clearly and adequately. Both DVHA and State are well-experienced and proficient in all these processes.

7.3.4 D. DESIGN

The DDI project management deliverables in the draft contract require design deliverables coupled with State approval that are comprehensive and appropriate to an implementation like this.

7.3.5 E. CONVERSION (IF APPLICABLE)

N/A

7.3.6 F. IMPLEMENTATION PLANNING

Please see the general assessment at the beginning of Section 7, above.

7.3.7 G. IMPLEMENTATION

Please see the general assessment at the beginning of Section 7, above

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

The State has assigned a newly hired State of Vermont project manager, who began working with the State only this past week. While we have not therefore had the opportunity to assess this project manager's abilities in person, we have reviewed his resume and qualifications. Both are extensive and appropriate to this project. We would expect his performance to meet all State standards.

Additional Comments on Implementation Plan:

none

8 COST ANALYSIS AND MODEL FOR BENEFIT ANALYSIS

8.1 ANALYSIS DESCRIPTION:

Provide a narrative summary of the cost benefit analysis conducted.

Please see Section 10, Impact Analysis on Net Operating Costs, below, for tangible cost/benefit analysis.

8.2 ASSUMPTIONS:

List any assumptions made in your analysis.

Please see Section 10, Impact Analysis on Net Operating Costs, below.

8.3 FUNDING:

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

Federal Financial Participation will cover costs at the following rates which are subject to change based on approved allocations:

Implementation:

- 67.9% Federal
- 32.1% State

Operating:

- 71.11% Federal
- 28.89% State

8.4 TANGIBLE COSTS & BENEFITS:

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

- **Tangible Cost: \$6,474,941.80 net cost over the project lifecycle, including both federal and State funds.**

Note: the computation of the total cost above includes this tangible benefit:

- **Tangible Benefit: \$3,790,722.00**
Combination of Archetype's quoted component upgrade costs (\$235,000) and a projected full stack upgrade cost similar to the OBIEE to OFE effort (\$3,555,722) due by 2025.

8.5 INTANGIBLE COSTS & BENEFITS:

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

- A modernized, state-of-the-art reporting system likely to result in more efficiently produced reports, facilitating State decision making, planning, and understanding related to VHC, ultimately benefiting Vermont citizens.
- Focusing staff work on their primary skill sets resulting from a reduction in State resources dedicated to M&O tasks related to software upgrades and by adopting a system using open-source SQL.
- Improved report timeliness due to scalable data warehouse with improved loading times.
- Better alignment with State IT strategic direction by employing a cloud-hosted SaaS solution.
- Increased State IT autonomy by eliminating (for this project) a dependence on Oracle product ecosystem with related unresolved, intermittent, defects.
- Reduction of reliance on vendor expertise as the state does not have Oracle reporting tool experts on staff.

8.6 COSTS VS. BENEFITS:

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

Emphatically yes. There is significant monetary cost, particularly for the implementation. However, it is quite reasonable for the work to be performed. The benefits to be gained address persistent business problems encountered with the current system.

8.7 IT ABC FORM REVIEW:

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

The IT ABC form was very well-populated, with several team members providing detailed cost information for both current and proposed systems. Team-entered project costs, goals, constraints, risks, and benefits are consistent with the project as currently realized.

However, we did find a very significant cost error in the Section 7 Current Solution Costs. This resulted not from an erroneous entry by a person, but rather from the way that the form automatically generates totals. Because of this, **a well-justified one-time cost avoidance of \$3,790,722.00 was multiplied by the project lifecycle. This resulted in a \$15,162,888 overstatement of lifecycle total current costs.** There is no proper way to enter one-time cost savings/avoidance in Section 7 without resorting to external calculations to amortize the cost over the lifecycle.

We strongly urge the State to update the IT ABC form to allow entry of one-time cost savings/avoidance in Section 7.

Additional Comments on the Cost Benefit Analysis:

