

→ 8 APRIL 2024

# Modernized DMV Citizen Services Solution Emergency Procurement Proposal



Presented to  
**Commonwealth of Virginia  
Department of Motor Vehicles**

Point of Contact  
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## Part 1 - Coversheet

**1.1 - In Response to Section 3 Part C**

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**Title:** Modernized Citizen Services Solution

**Commodity Code:** 92000 – Data Processing, Computer, Programming, and Software Services

**Issuing Agency:** Commonwealth of Virginia  
Department of Motor Vehicles (DMV)  
2300 West Broad Street  
Richmond, Virginia 23220

**Period Of Contract:** From date of Contract award through 1 year following the date of Final Acceptance. Support and other optional services are renewable annually thereafter.

Best value proposals will be electronically received until **April 8, 2024, 2:00 PM EST** for furnishing the services described herein.

All proposals and inquiries must be submitted electronically as indicated in the Emergency Procurement Document (EPD).

Proposals must be prepared and submitted as specified in Section 3 Proposal Protocol and Preparation Requirements.

Please refer to Section 2 Part L for additional information regarding the single point of contact and submitting inquiries. No verbal inquiries will be accepted. From the date of issuance of this EPD, until the selection of a Contractor is announced, all questions shall be directed to the designated single point of contact. **The deadline for all electronically submitted questions is March 1, 2024, 2:00 PM EST (see Section O - Projected Procurement Timeline).**

In compliance with this EPD and subject to all the conditions imposed herein, the undersigned offers and agrees to furnish the services in accordance with the attached signed proposal or as mutually agreed upon by subsequent negotiation. The attached signed proposal shall be valid until an award is made or the procurement is canceled.

**Name and Address of Supplier:**

CapTech Ventures, Inc.  
7100 Forest Avenue  
#100  
Richmond, VA 23226  
EIN No: 54-1843700

Date: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature In Ink)

Name: Andy Sofish  
(Please Print)

Title: Chief Executive Officer

Phone: (484)-588-2429

E-Mail: asofish@captechconsulting.com

---

**Note: This public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, §2.2-4343.1, or against a bidder or Supplier because of race, religion, color, sex, national origin, age, disability, sexual orientation, gender identity, political affiliation, or status as a service disabled veteran, or any other basis prohibited by state law relating to discrimination in employment, in accordance with the Code of Virginia, §2.2-4310.**

April 8, 2024

Arthur Vandenesse, Senior Contract Specialist  
Virginia Department of Motor Vehicles (DMV)

Dear Mr. Vandenesse,

Thank you for your consideration of CapTech as a partner for the Modernized DMV Citizen Services Solution.

With this proposal, we demonstrate how CapTech will effectively and efficiently leverage our large program delivery expertise, deep multi-disciplinary strengths, and long-standing partnership with DMV to deliver a best-in-class modernization that drives internal efficiencies and delivers greater external stakeholder value.

We will build upon our success partnering with the DMV and delivering modernized experiences for Commonwealth of Virginia agencies. DMV will benefit from over twenty-five (25) years of our experiences working in environments where accurately understanding our clients' needs has been the cornerstone to our delivering transformational solutions that enable our partners to accomplish their objectives with minimal downtime.

CapTech submits this proposal to the Virginia Department of Motor Vehicles in response to your specific requests and needs stated in the EPD. We appreciate the opportunity to propose our approach for your consideration, and we are eager to continue our already strong partnership with your organization.

By submitting this proposal, CapTech certifies to the following:

Designation of Individual(s) authorized to negotiate on behalf of CapTech:

Andy Sofish, Chief Executive Officer  
Email: [asofish@captechconsulting.com](mailto:asofish@captechconsulting.com)  
Phone: 484.588.2429

Sincerely,

Andy Sofish, CEO

## Part 2 – Addenda

**2.1 - In Response to Section 3 Part C Paragraph 2 (Addendum)**



**Gerald F. Lackey, Ph.D.**  
Commissioner

**COMMONWEALTH of VIRGINIA**  
Department of Motor Vehicles

2300 W. Broad St.  
P.O. Box 27412  
Richmond, VA 23269-0001  
(804) 497-7100  
TTY: 711 or (800) 828-1120  
[dmv.virginia.gov](http://dmv.virginia.gov)

March 7, 2024

**ADDENDUM # 1**

Reference: EPD #154:24-CSS  
Title: Modernized Citizen Services Solution  
Commodity: 92000  
Dated: February 21, 2024  
For: Virginia Department of Motor Vehicles  
Due Date: April 8, 2024 (2:00 PM EST)

**TO ALL SUPPLIERS:**

The above EPD is hereby changed as follows:

**1. Reference Page 18, Section 4.B.4:**

Add the following at the end of this Section:

**vv. Hearing Office Scheduling System (HOSS):**

HOSS is a stand-alone solution that supports business functions in the DMV Hearing Office related to scheduling.

**ww. Traffic Records Electronic Data System (TREDS):**

TREDS is a stand-alone solution that centralizes all of Virginia's crash data and related information. It allows for the electronic submission of police crash reports, electronic mapping for locating the crash while completing the crash report, electronic crash diagramming, and integration with other data systems for enhanced data mining, analysis and reporting at various levels.

**2. Reference Page 23, Section 4.B.4.ii:**

Replace with the following:

**ii. Online Dealer Vendors:**

This interface provides an electronic link between DMV and Virginia motor vehicle dealers. This interface provides a means for Virginia dealerships to issue registration cards, metal license plates and decals at the point of sale and electronically update DMV's vehicle files. Titles are printed at DMV and mailed after DMV receives the transaction paperwork. The interface is facilitated by software and hardware provided by approved third-party vendors under contract with the dealer (see third-party vendor information at the following link: <https://www.dmv.virginia.gov/businesses/odealer/contacts>).

**3. Reference Page 18, Section 5.B.g:**

Replace with the following:

**g. Stand-Alone and Third-Party Vendor Applications**

Some DMV core business functions and related processes are supported by stand-alone and/or third-party vendor applications with interfaces to the existing DMV CSS system. Examples include, but are not limited to:

- VAETS – Virginia Excise Tax Solution: Supports fuel tax related processes and functions.
- Mileage Choice Solution: Supports mileage-based user fee related processes and functions.
- VirginiaMCS: Supports processing International Registration Plan (IRP) and International Fuel Tax Agreement (IFTA) transactions and related processes and functions.
- EZ Haul Solution: Supports hauling permits and related processes and functions.

- Oracle e-Business Suite: Supports various financial, tax processing, and inventory management related processes and functions.
- HOSS: Supports business functions related to hearings.
- TREDS: Supports business functions related to crashes.
- Online Dealer: Provides a means for Virginia dealerships to issue registration cards, metal license plates and decals at the point of sale and electronically update DMV's vehicle files.

**Note:** A signed acknowledgement of this addendum must be received electronically as indicated in the EPD and accompany your proposal in response to the EPD. Signature on this addendum does not substitute for your signature on the original EPD document. The original EPD document must be signed.

Sincerely,

Arthur Vandenesse  
DMV Contracts and Procurement Office

Acknowledged By:

CapTech Ventures, Inc.