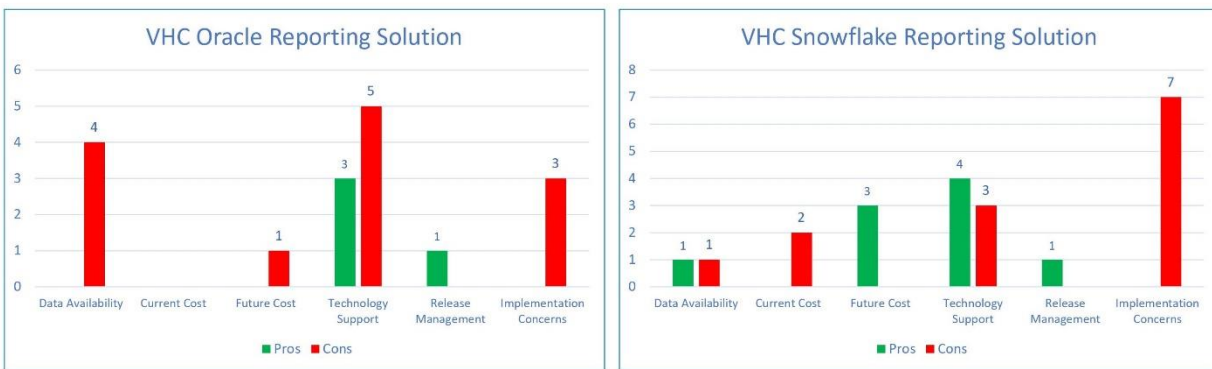
none

9 ANALYSIS OF ALTERNATIVES

In the run up to this project, in June of 2021 an ADS team conducted an in-depth, documented comparison of the current system with the proposed system as it was understood at the time, including historical data points. The analysis covered Data Availability, Current and Future Costs, Technology Support, Release Management, and Implementation Concerns. Detailed Pros and Cons were developed and discussed, with the aim of forming a consensus opinion.

Both alternatives had positive and negative aspects, but on balance a consensus emerged to go forward with the project as it now exists.

The charts below, extracted from the comparison presentation, show the summary scores for each solution. (Red is Con, Green is Pro.) While both solutions had an equal number of negative concerns (13), the SaaS Snowflake solution had more than twice as many positive aspects (9 to 4).



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

The State does not have internal expertise or other resources to design, develop, implement, and maintain a comparable system in-house.

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

The current system is not compatible the State's intended CRM strategy. When migrating to a new CRM, the existing reporting solution would need extensive modification or a new solution

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

N/A

10 IMPACT ANALYSIS ON NET OPERATING COSTS

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

Table 10 - Net Operating Cost Impact

	Procurement	FY1	FY2	FY3	FY4	FY5	Lifecycle Total
Federal Share	\$2,479,178.38	\$983,376.21	\$2,178,024.21	\$2,178,024.21	\$2,178,024.21	\$2,178,024.21	\$12,174,651.42
State Share	\$1,172,041.62	\$399,518.19	\$884,870.19	\$884,870.19	\$884,870.19	\$884,870.19	\$5,111,040.58
Total Project Cost	\$3,651,220.00	\$1,382,894.40	\$3,062,894.40	\$3,062,894.40	\$3,062,894.40	\$3,062,894.40	\$17,285,692.00
Current Cost (Averaged) *		\$2,162,150.04	\$2,162,150.04	\$2,162,150.04	\$2,162,150.04	\$2,162,150.04	\$10,810,750.20

** The costs of the required database upgrade and OBIEE tool upgrades needed to stay in vendor support and MARS-E compliance are included in the averaged current annual cost, i.e., ((current annual cost X 5) + upgrades cost) / 5*

Note: State and federal share are estimates based on current approved allocations and subject to change.

Net total operating cost impact of the project:

(State + FFP) over the lifecycle (\$17,285,692.00) minus the lifecycle total at current cost (\$10,810,750.20) = **\$6,474,941.80 net cost**

State funds only impact over the same period, assuming same FFP = **\$1,987,814.85 net cost**

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

Proposed and current cost details and totals may be found in Attachment 1, Cost Spreadsheet. Federal and State totals are broken out by using the federal/state figures listed in Section 10.3, below. Cumulative totals for State Agency impact in section 10.4, below are computed using the same figures.

Assumptions:

- State estimates of State personnel for proposed project lifecycle are accurate
- State estimates of State personnel for current system are accurate
- Federal Financial Participation (FFP) is stated correctly
- State estimate of costs of Oracle upgrades that would be necessary with current system are accurate
- M&O costs for the current system would remain the same for the lifecycle

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

Federal Financial Participation will cover costs at the following rates:

Implementation:

- 67.9% Federal
- 32.1% State

Operating:

- 71.11% Federal
- 28.89% State

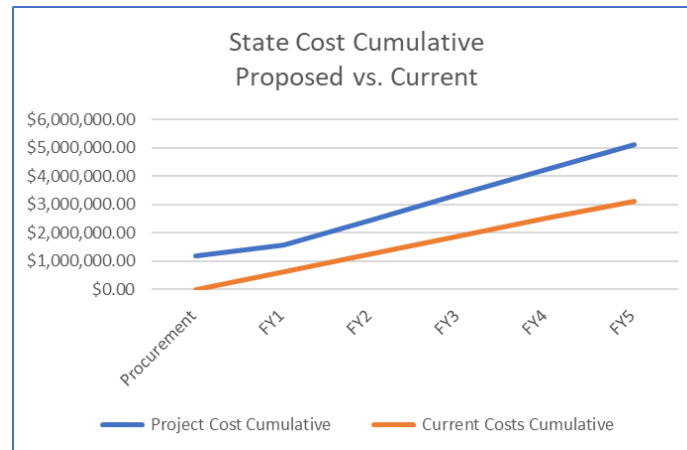
10.4 WHAT IS THE BREAK-EVEN POINT FOR THIS IT ACTIVITY (CONSIDERING IMPLEMENTATION AND ON-GOING OPERATING COSTS)?

The following table shows the cumulative State-only costs of the proposed project compared to the current system. (Including FFP would result in a similar conclusion.)

Table 11 - Comparison of Cumulative Cost to State Agency

	Procurement	FY1	FY2	FY3	FY4	FY5
Project Cost Cumulative	\$1,172,041.62	\$1,571,559.81	\$2,456,430.00	\$3,341,300.20	\$4,226,170.39	\$5,111,040.58
Current Costs Cumulative (Averaged)*	\$0.00	\$624,645.15	\$1,249,290.29	\$1,873,935.44	\$2,498,580.59	\$3,123,225.73
Cumulative Cost Savings	-\$1,172,041.62	-\$946,914.67	-\$1,207,139.71	-\$1,467,364.76	-\$1,727,589.80	-\$1,987,814.85

** The State portion of the costs of the required database upgrade and OBIEE tool upgrades needed to stay in vendor support and MARS-E compliance are included in the averaged current annual cost, i.e., ((current annual cost X 5) + upgrades cost) / 5*



There is no breakeven point for this project. This because new project annual costs are \$564,744.36 higher than current, and acquisition costs – absent from the current system – total \$3,651,220.00.

11 SECURITY ASSESSMENT

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

Affordable Care Act (ACA) exchanges such as Vermont Health Connect, and associated data analysis systems, have stringent security and privacy requirements, overseen by CMS.

The existing reporting system is hosted on State and Optum hosting environments. The proposed SaaS system will be hosting by a new vendor in a different environment. The expanded security boundary requires review and approval by CMS. When the new system is nearing completion, the State will conduct a Security Impact Analysis (SIA) related to the changes and report the result to CMS via a Change Notification Form for Administering Entity Affordable Care Act Systems. CMS will respond within 90 days and will identify any testing and/or documentation required.

This maximum 90-day period is accounted for in the implementation timeline as described in Section 7, above. The State cannot know in advance how much of this 90-day window the CMS will actually use, nor what testing/documentation will be required. We identify this as a Risk **RISK_ID#_R4** to the project's implementation timeline.

The State's response to this risk is to Mitigate:

"Set clear expectations for 'worst case' expectations and prepare early to complete this documentation. Ensure Archetype is familiar with MARS-E and other security requirements. Embed those requirements in the contract amendment."

We concur that this is the appropriate response, and the State is already acting on this mitigation.

Aside from the assessment, testing, and documentation performed by the State during implementation, the Security Division of ADS will need to devote some extra resources to the new environment and platform in an ongoing way. This additional resource expenditure is accounted for in the lifecycle project cost.

The current draft contract states that production data cannot be transferred, stored or accessed outside the US. This assures compliance with federal and State law concerning Protected Health Information (PHI). A key Archetype staff member is located in France. This clause is a point of negotiation between Archetype and the State. Delays in resolving this point of negotiation could further delay completion of overall negotiations and thereby impact the project timeline. We identified this as a risk **RISK_ID#_R3** to the project's timeline.

The State's response is to Mitigate:

"Language was added to the SaaS contract outlining the obligation that offshore resources who were granted a waiver cannot download/store data locally.

Archetype will have to request a waiver for access to the Production environment for their staff member who is located outside of the continental US, and that waiver will only be approved if the technical controls mentioned below have been met. The State will require ongoing periodic evidence-based verification from the vendor that the terms of the waiver are being met.

Archetype will have to use technical controls as part of the new solution to prevent staff who would be outside of the continental US from downloading, printing, saving, processing, and storing data from the Production environment locally onto their computer. Archetype has the ability to mask, sensitive data (PII) or any data down to the column level based on a user's role. There are also capabilities within the cloud solution to prevent downloading, saving, and printing of sensitive data. Processing of data will only happen in the secure cloud environment.

Process wise if an Archetype user is travelling outside the continental United States, Archetype would alert the State prior to any travel, and the Archetype staff member would be provisioned for an "offshore" role w/ these restrictions until they return."

We concur with this mitigation.

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

Most of the controls in a cloud environment are shared between the cloud provider and the consumer.

11.2 WHAT METHOD DOES THE SYSTEM USE FOR DATA CLASSIFICATION?

The proposed system uses compliance standards for classifying data, such as Personally Identifiable Information (PII) and Protected Health Information (PHI).

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

This is defined contractually in the draft contract Attachment D: Information Technology System Implementation Terms and Conditions, section 6.2, **Security Breach Notice and Reporting**.

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

Yes. This is contractually required and comprises vulnerability testing by both State and vendor, monitoring by the vendor, and comprehensive and detailed incident reporting and problem management services with associated tracking.

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

The proposed system hosting environment employs AES 256-bit encryption meeting Federal Information Processing Standards (FIPS) 140-2.