Name of Firm

---

Signature/Title

---

Date

**2.2 - In Response to Section 3 Paragraph C Part 2 (Questions and Answers)**



#	Document	Section	Page	Topic
<b>QUESTIONS RECEIVED THROUGH March 1, 2024</b>				
1	EPD	5.E.2; 5.F.2	47; 50	Iterative Release Requirements
<b>Question:</b>				
The RFP states the Contractor will "Iteratively build and implement/release the full Modernized CSS Solution components while synchronizing data, as necessary, and components between the new and existing systems."				
Please explain in more detail the desired iterative release and synchronization requirements - does this imply a release where transactions are executed in the live production environment while synchronizing between deployed components in the new system with the existing mainframe? Or does DMV desire frequent releases to a production-like (but not live production) environment that has the most recent mainframe data?				
<b>Response:</b>				
DMV will be evaluating approaches proposed by the Supplier for meeting the iterative release and synchronization requirements. DMV anticipates frequent releases to a production-like (but not live production) environment. DMV will work with the Contractor during initial project planning to finalize the iterative release plan/schedule and the associated data synchronization requirements.				
2	EPD	4.B.4.c	19	Print Sub-System
<b>Question:</b>				
Please provide additional information on the Solimar IP based printing replacement scheduled for March 2024.				
<b>Response:</b>				
This is a replacement of the internally custom-developed Print Sub-System (PSS) with a COTS print management and routing solution from Solimar. The system allows users to print on-demand and batch printed documents to various printers throughout DMV.				
3	EPD	5.E.2.b	47	ADOT MVD MAX
<b>Question:</b>				
Please provide any additional information, documentation, and/ or reference architecture and functional information for the Alternate Scenario (Build From ADOT MVD MAX As Starting Point).				
<b>Response:</b>				
Suppliers may reach out to the following point of contact with the Arizona DOT for information regarding the MAX Solution:  Jay Chilton MVD Business Strategy Manager <a href="mailto:jchilton@azdot.gov">jchilton@azdot.gov</a>				
4	EPD	2.M	6	SWAM Participation
<b>Question:</b>				
Can you provide clarification on how planned amount of spend with SWaM partner will be evaluated?				

NOTE: Nothing contained herein shall be considered a change in requirements unless and until reduced in writing by formal addendum to the EPD.





#	Document	Section	Page	Topic
<b>Response:</b>				
DMV will review and consider the overall Supplier planned percentage for DSBSD-certified SWaM businesses directly performing the requirements of this Contract when applying an overall rating for evaluation criteria 5. Please refer to EPD Section 2.N on page 6 and Section 6.F on page 66.				
5	EPD	App A, 20	91	<b>Proposed Contract – Performance Bond</b>
<b>Question:</b>				
Would DMV be open to other mechanisms of protection rather than the Performance Surety Bond?				
<b>Response:</b>				
For each term and condition of the Proposed Contract in Appendix A of the EPD that is not fully accepted, the Supplier must:				
<ul style="list-style-type: none"><li>Provide suggested alternate wording in a tracked change, redline format, directly within the Proposed Contract wording.</li><li>Indicate the rationale and reason(s) for taking exception using the Proposed Contract Exceptions Matrix in Appendix A.</li></ul>				
Any Supplier provided exceptions and/or suggested language revisions will be considered; however, DMV may reject any proposed edits, deletions, or additions at any time.				
If Supplier is selected to go forward into negotiations, the final terms and conditions of the Contract shall be agreed upon during negotiations. Please refer to EPD Section 8.B on page 69.				
6	EPD	5.C.3.c	39-40	<b>Administrative Proceedings Scope</b>
<b>Question:</b>				
For the Administrative Proceedings scope, does DMV expect that this functionality will be developed within the new system, or will the new system integrate with the existing Hearing Office Scheduling System (HOSS) solution?				
<b>Response:</b>				
HOSS is a stand-alone application. It interfaces to the existing CSS system, and it will require an interface to the Modernized CSS Solution.				
7	EPD	4.B.2	13	<b>3270 Screen Functionality</b>
<b>Question:</b>				
Is there functionality in the 3270 screens that is not available elsewhere (e.g., in mySelect) that prevents DMV from removing direct access to 3270? If so, please provide details on this functionality.				
<b>Response:</b>				
Yes. Some examples include external user access, internal system support/maintenance utilities, on-demand reports, data warehouse user access, specific DMV HQ work center functionality, etc.				

NOTE: Nothing contained herein shall be considered a change in requirements unless and until reduced in writing by formal addendum to the EPD.





#	Document	Section	Page	Topic
8	EPD	5.H.2	58	Proposal Preparation

**Question:**

Regarding the proposal preparation instruction on Page 9. Number 6 instructs the Supplier to respond to each paragraph, does DMV consider the required paragraphs to be when it states "Supplier must..." or "Supplier shall..."? Please provide any additional clarification.

Ex. For example, does supplier need to respond to both paragraphs copied below, or are they only required to respond to the second paragraph and its subsequent bullets?"

"DMV plans to assign an appropriate level of DMV staff to the overall project team in order to ensure self-sufficiency once the Modernized CSS Solution is fully deployed. DMV anticipates providing 2 SQL Server DBAs with varying skills. In addition, DMV anticipates providing approximately 15 developers and analysts. This staffing is subject to change based on needs to maintain the existing CSS system."

AND

"The Supplier must provide proposed project staffing plans and approaches for each stage of the project (and each scenario of stage 2) that clearly defines and describes the following in detail..."

**Response:**

Each paragraph of EPD Sections 5, 6, 7, 8, and related Appendices requires a response, however it is acceptable for the Supplier to identify a group of paragraphs within these Sections, then provide a corresponding single Supplier response for these paragraphs.

9	EPD	5.F.2	49	Security Requirements
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**Question:**

Please provide the current security sensitivity criteria applicable to DMV CSS.

10	EPD	5.F.3	51	WAN and WAN Support
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**Response:**

Highly sensitive. Please refer to Section 5.F.2 (Mandatory Security Requirements) starting on page 49.

11	EPD	5.F.3.b and 5.G.2.c	58	Project Management Tools
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**Question:**

Is it correct to conclude that DMV will provide WAN and WAN support that may be required?

12	EPD	5.F.3.b and 5.G.2.c	58	Project Management Tools
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**Response:**

Yes, through enterprise services from VITA.

13	EPD	5.F.3.b and 5.G.2.c	58	Project Management Tools
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**Question:**

Is it correct to conclude that DMV will provide the Incident, Problem, and Change (IPC) tooling and access/integration required for Supplier to meet their commitments?

14	EPD	5.F.3.b and 5.G.2.c	58	Project Management Tools
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**Response:**

Yes. Please refer to 5.F.3.b on page 52 and 5.G.2.c on page 58.

NOTE: Nothing contained herein shall be considered a change in requirements unless and until reduced in writing by formal addendum to the EPD.





#	Document	Section	Page	Topic
12	EPD	5.E.2	47	Stage 2 Scenarios
<b>Question:</b>				
Section 5, subsection 2 includes the requirement that Supplier must provide a solution for both the Base Scenario and Alternate Scenario. Is it acceptable and compliant to provide the comprehensive and detailed narrative for our proposed scenario only?				
<b>Response:</b>				
No, a proposal for a single scenario is not acceptable. The Supplier must provide separate comprehensive and detailed narratives describing the proposed plans, approaches, concepts, and methodologies to accomplish the requirements of Stage 2 – Full Modernized CSS Solution Build and Implementation activities under 2 different scenarios: <ol style="list-style-type: none"><li>Base Scenario (Build From Ground Up)</li><li>Alternate Scenario (Build From ADOT MVD MAX As Starting Point)</li></ol>				
13	EPD	5.F.3	51	Technical Environment/Licensing
<b>Question:</b>				
Please confirm VITA will be providing and covering the expense of the required Cloud environments and any needed 3rd party application licensing.				
<b>Response:</b>				
DMV will acquire and cover the expenses of the required Cloud environments and any needed 3rd party application licensing. All Cloud services are delivered through VITA.				
14	EPD	4.B.3.k.1	17	Print Stock
<b>Question:</b>				
Page 17, Print Stock. <ol style="list-style-type: none"><li>Is all printing handled through a print vendor or does the DMV print as well?</li><li>Can the print vendor consume JSON?</li></ol>				
<b>Response:</b>				
<ol style="list-style-type: none"><li>DMV manages all print internally.</li><li>No</li></ol>				
15	EPD	4.B.4.c	18	Print Sub-System (PSS)
<b>Question:</b>				
Page 18, Print Sub-System (PSS). Please confirm that these are DMV internally printed items. If these not being mailed to customers, why is the daily print volume so high?				
<b>Response:</b>				
Internal and external. The only external is to the Department of Corrections facility to support the special plate manufacturing process, which also explains the high print volume.				