Within the Snowflake data warehouse, as data is added, it is compressed using AES-256 strong encryption

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

The draft contract details the following security services and identifies required reports and timeframes for each.

- Penetration Testing
- Vulnerability Scanning
- Security Baseline Monitoring
- Threat and Vulnerability Remediation (TVM) tracking

Application-level penetration testing and web-based dynamic code scanning will be performed by the State's third-party security vendor.

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

The vendor will comply with security standards set forth in the CMS Minimum Acceptable Risk Standards for Exchanges (MARS-E) standards. Attestation of compliance is required every 3 years (via draft contract and CMS requirements).

The proposed cloud hosting provider, Amazon Web Services (AWS) is FedRAMP moderate. MARS-E aligns with this. CMS does not require the cloud provider to be "MARS-E" compliant, but rather it must be FedRAMP. Snowflake makes security & compliance reports available to customers under a Non-Disclosure Agreement (NDA). Currently listed available attestations relevant to the proposed project include:

- FedRAMP Moderate
- SOC 2 Type II
- SOC 2 Type I
- HITRUST / HIPAA

12 RISK ASSESSMENT & RISK REGISTER

The risks identified throughout this review are collected below, along with an assessment of their significance, a description of the State response and timing, and our evaluation of the State response.

12.1.1 ADDITIONAL COMMENTS ON RISK

The project team identified the following issue and reported its status to this reviewer:

Issue:

In order to limit the amount of time in which the VHC Oracle database may be out of support, the contract must be executed by Nov 2021. In order to ensure execution on that timeline, the contract must be submitted to CMS by Sept 2021. A day for day slip in delivery to CMS can cause a day for day slip in execution of the contract, assuming CMS takes the full review period allotted. This was previously recognized as a risk and was converted to an issue when negotiations exceeded the 9/1 target to submit the amendment to CMS.

State response and status:

"11/1/2021 - CMS has approved the contract 10/26. Currently waiting on completion of the Independent Review before executing the contract.

Accept:

Submitted the amendment to DVHA leadership on 9/16 for submission to CMS. The amendment was submitted to CMS on 9/23."

12.1.2 RISK REGISTER

The following table explains the Risk Register components:

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

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

Risk ID: R1	Rating:	35	
	Likelihood:	5	
	Impact:	7	
Finding:	<p>"The implementation phase of the project is highly time-sensitive, due to several factors, including:</p> <p>OBIEE is the existing reporting component in VHC. In May 2022, it will no longer be supported. ADS CISO office has agreed to a maximum of 6 months in which OBIEE can remain unsupported while the new solution is being implemented. An upgrade is undesirable and would be very costly in time and resources. (See Issue1 below)</p> <p>The relevant VHC open enrollment period begins November 1, 2022, and complications would arise were the new system not fully up and running, well-tested, and with State personnel confident in its operation.</p> <p>The vendor's proposed timeline has already been compressed by a month.</p> <p>The CMS review period, which is embedded in the implementation timeline, has a maximum length of 90 days. It might in fact take less time, but the State wisely must assume the maximum.</p> <p>The extent of security documentation and remediation that will be required by CMS is unknown at this point (see R4 below) "</p>		
Risk Of:	project delay, increased cost		
Risk domains:	schedule, cost, State reputation		
State's Planned Risk Response:	<p>"Accept.</p> <p>The IE&E Steering Committee, which includes ADS security, reviewed the proposed timeline to implement the Reporting SaaS project. After review, they agreed there is not enough time to pursue an Oracle upgrade after Reporting SaaS implementation and before Open Enrollment code freeze. Based on this the</p>		

	<p>Oracle upgrades were delayed until after Open Enrollment to quarter 1 to quarter 2 of 2023.</p> <p>While this isn't an optimal situation, it ultimately was a business decision based on assessed risks and impacts to State workers and end users of the application during their busiest time of year.</p> <p>It was found to upgrade the Oracle Database version for VHC which is reaching end of support, the Siebel component also must be upgraded due to the new version of Database being incompatible with the existing version of Siebel.</p> <p>The State is actively reviewing the option of pursuing part of the upgrade, the required Siebel component, prior to 2023 to reduce the scope of the Oracle database upgrade effort. The State has previously had risks related to out of support Oracle products in VHC and is familiar with the resulting impacts.</p> <p>To the note of the vendor's proposed timeline being compressed, this will be reviewed further upon receipt of and review of the project plan with the vendor and adjust accordingly."</p>
<p>Reviewer's Assessment of State's Planned Response</p>	<p>Concur. The likely benefits of the project outweigh the possible risk of delay.</p>

Risk ID: R2	Rating:	15	
	Likelihood:	3	
	Impact:	5	
Finding:	The design of the push or pull mechanism to send data from the VHC system to the reporting cloud solution will be done on the current 12c Database version. Archetype will be implementing the transfer of VHC data for the reporting solution from Oracle database version 12c (current version). Not validating it against the known required future version (19c) could cause issues with the data transfer when that occurs.		
Risk Of:	Ability to validate push/pull mechanism for data		
Risk domains:	architecture		
State's Planned Risk Response:	<p>"Mitigate:</p> <p>Do not upgrade until SaaS effort is completed. Then, when upgrade takes place, facilitate additional QA and coordination between vendors to assure no issues with data access using the new reporting system. At this point, State assesses that updates to the database appear minor, which should minimize compatibility issues."</p>		
Reviewer's Assessment of State's Planned Response	Concur.		