NOTE: Nothing contained herein shall be considered a change in requirements unless and until reduced in writing by formal addendum to the EPD.





#	Document	Section	Page	Topic
16	EPD	4.B.4.oo	23	Mobile ID
<b>Question:</b>				
Page 23, MobileID. What is the expected launch date for the CBN mobile DL/ID solution? Will the DMV also be allowing Apple, Google, and/or Samsung native wallet IDs?				
<b>Response:</b>				
The anticipated launch date for the CBN mobile ID solution is second quarter of 2024. DMV is in discussions with Apple, Google, and Samsung regarding integrating the Virginia mobile ID in these wallets at some point in the future. The mobile ID solution is currently a third-party solution provided by CBN as part of the Secure Credential Solution with interfaces/integrations with the existing CSS system.				
17	EPD	5.B.b.	35	Crashes
<b>Question:</b>				
Page 32, Monitoring programs – Crashes. Is this intended to include a complete Crash Reporting System for reporting to NHTSA and to inform roadway safety design?				
<b>Response:</b>				
Crashes are supported by TREDS, a stand-alone application, with integrations with the existing CSS system. TREDS will remain a stand-alone application with integrations to the Modernized CSS Solution.				
18	EPD	5.B.b.	35	Insurance Monitoring
<b>Question:</b>				
Page 32, Monitoring programs – Insurance Monitoring. Is this to include a complete real-time insurance verification system? If so, could it be in-house or could an external IVS vendor provide those services?				
<b>Response:</b>				
Insurance verification in support of the in-house insurance monitoring function is currently accomplished through various integration methods for data exchange.				
19	EPD	5.B.f.	36	Partnership Functions
<b>Question:</b>				
Page 36, Partnership Functions, Services, and Products. What is the full list of partnership functions, services, and products? The EPD includes four examples, but states are "not limited to."				
<b>Response:</b>				
Please refer to EPD Section 4.B.4 (Current CSS Integrations and Interfaces) starting on page 18.				
20	EPD	5.C.3.a	38	Pesticide Knowledge Testing
<b>Question:</b>				
Page 38. What is the estimated volume of pesticide license knowledge testing that the DMV handles? Are there plans to have the DMV host this testing online?				

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#	Document	Section	Page	Topic
<b>Response:</b> Pesticide knowledge testing is administered by DMV on behalf of the Department of Agriculture as stand-alone testing through the third-party SecuriTest Solution provided by Idemia. DMV does not have any plans to change the current method of hosting. Pesticide testing results are not stored on the existing CSS system. DMV administers approximately 5,000 pesticide tests per year.				
21	EPD	5.C.5.a	42	Billing and Receivables
<b>Question:</b> Page 42. Manage Billing and Receivables. Is the DMV open to allowing customers to maintain a balance/financial account?				
<b>Response:</b> Yes, following PCI compliance requirements.				
22	EPD			Insurance Reporting Formats
<b>Question:</b> What insurance reporting formats are currently supported by VADMV? If EDI X12 is still in use for insurance reporting in VA, are there any plans to replace these with more modern reporting formats? How many insurance companies report insurance policy information to VA ?				
<b>Response:</b> Insurance verification in support of the in-house insurance monitoring function is currently accomplished through various integration methods for data exchange. EDI X12 is still in use with no current plans to replace. There are approximately 920 active insurance companies reporting insurance policy information.				
23		4.B.4.rr	23	VAETS
<b>Question:</b> What are the interface requirements to the DMV system for VAETS? Please identify the tax processing requirements of the new CSS system.				
<b>Response:</b> VAETS is a third-party solution that supports fuels tax reporting. VAETS includes integrations/interfaces with the existing CSS system, which will remain in the Modernized CSS Solution.				
24	EPD	5.B.g	36	Motor Carrier (IRP/IFTA)
<b>Question:</b> Is Motor Carrier (IRP/IFTA) in scope for the new CSS system? Or will the new CSS system support monitoring activities only?				
<b>Response:</b> No. Only interfaces/integrations, as they exist today with the third-party vendor product (VirginiaMCS), is required.				

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#	Document	Section	Page	Topic
25	EPD			Rental Vehicle Registration
<b>Question:</b>				
Is the rental vehicle certificate of registration the same document as a citizen or company vehicle registration?				
<b>Response:</b>				
The document is basically the same with some variation to indicate a different type on the printed document.				
26	EPD	4.B.4.t	22	NCIC
<b>Question:</b>				
What action does VA DMV initiate when a VA vehicle is reported as stolen from NCIC?				
<b>Response:</b>				
Certain indicators may be added to records based on business rules.				
27	EPD	4.B.4.m	21	Oracle e-Business
<b>Question:</b>				
Are payment plans supported in Oracle e-Business or is the new system responsible for accepting and maintaining partial payment data?				
<b>Response:</b>				
Some payment plans are currently supported within the existing CSS system today. DMV has not determined how these will be supported in the Modernized CSS Solution.				
28	EPD	5.B	33	Dealer Processing
<b>Question:</b>				
1. Does a VA Dealer maintain plate and decal inventory to allow for creation of a registration document with new plate/decal assignment? 2. If so, what process occurs if the business deal is not completed and the vehicle is returned to the Dealer?				
<b>Response:</b>				
1. A dealer can choose to keep inventory at their dealership via the Online Dealer program. 2. In the event a vehicle is returned, the online dealer does nothing with regards to DMV processing. The customer must contact DMV to resolve any refunds for titling, sales and use tax, and registration fees with DMV. The customer surrenders the license plates to DMV.				
29	EPD	5.H	58	Onsite Staffing
<b>Question:</b>				
Re the onsite requirements, can you please expand on the following:				
1. What are the expectations during the project and support phase? 2. Will space be provided at the State's facility? 3. Are there specific requirements for this person in terms of skills, abilities, or education?				

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#	Document	Section	Page	Topic
4.				What is the expectation of the function and duration of onsite coaching?
5.				In what ways is that different than training?
<b>Response:</b>				
Please refer to EPD Section 5.H starting on page 58.				
1.				DMV requires Contractor staff available and working on-site at DMV on a full-time basis, 5 days per week, throughout the duration of the project for mutually agreed upon resources. While DMV may approve some off-site performed by some Contractor staff, off-shore Contractor staffing and project work will NOT be allowed. The Contractor should provide continuity of staff throughout life of the project to the maximum extent possible.
2.				Yes
3.				The Supplier must provide a proposed project staffing plan. Please refer to EPD Section 5.H starting on page 58.
4.				Coaching is one method of training which will be performed throughout the duration of the project as needed to adequately prepare DMV staff for ongoing development and maintenance in the new environment.
5.				Coaching is one method of training.
30	EPD	5.K	61	Training Facilities
<b>Question:</b>				
What training facilities are available onsite?				
<b>Response:</b>				
Depending on the specific training methods proposed, DMV can provide meeting space (such as meeting rooms) to conduct training.				
31	EPD			Federal Funding
<b>Question:</b>				
Will Federal Funding be leveraged in this project?				
<b>Response:</b>				
DMV does not anticipate the use of Federal funding for this project.				
32	EPD	5.B.g	36	Motor Carrier
<b>Question:</b>				
Does the VA MCS system have separate Customer Account, Finance, and Inventory Modules or are they included in CSS?				
<b>Response:</b>				
The VirginiaMCS system is a third-party solution. VirginiaMCS includes integrations/interfaces with the existing CSS system, which will remain in the Modernized CSS Solution. These interfaces involve customer, vehicle, and financial data on CSS.				

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#	Document	Section	Page	Topic
33	EPD	5.L.2.c	63	Ongoing Support Resources
<b>Question:</b>				
Will vendor resources for ongoing support following transition to DMV expected to be on-site in VA?				
<b>Response:</b>				
DMV requires Contractor staff available and working on-site at DMV on a full-time basis, 5 days per week, throughout the duration of the project for mutually agreed upon resources. While DMV may approve some off-site performed by some Contractor staff, off-shore Contractor staffing and project work will NOT be allowed.				
34	EPD	5.C.3	38	Motor Carrier (IRP/IFTA)
<b>Question:</b>				
Does the DMV CSS Rewrite scope include the implementation of Motor Carrier Products (IRP & IFTA)? There are some sections that appear that it is in scope and there are other sections that appear the only requirement is to interface with the existing vendors product (VirginiaMCS).				
<b>Response:</b>				
No. Only interfaces/integrations, as they exist today with the third-party vendor product (VirginiaMCS), is required.				
35	EPD	5.E.2.b	47	Alternate Scenario
<b>Question:</b>				
Will DMV provide information regarding the ADOT system in order to support level of effort and pricing?				
<b>Response:</b>				
Suppliers may reach out to the following point of contact with the Arizona DOT for information regarding the MAX Solution:  Jay Chilton MVD Business Strategy Manager <a href="mailto:jchilton@azdot.gov">jchilton@azdot.gov</a>				
36	EPD	5.E.2.b	47	Alternate Scenario
<b>Question:</b>				
Has the COV performed a fit / gap analysis on the ADOT MVD MAX application to determine what application and database components can be re-used relative to COV's specific requirements and business processes, and if so, will the COV make the fit / gap analysis available to respondents?				
<b>Response:</b>				
No, DMV has not performed a fit/gap analysis on the ADOT MVD MAX application.				
37	EPD	5.E.2.b	47	Alternate Scenario
<b>Question:</b>				
COV states an objective of achieving a microservices-based architecture model operating in a Microsoft Azure environment.				

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#	Document	Section	Page	Topic
1				1. To what degree does the ADOT MVD MAX application meet the requirement of providing a microservices-based architecture? 2. Is the ADOT MVD MAX currently running in Azure?
<b>Response:</b>				
1. Unknown at this time. 2. Yes.				
38	EPD	3.A	8	<b>Proposal Protocol and Preparation</b>
<b>Question:</b>				
As per the EPD requirements, the proposal must be submitted electronically to the designated single point of contact, thus requiring submission via email. Could DMV please confirm if there is a size limit for email attachments?				
<b>Response:</b>				
There is a 50MB limit for email attachments.				
39	EPD	4.B.4	18	<b>Current Integrations and Interfaces</b>
<b>Question:</b>				
Will COV provide a definitive list of interfaces/integrations with 3rd parties or other systems? Several integrations are listed but it is unclear how many distinct interfaces/integrations exist.  For example, Oracle e-Business Suite is noted as being “used to support various tax processing, financial, and inventory management business functions and related processes.” How many distinct interfaces make up the integration with Oracle e-Business Suite?				
<b>Response:</b>				
Please refer to EPD Section 4.B.4 (Current CSS Integrations and Interfaces) starting on page 18. Further definition of distinct interfaces and integrations will be part of initial project planning and detailed design activities.				
40	EPD	5.C.6	43	<b>Business Intelligence</b>
<b>Question:</b>				
Will COV provide an estimate on the number of reports it requires from the modernized system?				
<b>Response:</b>				
Further definition of distinct reports will be part of initial project planning and detailed design activities.  In support of the in-scope core lines of DMV business activities, the Modernized CSS Solution must provide business intelligence capabilities to support the delivery of data to external data reporting system(s) based on the DMV Data Architecture program.				

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Virginia Department of Motor Vehicles



#	Document	Section	Page	Topic
41	EPD	5.E.2	47	Iterative Build
<b>Question:</b>				
Has COV considered the sequence in which the application will be rolled out iteratively? If so, will COV share the current sequence/rollout plan?				
<b>Response:</b>				
DMV has not defined a sequence/rollout plan at this time.				
DMV will be evaluating approaches proposed by the Supplier for meeting the iterative release and synchronization requirements. DMV anticipates frequent releases to a production-like (but not live production) environment. DMV will work with the Contractor during initial project planning to finalize the iterative release plan/schedule and the associated data synchronization requirements.				
42	EPD	5.C.7.a	43	Dealer Third Party Solutions
<b>Question:</b>				
How many distinct third party “vendor solutions” are in use by dealers and must integrate with the modern solution? Will COV provide a list of those 3rd party dealer systems?				
<b>Response:</b>				
At this time, there are 4 third-party vendor solution in use by dealers: Computerized Vehicle Registration (CVR), Cox Automotive DealerTrack, Motor Vehicle Software Corporation VITU, and Solera Titletec. More details can be found at <a href="https://www.dmv.virginia.gov/businesses/odealer/contacts">https://www.dmv.virginia.gov/businesses/odealer/contacts</a>				
43	EPD	2.N	6	Evaluation Criteria
<b>Question:</b>				
Senate Bill 242 is a bill that is currently moving through the 2024 General Assembly. This bill was recommended by the Public Body Procurement Work Group. This bill requires an offeror to provide exceptions to contractual terms or conditions at the time they submit a response to a Request for Proposal. However, it prohibits agencies from basing the initial scoring or evaluation on any exceptions provided by an offeror when selecting offeror for negotiations.				
Studies have found that proposals with minimal or less exceptions to terms and conditions are not necessarily more advantageous than proposals that seek clarity and understanding of contractual obligations. Once selected for negotiation, agencies can then consider the exceptions and work with the offeror to resolve. So far, this bill has been unanimously passed in this year's General Assembly and is expected to be adopted prior to the proposal deadline. As such and considering that the Public Body Procurement Work Group has suggested that this process is a best practice, would the DMV consider removing the evaluation of terms and conditions as part of the stated evaluation criteria to comply with the newly modified statute?				
<b>Response:</b>				
This procurement is following emergency procurement rules and is not considered a “Competitive negotiation” or a “Request for Proposals” procurement. DMV will comply with any modified statutes related to an emergency procurement based on the effective date(s) of any such modification(s).				

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Virginia Department of Motor Vehicles



#	Document	Section	Page	Topic
44	EPD	2.N	6	Evaluation Criteria
<b>Question:</b>				
Please clarify whether the evaluation criteria are ranked in order of importance. If not, will the DMV please provide a relative ranking so that suppliers understand how best value will be determined?				
<b>Response:</b>				
DMV is using a best value rating approach to evaluate proposals for this procurement.				
45	EPD			General
<b>Question:</b>				
AAMVA announced that it will be sunsetting the use of legacy UNI software and protocols by Jan 2028 date.				
1. Does the current CSS solution use UNI/AMIE for AAMVA data exchange interfaces?				
2. Please list the protocol (UNI/AMIE, NEIM XML/SOAP web services or RESTful web services) currently used by CSS for each AAMVA interface?				
3. Should the scope of work include redesigning the CSS integration with AAMVA interfaces to discontinue the use of UNI/AMIE and implement RESTful web services?				
<b>Response:</b>				
1. Yes				
2. NDR/SPEXS/NMVTIS/SSA/DLDV- Windows UNI/AMIE				
PVS - Passport Verification Service - XML/SOAP web service				
3. Yes				
46	EPD	5.E.1	45	Stage 1 – Proof of Concept
<b>Question:</b>				
Would DMV provide the technical details of the existing system that correspond to the functionality to be re-written to .NET during the POC? These would include approximate lines of Natural/ADABAS (and other) code, # of batch programs, # of online programs, # of ADABAS tables used, # of interfaces, etc., and are needed as a basis for estimation and pricing.				
<b>Response:</b>				
DMV does not have this specific information but can offer the following approximate estimates as a guide:				
<ul style="list-style-type: none"><li>• 50,000 lines of code</li><li>• 35 online programs</li><li>• 2 batch programs</li><li>• 15 ADABAS files</li></ul>				
47	EPD	5.B.d	35	Tax Processing
<b>Question:</b>				
Please confirm that all tax processing functions will remain in the systems noted including Oracle eBusiness Suite, VAETS, and VirginiaMCS?				