Risk ID: R3	Rating:	21	
	Likelihood:	3	
	Impact:	7	
Finding:	The current draft Statement of Work (SOW) states that production data cannot be transferred, stored or accessed outside the US. A key Archetype staff member is located in France. This clause is a point of negotiation between Archetype and the State. Delays in resolving this point of negotiation could further delay completion of overall negotiations and thereby impact the project timeline.		
Risk Of:	Non-compliance with off-shore resources & data access requirements		
Risk domains:	compliance		
State's Planned Risk Response:	<p>Mitigate: Language was added to the SaaS contract outlining the obligation that offshore resources who were granted a waiver cannot download/store data locally.</p> <p>Archetype will have to request a waiver for access to the Production environment for their staff member who is located outside of the continental US, and that waiver will only be approved if the technical controls mentioned below have been met.</p> <p>Archetype will have to use technical controls as part of the new solution to prevent staff who would be outside of the continental US from downloading, printing, saving, processing, and storing data from the Production environment locally onto their computer. Archetype has the ability to mask, sensitive data (PII) or any data down to the column level based on a user's role. There are also capabilities within the cloud solution to prevent downloading, saving, and printing of sensitive data. Processing of data will only happen in the secure cloud environment.</p> <p>Process wise if an Archetype user is travelling outside the continental United States, Archetype would alert the State prior to any travel, and the Archetype staff member would be provisioned for an "offshore" role w/ these restrictions until they return</p>		
Reviewer's Assessment of State's Planned Response	Concur.		

Risk ID: R4	Rating:	21	
	Likelihood:	3	
	Impact:	7	
Finding:	<p>CMS has stringent security requirements that apply to this project as the boundary for VHC is changing. Per SoV Security Director, these requirements occur over several phases and are an iterative process whereby the State provides information and CMS states their requirements, after which the State must provide updated documentation and respond to a third-party security assessment. It is unknown how much documentation CMS may require, so the State must assume the maximum. The more documentation required, the longer it will take to complete, and the greater the potential impact to the project implementation timeline. It is also unknown what may be uncovered by a security assessment and the extent of remediation required before the solution can "go-live".</p>		
Risk Of:	CMS Security Requirements extend implementation timeline		
Risk domains:	Security, compliance		
State's Planned Risk Response:	<p>"Mitigate: Set clear expectations for ""worst case"" expectations and prepare early to complete this documentation. Ensure Archetype is familiar with MARS-E and other security requirements. Embed those requirements in the contract amendment."</p>		
Reviewer's Assessment of State's Planned Response	<p>"Concur with State's approach. Draft contract including SLA contains appropriate references to compliance with CMS security requirements (MARS-E), OWASP, pen testing, code scan, etc., for both vendor and State."</p>		

Risk ID: R5	Rating:	21	
	Likelihood:	3	
	Impact:	7	
Finding:	<p>Section (Task) 5.3.4 does contain a single graphic representation of a high-level timeline. Several of the labels on this graphic are not referenced elsewhere in the contract draft. The timeline start, which is the anticipated date of contract execution, has shifted by one month, (Dec. 1, 2021 instead of Nov. 1, 2021) while the anticipated Go-Live date has not, which necessarily compresses the timeline shown. The graphic is included at the end of Section 5.3.4, and refers to “these activities,” but Task 5.3.4 refers to a period beginning with SaaS Go-live and primarily refers to contingency triggers, and in the DDI Budget table several pages later, this is also the case. Aside from that graphic, the contract draft does not appear to have a timeline for SaaS Implementation with phases/milestones and corresponding dates or date ranges. The DDI Budget table includes SaaS Implementation but does not refer to any contract Task number.</p>		
Risk Of:	<p>That the State will not be able to adequately assess and be assured of the progress, quality, and suitability of the solution as it is being implemented, potentially resulting in delay of the project.</p>		
Risk domains:	<p>schedule</p>		
State’s Planned Risk Response:	<p>11/2/2021 - Mitigate: Draft a clause in the Deliverables section of the contract that stipulates a project/implementation plan will be created within 2 weeks upon execution of the contract.</p>		
Reviewer’s Assessment of State’s Planned Response	<p>Concur.</p>		

13 ATTACHMENTS

Attachment 1 – Cost Spreadsheet

Attachment 2 – Risk Register

Attachment 1: VHC SaaS Cost Spreadsheet ver. 1.1a - Paul Garstki Consulting - 2021/Oct/27