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#	Document	Section	Page	Topic
<b>Response:</b> Yes				
48	EPD	5.B.e	36	Crash Reports
<b>Question:</b> Please clarify whether the modernized CSS system will be the system of record for crash reports?				
<b>Response:</b> Crash reports are supported by TREDS, a stand-alone application, with integrations with the existing CSS system. TREDS will remain a stand-alone application with integrations to the Modernized CSS Solution.				
49	EPD	5.B.f	36	Partnership Functions, Services, Products
<b>Question:</b> <ol style="list-style-type: none"><li>1. Please confirm the modernized CSS will not be the system of record for:<ul style="list-style-type: none"><li>• Birth Certifications</li><li>• Marriage/Divorce/Death Certifications</li><li>• EZPASS</li><li>• Voter Registration</li></ul></li><li>2. Will integrations with the modernized CSS be required for these business functions?</li></ol>				
<b>Response:</b> <ol style="list-style-type: none"><li>1. The Modernized CSS Solution will not be the system of record for the items referenced in this question.</li><li>2. Existing integrations and interfaces for the items referenced will still be required in the Modernized CSS Solution.</li></ol>				
50	EPD	5.E.1	45	Project Approach – Stage 1
<b>Question:</b> Under Stage 1 activities, is DMV's mainframe code expected to be the starting point for deconstruction? Please confirm Stage 1 activities be will not be based upon the acquired ADOT code base?				
<b>Response:</b> Yes. For Stage 1 activities, DMV's mainframe code will be the starting point for deconstruction.				
51	EPD	5.H	58	Project Staffing
<b>Question:</b> Is there a limit to how many onsite staff DMV can accommodate at any one time?				
<b>Response:</b> DMV does not anticipate the need to limit the number of onsite Contractor staff.				

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#	Document	Section	Page	Topic
52	EPD	5.H	59	Project Staffing
<b>Question:</b>				
While DMV's desire to approve resumes of Senior project personnel is understandable, the request to approve resumes of all staff assigned to the project may pose challenges, especially considering the size and firm fixed price nature of the project. Would DMV be open to reconsidering this requirement for non-Project Management personnel? If not, would DMV be willing to commit to a 24-hour turnaround for resume review requests?				
<b>Response:</b>				
Throughout the project, during time of project staff turnover, DMV will strive to review resumes and turnaround resume reviews as quickly as possible.				
53	EPD	5.E.1	45	Stage 1 – Proof of Concept
<b>Question:</b>				
What criteria will be utilized to ascertain the success of Stage 1?				
<b>Response:</b>				
At the end of Stage 1, DMV will review and evaluate the results of the POC and the Go-Forward Plan. If DMV approves the detailed Go-Forward plan, Stage 2 efforts may proceed for the agile-based iterative development and delivery of the full Modernized CSS Solution.				
Approval of the results of Stage 1 and the Go-Forward plan is an internal business decision of DMV at the conclusion of Stage 1.				

## Part 3 – Modernized CSS Solution Proposal

### 3.1 - In Response to Section 5 Part A

#### OVERVIEW AND GENERAL SCOPE

Overall customer service is a critical component of DMV's responsibility to administer a variety of business functions related to credentialing, tax processing, financial management, and information provisioning. Maintaining automated systems to manage the flow of our customers and business partners through these business functions is essential to ensure the integrity and efficiency of the related business processes. The overall scope of this effort is for Contractor staff working with DMV staff to re-architect and rewrite the existing legacy mainframe-based DMV CSS Solution with a newly developed Modernized CSS Solution that fully incorporates innovation and state-of-the-art technologies operating in a new microservice-based architecture within the existing COV Microsoft Azure Cloud subscription environment while maintaining and enhancing overall customer service and transaction processing. This includes, but is not limited to:

- Re-writing all existing legacy on-line and batch application code, user interface applications, databases, and interfaces while ensuring those re-written applications, databases, and interfaces function in the new environment as they did in the mainframe environment.
- Embracing agile methodologies throughout the project lifecycle, from planning to delivery.
- Ensuring seamless integration with existing systems and third-party applications using agile integration practices.
- Migrating/synchronizing data from the current legacy mainframe environment to the new environment.
- Ensuring compliance with the then current Virginia Information Technology Agency (VITA) and DMV's security policies and standards.
- Preserving full functionality, capabilities, and security of the existing applications along with equal or improved performance.
- Maintaining and enhancing overall customer service and transaction processing along with ensuring the same or better service, performance, and efficiency.
- Training, coaching, and supporting DMV's Information Technology staff to transition, operate, support, and maintain the re-written applications, databases, and interfaces in the new environment.

The Contractor must provide all necessary services and support for the overall Modernized CSS Solution project, including:

- a. Planning, defining, analyzing, designing, developing, customizing, configuring, testing, and implementing a fully integrated and automated Modernized CSS Solution that supports all DMV core business processes defined in this EPD while utilizing iterative agile methodologies.
- b. Developing electronic interfaces and integrations with various internal and external systems in support of business and transaction processes.
- c. Performing data migration/synchronization from the existing mainframe environment to the new target environment.
- d. On-site project management and project staffing during all project stages.
- e. On-site training and coaching.
- f. On-site transition support.

### Executive Summary

The Virginia Department of Motor Vehicles ("DMV") has long been an innovator at providing valuable and reliable services to the Commonwealth of Virginia ("CoVA"), but legacy technology has hamstrung many transformational opportunities. Over the last several years, DMV has modernized experiences to deliver incremental value, but now is the right time to holistically modernize technology to enable further transformation that will support the evolving needs of the Commonwealth for many years to come.

CapTech is committed to being the partner that DMV can rely on to deliver this transformative modernization. As a Virginia-based consultancy, we have a 20+ year history of partnering with CoVA agencies to deliver their most mission-critical projects and transformational initiatives on time and on budget. CapTech is the partner that agencies turn to when success is the only option, cookie-cutter solutions will not work, and the risk of failure is high. We have an unrivaled record of delivering successful outcomes and creating award-winning citizen-to-government experiences that have helped our clients reduce contact center volumes, drive citizens transactions to online and mobile platforms, and enabled citizens to receive vital services in the digital age.

#### ENABLING SUCCESS FOR DMV: WHY CAPTECH?

- We have a 20+ year history of partnering with the Commonwealth of Virginia ("CoVA")
- We have an unrivaled record of delivering successful outcomes and creating award-winning citizen-to-government experiences.
- Our headquarters is in Richmond, and we have an office in Reston, VA.
- We have deep institutional knowledge of the DMV's people, processes, and technologies.

We also lead large and complex technology and business transformations for some of the largest Fortune 500 companies and state agencies across the nation. Our technical solutions use non-proprietary frameworks and our proven approach to mentoring, educating, and peer programming will enable DMV staff to support the Modernized Citizen Services Solution ("Modernized CSS Solution") without reliance on

outside vendors or expensive license arrangements. Our goal is to empower DMV with a modern solution and a highly skilled workforce so that DMV can own and maintain control of its destiny for many years to come.



Figure 1: Downtown Richmond

With offices in Richmond (our headquarters) and Reston, we understand the importance of this modernization and the benefits it aims to provide for Virginia constituents. This project is personal for us - we are Virginians, we pay taxes, we own cars, we take our children to get their learners permits, and we even occasionally receive speeding tickets. Our teams have worked side-by-side with DMV since 2009 to achieve significant accomplishments related to modernization across data strategy, award-winning web solutions, Azure/cloud technology, structured testing programs, and integrations with Virginia State Police, Online Dealer Vendors, AAMVA, NADA, MFT, and EDI. Our past experiences and partnership will enable

our teams to ramp up faster and avoid costly pitfalls. We will harness artificial intelligence ("AI") and other innovative approaches to analyze the legacy codebase, 15,000+ test cases, and 1,300+ process flows (that we helped capture) to accelerate the end-to-end delivery of modernized features and capabilities.