Project Name:		Enterprise VoIP									Lifecycle Total @	Benefit
Description	Qty	Unit Price	Procurement	Maintenance FY1	Maintenance FY2	Maintenance FY3	Maintenance FY4	Maintenance FY5	Total	Current Annual Cost		
Fiscal Year												
Hardware												
none			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Hardware Total			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Services												
Vendor O&M SaaS ¹	0	\$ -	\$ -	\$ 1,200,000.00	\$ 2,880,000.00	\$ 2,880,000.00	\$ 2,880,000.00	\$ 2,880,000.00	\$ 12,720,000.00	\$ 1,133,590.60	\$ (11,586,409.40)	
[current hosting cost] ²			\$ -						\$ -	\$ 1,349,307.60	\$ 1,349,307.60	
[current component and full stack upgrade] ³										\$ 3,790,722.00	\$ 3,790,722.00	
State Personnel - ADS Contracted Labor												
VHC EA Support (DR support, issue support)	0	\$ -	\$ -	\$ 1,872.00	\$ 1,872.00	\$ 1,872.00	\$ 1,872.00	\$ 1,872.00	\$ 9,360.00	\$ 56,160.00	\$ 46,800.00	
Security Support	0	\$ -	\$ -	\$ 17,160.00	\$ 17,160.00	\$ 17,160.00	\$ 17,160.00	\$ 17,160.00	\$ 85,800.00	\$ -	\$ (85,800.00)	
Services Total			\$ -	\$ 1,219,032.00	\$ 2,899,032.00	\$ 2,899,032.00	\$ 2,899,032.00	\$ 2,899,032.00	\$ 12,815,160.00	\$ -	\$ -	
Consulting												
Independent Review			\$ 17,769.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,769.00	\$ -	\$ (17,769.00)	
Consulting Total			\$ 17,769.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,769.00	\$ -	\$ -	
Training												
none	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Training Total			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Implementation Services												
DDI VENDOR												
SaaS Implementation	0	\$ -	\$ 2,631,996.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,631,996.00	\$ -	\$ (2,631,996.00)	
Implementation Contingency	0	\$ -	\$ 526,400.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 526,400.00	\$ -	\$ (526,400.00)	
Other Contracted Professional Services for Implementation												
Enterprise Architect			\$ 3,600.00						\$ 3,600.00	\$ -	\$ (3,600.00)	
Security Assessment			\$ 71,120.00						\$ 71,120.00	\$ -	\$ (71,120.00)	
Implementation Services Total	0	\$ -	\$ 3,233,116.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,233,116.00	\$ -	\$ -	
Personnel - Additional												
State Personnel - ADS - Implementation												
ADS EPMO Project Oversight & Reporting			\$ 5,456.00						\$ 5,456.00	\$ -	\$ (5,456.00)	
ADS EPMO Project Manager for Implementation			\$ 45,760.00						\$ 45,760.00	\$ -	\$ (45,760.00)	
ADS Business Analyst for Implementation			\$ 22,000.00						\$ 22,000.00	\$ -	\$ (22,000.00)	
ADS Enterprise Architect Staff			\$ 1,760.00						\$ 1,760.00	\$ -	\$ (1,760.00)	
ADS Security Staff			\$ 6,160.00						\$ 6,160.00	\$ -	\$ (6,160.00)	
Other ADS IT Labor for Implementation			\$ 158,844.00						\$ 158,844.00	\$ -	\$ (158,844.00)	
State Personnel - ADS - M&O												
Contract Management & SME	0	\$ -	\$ -	\$ 43,680.00	\$ 43,680.00	\$ 43,680.00	\$ 43,680.00	\$ 43,680.00	\$ 218,400.00	\$ 131,040.00	\$ (87,360.00)	
Vendor Management & SME	0	\$ -	\$ -	\$ 43,680.00	\$ 43,680.00	\$ 43,680.00	\$ 43,680.00	\$ 43,680.00	\$ 218,400.00	\$ 131,040.00	\$ (87,360.00)	
M&O Oversight & Release Management	0	\$ -	\$ -	\$ 26,208.00	\$ 26,208.00	\$ 26,208.00	\$ 26,208.00	\$ 26,208.00	\$ 131,040.00	\$ 87,360.00	\$ (43,680.00)	
M&O Change Management (SOs not through EP MO)	0	\$ -	\$ -	\$ 10,483.20	\$ 10,483.20	\$ 10,483.20	\$ 10,483.20	\$ 10,483.20	\$ 52,416.00	\$ 52,416.00	\$ -	
EA Support (DR support, issue support)	0	\$ -	\$ -	\$ 915.20	\$ 915.20	\$ 915.20	\$ 915.20	\$ 915.20	\$ 4,576.00	\$ 27,456.00	\$ 22,880.00	
Security & Assessments	0	\$ -	\$ -	\$ 9,152.00	\$ 9,152.00	\$ 9,152.00	\$ 9,152.00	\$ 9,152.00	\$ 45,760.00	\$ -	\$ (45,760.00)	
State Personnel - DVHA/AHS												
SME	0	\$ -	\$ 16,315.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 50,115.00	\$ 67,600.00	\$ 17,485.00	
SME	0	\$ -	\$ 23,075.00	\$ 4,056.00	\$ 4,056.00	\$ 4,056.00	\$ 4,056.00	\$ 4,056.00	\$ 43,355.00	\$ 20,280.00	\$ (23,075.00)	
SME/testing	0	\$ -	\$ 25,350.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 59,150.00	\$ 54,080.00	\$ (5,070.00)	
SME/testing	0	\$ -	\$ 21,385.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 28,145.00	\$ 20,280.00	\$ (7,865.00)	
SME/testing	0	\$ -	\$ 21,385.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 28,145.00	\$ 20,280.00	\$ (7,865.00)	
SME/testing	0	\$ -	\$ 25,350.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 6,760.00	\$ 59,150.00	\$ 54,080.00	\$ (5,070.00)	
SME/testing	0	\$ -	\$ 21,385.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 28,145.00	\$ 20,280.00	\$ (7,865.00)	
SME/testing			\$ 6,110.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 1,352.00	\$ 12,870.00	\$ 4,056.00	\$ (8,814.00)	
One-time:			\$ 400,335.00	\$ 163,862.40	\$ 163,862.40	\$ 163,862.40	\$ 163,862.40	\$ 163,862.40	\$ 1,219,647.00	\$ 7,020,028.20	\$ (10,265,663.80)	
Grand Total			\$ 3,651,220.00	\$ 1,382,894.40	\$ 3,062,894.40	\$ 3,062,894.40	\$ 3,062,894.40	\$ 3,062,894.40	\$ 17,285,692.00	\$ 10,810,750.20	\$ (10,265,663.80)	