Our deep institutional knowledge of DMV's unique people, processes, and technologies enables us to emphatically state that there is no silver-bullet solution available in the marketplace that can adequately address DMV's unique operational, technological, and institutional circumstances. Throughout our 15-year history working together, we have always advocated on the DMV's behalf and had the DMV's back. We understand that the DMV's modernization journey is going to be unique and complex. While well-defined implementation approaches, technical architecture, and innovative accelerators are important, there is no predefined or premade solution, methodology, or approach that is going to guarantee success. Instead, the DMV needs to place its investments on an innovative, flexible partner, who DMV trusts, has the necessary delivery capabilities, and will make this initiative one of their top priorities.

We are prepared to make this initiative a top organizational priority, we have consistently shown that we can work together and in alignment with DMV's (TRAIT) values, and we are clear-eyed going into this that we have more at stake than our competitors because we are a Virginia-based consultancy and embedded in this community. Failure is not an option for us, and we know that our success will depend on our ability to partner with DMV on all aspects of this delivery. Our team will be local with you, partnering to modernize together using an agile / iterative approach that promotes and values individuals and interactions, demonstration of working software, collaboration, and flexibility with responding to change.

## Why CapTech

Based on our understanding of the scope of this Emergency Procurement Document ("EPD"), we believe DMV will benefit from over two decades of our relevant experiences delivering similar large and complex transformational solutions for other state government agencies. While all large projects have challenges, we always deliver, and the solutions we deliver often become industry-defining and award-winning models that other states seek to emulate.

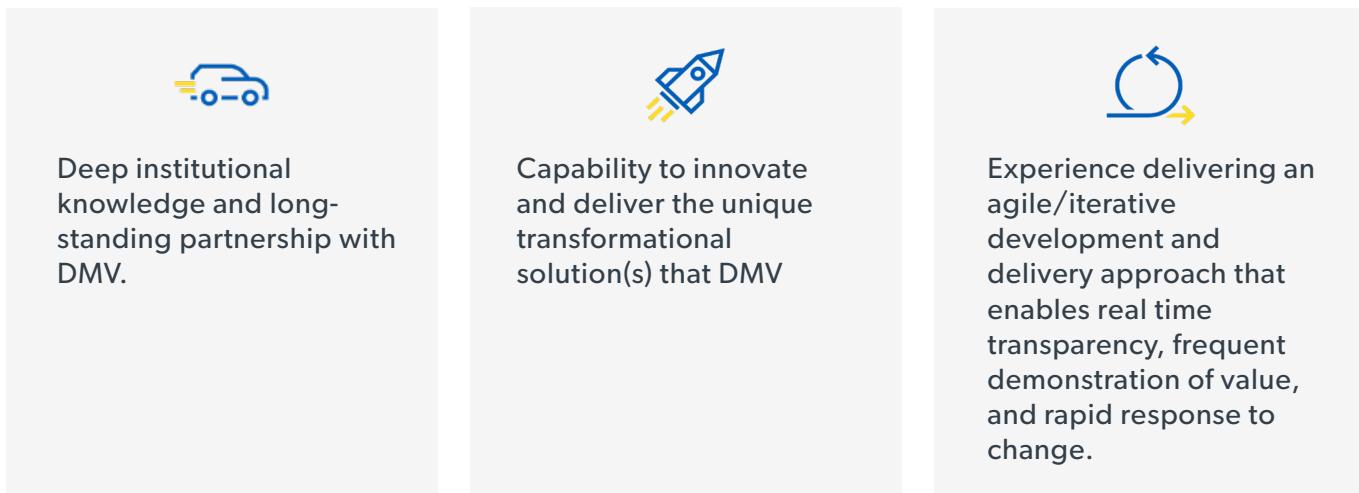


Figure 2 – CapTech’s Experience

The following highlights our strengths and why we are well-suited to partner with DMV on the Modernized CSS Solution based on our understanding of the EPD:

**We are your proven, long-term partner who is committed to your success**



Our longstanding and positive relationship, spanning over 15 years, provides us with a deep understanding of DMVs business and strategic mission, people, processes, and technology. This ongoing collaboration allows us to swiftly ramp up and onboard our high-performing teams. Additionally, our previous project experiences with DMV means we have insights into potential challenges, allowing us to assist in avoiding significant project delays, rework, or issues. Furthermore, CapTech has established robust relationships with key partner agencies, including VITA, bringing valuable expertise and insights on strategic partnership approaches, thereby increasing the likelihood of project success.

**We are a market leader in implementing highly relevant, large government solutions**



Our experience includes 15 years of regulatory and adjudicatory experience in administering workers’ compensation projects for different jurisdictions. CapTech has established a reputation as an innovative state government partner with industry-leading system modernizations in Virginia, Kentucky, Kansas, Nevada, Minnesota, Washington State, Georgia and elsewhere. Our experienced consultants, proven solutions, and supporting processes and tools deliver low-risk, full-capability solutions, and we bring our lessons learned from hundreds of state government and commercial implementations to provide a comprehensive, outcome-focused approach for modernization and delivery.

**We are a pioneer in delivering fixed priced projects using agile/iterative delivery**



By breaking our deliveries into small, iterative development cycles, we can deliver at a much lower cost and risk for DMV. CapTech is more cost effective than other government delivery companies because we deliver with smaller, high-quality teams who can build custom software with low levels of defects and technical debt. This builds extra development capacity and will enable DMV to get more scope for the same or lower cost. As an example, for the State of Nevada’s workers’ compensation system, CapTech’s

delivery efficiency allowed the state to receive 30% more scope for no additional cost.



### **CapTech has more than 20 years of deep and relevant automotive experience**

For more than two decades, CapTech has provided client services and solution delivery across automotive retail, distribution, insurance, finance, racing, transit, and product manufacturing. We have been an enterprise partner with CarMax, the largest automotive retailer in the United States delivering modernized transformation solutions across eight diverse lines of business. CarMax, headquartered in Richmond, VA is one of the largest consumers of DMV services and represents a customer population that directly aligns with the citizens of Virginia. Our experience, assisting analogous client populations with relevant modernization services in both the public and private sectors positions us as a trusted advisor in navigating the unique challenges and opportunities outlined in the emergency procurement. Whether it's optimizing operations, enhancing customer experiences through product innovation, or leading a modernization of enterprise platforms, our unwavering commitment to our clients, which we outline in our CarMax reference, exemplifies our ability to deliver incredible value for the DMV and Virginia constituents.



### **We provide industry-leading Agile approaches to drive efficiencies and business value**

CapTech takes a pragmatic approach to how we structure teams and integrate Agile best practices to iteratively define, develop, validate, and deliver valuable solutions for our clients. We have successfully delivered both large and small engagements using Agile practices by focusing on proactive communication with stakeholders to proactively manage dependencies and enable a continuous flow of work to provide more predictable delivery outcomes. We continuously improve quality and customer satisfaction by learning from prior iterations and evolving to meet customer needs. We align all delivery teams to the prioritized organizational milestones/outcomes by planning upcoming work and aligning all teams on dependencies on a quarterly basis. This approach increases clarity and alignment across the organization and reduces the risk of discovering issues late in the delivery cycle, resulting in faster time-to-value, less rework, and lower costs.



### **We will craft a non-proprietary, reliable, and maintainable solution for DMV**

We design our solutions to meet current business objectives while offering our clients the flexibility they need as those objectives evolve. We draw on our expertise in a variety of technology areas to produce the ideal solutions for each unique engagement. While technology is often the primary focus, CapTech's methodology for strategic engagements includes the evaluation of people, process, and technology. These three focus areas provide a full organizational picture of not only the technology but also the people that use that technology and how they fulfill their responsibilities.