ATTACHMENT 2 - VHC SaaS INDEPENDENT REVIEW -- Risk and Issues Register -- version 1.2.a 2021/Nov/17 -- Paul E. Garstki, JD -- Paul Garstki Consulting

RISKS	What is the finding that leads to identifying a risk? (This is a highly condensed version that is explained more fully in the report narrative)	What are the risks implied by the finding?	What aspects of the project are at risk if the risk(s) are realized?	What is the State's response to the risk?	What is the Independent Reviewer recommending? (The Reviewer does not necessarily make a recommendation for each risk)	Is the State's response to this risk adequate?	Reviewer's assessment of likelihood risk is realized 1,3,5,7, or 10	Reviewer's assessment of impact if risk is realized 1,3,5,7, or 10	1-9 low
									10-48 medium
Note: Risk ID # list may have gaps, in order to maintain consistency with earlier drafts									
Risk #	Finding	risk of	risk domains	SOV response	Reviewer Recommendation	Reviewer Assessment of SOV Response	likelihood 1-10	impact 1-10	total rating
R1	<p>The implementation phase of the project is highly time-sensitive, due to several factors, including:</p> <p>OBIEE is the existing reporting component in VHC. In May 2022, it will no longer be supported. ADS CISO office has agreed to a maximum of 6 months in which OBIEE can remain unsupported while the new solution is being implemented. An upgrade is undesirable, and would be very costly in time and resources. (See Issue1 below)</p> <p>The relevant VHC open enrollment period begins November 1, 2022, and complications would arise were the new system not fully up and running, well-tested, and with State personnel confident in its operation.</p> <p>The vendor's proposed timeline has already been compressed by a month.</p> <p>The CMS review period, which is embedded in the implementation timeline, has a maximum length of 90 days. It might in fact take less time, but the State wisely must assume the maximum.</p> <p>The extent of security documentation and remediation that will be required by CMS is unknown at this point (see R4 below)</p>	project delay, increased cost	schedule, cost, State reputation	<p>Accept.</p> <p>The IE&E Steering Committee, which includes ADS security, reviewed the proposed timeline to implement the Reporting SaaS project. After review, they agreed there is not enough time to pursue an Oracle upgrade after Reporting SaaS implementation and before Open Enrollment code freeze. Based on this the Oracle upgrades were delayed until after Open Enrollment to quarter 1 to quarter 2 of 2023.</p> <p>While this isn't an optimal situation, it ultimately was a business decision based on assessed risks and impacts to State workers and end users of the application during their busiest time of year.</p> <p>It was found to upgrade the Oracle Database version for VHC which is reaching end of support, the Siebel component also must be upgraded due to the new version of Database being incompatible with the existing version of Siebel.</p> <p>The State is actively reviewing the option of pursuing part of the upgrade, the required Siebel component, prior to 2023 to reduce the scope of the Oracle database upgrade effort. The State has previously had risks related to out of support Oracle products in VHC and is familiar with the resulting impacts.</p> <p>To the note of the vendor's proposed timeline being compressed, this will be reviewed further upon receipt of and review of the project plan with the vendor and adjust accordingly.</p>	Mitigate: Plan for worst case, but monitor closely and be vigilant for any opportunities to alleviate pressure and avoid a perfect storm.	Concur. The likely benefits of the project outweigh the possible risk of delay.	5	7	35
R2	<p>The design of the push or pull mechanism to send data from the VHC system to the reporting cloud solution will be done on the current 12c Database version. Archetype will be implementing the transfer of VHC data for the reporting solution from Oracle database version 12c (current version). Not validating it against the known required future version (19c) could cause issues with the data transfer when that occurs.</p>	Ability to validate push/pull mechanism for data	architecture	<p>Mitigate:</p> <p>Do not upgrade until SaaS effort is completed. Then, when upgrade takes place, facilitate additional QA and coordination between vendors to assure no issues with data access using the new reporting system. At this point, State assesses that updates to the database appear minor, which should minimize compatibility issues.</p>		Concur.	3	5	15