### **DMV will own the core system, not CapTech, enabling true long-term ownership**

Our model is to turn our solutions over to our clients through training and coaching on how to maintain the solutions themselves throughout delivery. The solution we build for DMV will stand the test of time while allowing DMV the flexibility to adapt it to meet the ever-changing needs of the organization without having to pay a vendor. Our philosophy is to empower our clients to own their solutions instead of locking into long-term maintenance

contracts for ongoing sustainment. We have multiple previous clients who have taken full ownership of similar-sized and complex solutions CapTech created for them and are able to demo those solutions if requested.



**Aligned with the Virginia Transformation Office's emphasis on citizen focus, CapTech meticulously crafts our solutions using established best practices from Human Centered Design (HCD) to maximize user satisfaction and successful user adoption**

Recognizing the advantages and potential challenges of the desired technology, we offer a multidisciplinary and holistic approach that combines our Customer Experience (CX) with our Systems Integration (SI) capabilities. We provide a team of consultants that seamlessly integrate user experience analysis and with unparalleled expertise in design, development, security, and accessibility. Certified by the International Association of Accessibility Professionals (IAAP) as CPWAs (Certified Professionals of Web Accessibility), our CX team designs universally accessible solutions. Their collective experience not only enables alignment with business imperatives but also supports an intuitive and accessible experience for all users.



**We provide the most realistic up-front pricing and value collaboration over negotiation**

CapTech understands that we will need to partner with DMV to decompose and prioritize the high-level feature and capability requirements defined in the EPD before Stage 2 development begins. CapTech knows that requirements refinement is a normal and integral part of the software/product-development process. Our bias is always towards collaboration over negotiation, and we believe our proposal and pricing is as realistic as DMV can expect based on the complexity of their system, the information provided in the EPD, and our history working together. Our intention is to provide DMV with as realistic an estimate for this scope of work as possible, and our low volume of historical change orders with DMV and CoVA agencies over the past 20+ years supports this.



**We provide innovative solutions grounded in data and tailored to DMV's needs**

Technology alone does not solve problems. By harnessing AI, specifically our LegacyLift tool, CapTech will be able to more efficiently help DMV modernize and move off the mainframe. LegacyLift utilizes large language models (LLM) and will accelerate and scale our analysts' and engineers' ability to understand the intent of DMV's current system. Our overall approach for Stage 1 and Stage 2 leverages AI, other innovative solutions, and tools to accelerate discovery and analysis activities, develop more efficiency and with higher quality, reduce delivery risks, and limit churn due to missed requirements. These efficiency improvements will both reduce the cycle/processing time in multiple stages of our delivery pipeline and save significant lead time across all tasks and activities. For additional information on our Innovation Approach, see Appendix 3 – Innovation Approach.



**CapTech has extensive experience in mainframe modernization.**

As highlighted through successful projects in the financial services and public sector, demonstrates our expertise in designing and implementing modern architectures to replace legacy mainframe systems. We have a proven track record of delivering tangible results, such as faster time to market, reduced costs, increased flexibility, and improved

functionality. Additionally, our ability to provide comprehensive support throughout all phases of the modernization program, from program management to design to development, ensures a seamless and efficient transition. With our deep understanding of the challenges associated with mainframe replacements and our commitment to delivering high-quality solutions, CapTech is well-positioned to be a valuable partner to the DMV in achieving a successful Modernized CSS solution.



### Our Public Services focus and expertise

CapTech has a dedicated Public Services team and is a national leader at implementing citizen and user-centric experiences and modernization efforts. CapTech has a long-standing 20+ years partnership history with CoVA agencies, helping our clients improve processes, modernize systems, and facilitate the adoption of organizational changes. Our cross-functional, collaborative culture enables us to bring the comprehensive capabilities and flexibility needed to best support and partner with DMV. CapTech' superior architects, engineers, strategists, designers, and analysts bring expertise in different services and technologies, enabling us to deliver on-time and meet DMV's goals. In addition, our team has access to SMEs from CapTech's Commercial Team, helping CapTech' team members enhance the citizen-to-government model by applying innovations and best practices from our commercial clients.



Figure 2: Sampling of CapTech's CoVA Partnerships

For more examples of CapTech's qualifications and projects, refer to Sections 5 and 10.

## 3.2 - In Response to Section 5 Part B Overview

### IN-SCOPE CORE LINES OF DMV BUSINESS

The Modernized CSS Solution shall support all in-scope core lines of DMV business activities (credentialing, tax processing, and information provisioning) that are accessible through all DMV point of contact channels (service delivery/customer account via full service, assisted service, and self-service channels), and the necessary shared services (financial services, business intelligence support, and inventory management).

The Supplier must acknowledge and confirm their understanding that the Modernized CSS Solution developed by the Contractor and DMV shall support all in-scope core lines of DMV business activities through all DMV point of contact channels, and the necessary shared services described and defined in this EPD.

The in-scope core lines of DMV business activities are defined as follows:

- a. Credentialing – A DMV credential is evidence that a privilege has been granted to perform an activity. DMV's main function is to administer motor vehicle laws and privileges while issuing credentials accurately, securely, and efficiently. This includes the provision of driver testing and licensing, vehicle titling and registration, credentialing of commercial motor carriers, and regulatory licensing functions such as fuel distributors, rental car companies, dealers, commercial driver training schools, driver improvement clinics, and 3rd party testers. DMV makes use of stand-alone and/or third-party vendor applications with interfaces to the existing CSS system to support some credentialing activities such as credentialing of motor carriers, fuel distributors, etc.
- b. Tax Processing – DMV administers motor vehicle sales and use tax, fuels tax, and International Fuels Tax Administration (IFTA) tax laws. This includes tax filings and related support for the calculation, collection, accounting, and reporting statistics for all tax filings (including IFTA and tax on fuel). DMV makes use of stand-alone and/or third-party vendor applications with interfaces to the existing CSS system to support tax processing activities and related processes. Tax processing capabilities that are related to calculation and collection of motor vehicle sales and use taxes are supported within the credentialing functions of the existing CSS system.
- c. Information Provisioning – The provisioning of driver, vehicle, and customer information to external entities. DMV makes use of a third-party vendor (via the State of Virginia website) for provision of certain information products to paying customers. Frequent information requestors include individual customers, insurance companies, motor vehicle dealers, service providers acting on behalf of dealers and insurance companies, attorneys, courts, private companies, and volunteer organizations that employ drivers, local government Treasurers and Commissioners of Revenue, various state agencies such as the Virginia State Police, Department of Transportation, Department of Social Services, and other state DMVs. Examples of information products include driver transcripts, vehicle transcripts, vehicle history reports, compliance summaries (which report the steps an individual customer must take to regain a particular credential), digitized photographs, and accident reports.

In support of the in-scope core lines of DMV business activities, the Modernized CSS Solution must provide the following functionality:

- a. Service Delivery/Customer Account capabilities (such as user interfaces supporting DMV's point of contact channels including full service, assisted service, and self-service).
- b. Credentialing capabilities (such as grant/reinstate privilege and issue credential, withdraw privilege, administrative proceedings, and manage credential audits) and related interfaces with stand-alone and/or third-party applications.
- c. Tax processing functions through interfaces with stand-alone and/or third-party applications.
- d. Information provisioning capabilities (such as process information requests).
- e. Financial services capabilities, such as:
- f. Open/close work unit.
- g. Integration of DMV's ERP System, Oracle e-Business Suite, as necessary to support various financial functions such as general ledger, accounts payable, accounts receivable, etc.
- h. Business intelligence capabilities to support the delivery of data to external data reporting system(s) based on the DMV Data Architecture program.
- i. Inventory management capabilities (such as manage secured inventory via daily transaction processing and integration with Oracle e-Business Suite to report inventory usage)

## Our Delivery Principles for DMV's Unique Situation

CapTech understands how important it is to DMV that modernization activities do not disrupt critical services to the DMV, citizens, businesses, other government agencies, non-profit organizations, or any other external parties that rely on the DMV. According to the EPD and DMV's website, DMV serves 6.2 million licensed drivers and ID card holders with over 8.4 million registered vehicles. Through DMV's headquarters in Richmond, Virginia, DMV operates 76 customer service centers, 60 DMV Select offices, 13 permanent motor carrier service centers (weigh stations), 3 Customer Call Centers, and a website that offers more than 50 transactions to citizens. DMV collects more than \$3 billion in revenue for Virginia's transportation programs while operating on a budget of less than \$300 million. DMV has more daily face-to-face contact with Virginia's citizens than any other state agency.