Risk #	Finding	risk of	risk domains	SOV response	Reviewer Recommendation	Reviewer Assessment of SOV Response	likelihood 1-10	impact 1-10	total rating
R3	The current draft SOW states that production data cannot be transferred, stored or accessed outside the US. A key Archetype staff member is located in France. This clause is a point of negotiation between Archetype and the State. Delays in resolving this point of negotiation could further delay completion of overall negotiations and thereby impact the project timeline.	Non-compliance with off-shore resources & data access requirements	compliance	<p>Mitigate: Language was added to the SaaS contract outlining the obligation that offshore resources who were granted a waiver cannot download/store data locally.</p> <p>Archetype will have to request a waiver for access to the Production environment for their staff member who is located outside of the continental US, and that waiver will only be approved if the technical controls mentioned above have been met. The State will require ongoing periodic evidence-based verification from the vendor that the terms of the waiver are being met.</p> <p>Archetype will have to use technical controls as part of the new solution to prevent staff who would be outside of the continental US from downloading, printing, saving, processing, and storing data from the Production environment locally onto their computer. Archetype has the ability to mask, sensitive data (PII) or any data down to the column level based on a user's role. There are also capabilities within the cloud solution to prevent downloading, saving, and printing of sensitive data. Processing of data will only happen in the secure cloud environment.</p> <p>Process wise if an Archetype user is travelling outside the continental United States, Archetype would alert the State prior to any travel, and the Archetype staff member would be provisioned for an "offshore" role w/ these restrictions until they return.</p>		Concur.	3	7	21
R4	CMS has stringent security requirements that apply to this project as the boundary for VHC is changing. Per SoV Security Director, these requirements occur over several phases and are an iterative process whereby the State provides information and CMS states their requirements, after which the State must provide updated documentation and respond to a third party security assessment. It is unknown how much documentation CMS may require, so the State must assume the maximum. The more documentation required, the longer it will take to complete, and the greater the potential impact to the project implementation timeline. It is also unknown what may be uncovered by a security assessment and the extent of remediation required before the solution can "go-live".	CMS Security Requirements extend implementation timeline	security, compliance	<p>Mitigate: Set clear expectations for "worst case" expectations and prepare early to complete this documentation. Ensure Archetype is familiar with MARSe and other security requirements. Embed those requirements in the contract amendment.</p>		Concur with State's approach. Draft contract including SLA contains appropriate references to compliance with CMS security requirements (MARSe), OWASP, pen testing, code scan, etc., for both vendor and State.	3	7	21
R5	Section (Task) 5.3.4 does contain a single graphic representation of a high-level timeline. Several of the labels on this graphic are not referenced elsewhere in the contract draft. The timeline start, which is the anticipated date of contract execution, has shifted by one month, (Dec. 1, 2021 instead of Nov. 1, 2021) while the anticipated Go-Live date has not, which necessarily compresses the timeline shown. The graphic is included at the end of Section 5.3.4, and refers to "these activities," but Task 5.3.4 refers to a period beginning with SaaS Go-live and primarily refers to contingency triggers, and in the DDI Budget table several pages later, this is also the case. Aside from that graphic, the contract draft does not appear to have a timeline for SaaS Implementation with phases/milestones and corresponding dates or date ranges. The DDI Budget table includes SaaS Implementation but does not refer to any contract Task number.	That the State will not be able to adequately assess and be assured of the progress, quality, and suitability of the solution as it is being implemented, potentially resulting in delay of the project.	schedule	<p>11/2/2021 - Mitigate: Draft a clause in the Deliverables section of the contract that stipulates a project/implementation plan will be created within 2 weeks upon execution of the contract.</p>	<p>Avoid: Include phases/milestones with corresponding dates or date ranges in the contract and obtain a more detailed implementation plan from the vendor.</p>	Concur .	3	7	21