We understand that failure is not an option, and that DMV needs a partner who can see them through this modernization journey as fast and with the lowest risk possible. As a Virginia-based consultancy we will not take these responsibilities lightly, this project is personal for us, and we acknowledge and confirm our understanding that this modernization must maintain or enhance services to the DMV and the many citizens and stakeholders it serves.

### OUR UNDERSTANDING

We understand that failure is not an option, and that DMV needs a partner who can see them through this modernization journey as fast and with the lowest risk possible.

Unfortunately, there are several relevant and recent examples where other states and jurisdictions struggled with similar modernization efforts. For example, the Office of the Legislative Auditor for the State of Minnesota put out a Special Review on February 14, 2019 titled “Factors That Contributed to MNLARS Problems” (<https://www.auditor.leg.state.mn.us/sreview/mnlarsfactors.pdf>). That Special Review highlights compounding problems that resulted in a release that created significant hardship for the state, citizens, businesses, and other parties despite more than \$100 million in funding and nine (9) years of development.

CapTech calls this example to attention because many of the factors identified in the Special Review had less to do with the technical solution or the project management approach than many other factors that will be relevant to this project, for example:

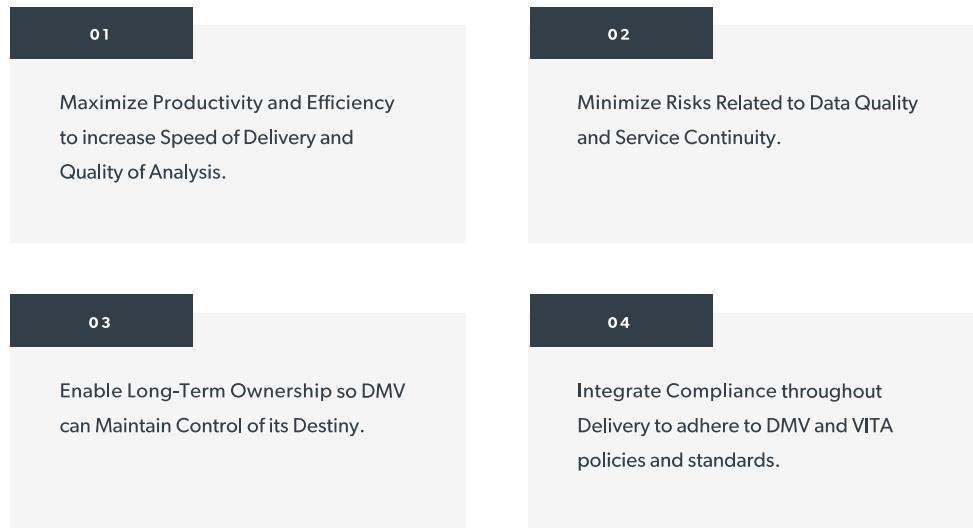
- Not changing business processes ahead of modernization
- Unsuccessful vendor partnerships with heavy focus on contract negotiation
- Lack of clarity and alignment of technical vision and scope
- Numerous leadership and governance gaps
- Insufficient business stakeholder involvement
- Over-utilization of “shared” resources assigned to multiple projects

Based on our understanding of what DMV aims to accomplish as part of the EPD, CapTech foresees similar risks that DMV must successfully navigate as part of this project. To best navigate these risks, CapTech envisions creating an efficient and effective value stream where we transparently define, develop, validate, and deploy/release demonstrable and valuable components of the Modernized CSS Solution iteratively to production-like environments. Our pragmatic approach relies on intense partnership and transparency between CapTech and DMV, a process that supports frequent inspection and feedback on small batches of work, a culture that celebrates “failing fast” to reduce rework, and a relentless commitment to only migrating valuable features and capabilities that are critical and required for the Modernized CSS Solution while keeping risks in check.

We believe our pragmatic approach to modernization will enable DMV to move off the mainframe as fast and with the lowest risk as possible. This project aims to eliminate decades of technical debt and enable DMV to take back control of its long-term destiny to the benefit of all Virginians. After Stage 2, DMV will have the architectural enablers and a robust backlog of prioritized features and capabilities that development teams can immediately begin implementing to continuously improve customer and user experiences, drive self-service functionality, reduce contact center volumes, and enable DMV to perform its administrative responsibilities more efficiently and effectively.

Throughout our proposal, the solution and approach we describe will follow these four (4) high-level

principles for each key area of modernization:



*Figure 3 - CapTech Delivery Principles*

This modernization includes millions of lines of existing code, thousands of existing batch jobs and screens, and hundreds of existing services and integrations. DMV desires to complete this modernization in 3.5 years, which equates to approximately 850 net working days or 85, 10-day sprints/iterations. CapTech expects to need frequent decisions, real-time feedback, and timely inspection and validations from DMV stakeholders every single sprint/iteration. Our ability to complete this modernization in this ambitious timeline is going to depend on CapTech and DMV's ability to partner together effectively, DMV's ability to make fast and informed decisions, the development teams' ability to continuously learn and improve, and on our project leadership team's ability to minimize or prevent bottlenecks, low-value work, rework, and unplanned work. We are excited at the opportunity to partner with DMV on this ambitious modernization and believe our approach, capabilities, and proven ability to partner effectively with DMV makes us the lowest risk and best investment for this transformational initiative.

## Acknowledgement and Understanding of Scope

CapTech acknowledges and confirms that we understand that the Modernized CSS Solution developed by the Contractor and DMV shall support all in-scope core lines of DMV business activities through all DMV point-of-contact ("POC") channels, and the necessary shared services defined in the EPD. This includes all credentialing, tax processing, and information provisioning business activities that are accessible through full service, assisted service, and self-service POC channels and necessary shared financial, business intelligence, and inventory management services.

We propose optimizing processes and interfaces (including core aspects of the user experience) to adhere to modern standards while implementing functionality that is very close to what exists today. Following this approach will give DMV more confidence that functionality and transactions work as expected while we modernize the underlying architecture and migrate/synchronize data. This project is going to have high complexity and risk, and we are concerned that significantly changing processes, interfaces, and data in flight during modernization will introduce untenable risk and delays, require numerous changes that increase costs, and make testing incredibly difficult.

Throughout this proposal, and in alignment with the proposal assumptions in Part 13, CapTech defines how the Modernized CSS Solution and modernization approach will support:



Rearchitecting (required) existing on-line and batch code, user interface applications, databases, and interfaces to a modern, microservice architecture so that the new architecture meets DMVs functional and non-functional requirements and business needs.



Embracing transparent, agile methodologies with frequent demonstration of value.



Integrating with (required) existing systems and third-party applications.



Migrating and/or synchronizing data from the current mainframe to the new environment in alignment with functional and non-functional requirements.



Complying with Virginia Information Technology Agency (VITA) and DMV's current security policies and standards.



Implementing must have functionality, capabilities, and security requirements along with equal or improved performance to the current system as possible.



Maintaining and enhancing overall customer service and transaction processing along with enabling the same or better service, performance, and efficiency as possible.



Training, coaching, and supporting DMV's Information Technology staff to transition, operate, support, and maintain the re-written applications, databases, and interfaces in the new environment.

CapTech also defines how we will provide all necessary services and support for the overall Modernized CSS Solution project throughout this proposal, including:

- Planning, defining, analyzing, designing, developing, customizing, configuring, testing, and implementing a Modernized CSS Solution that supports all DMV core business processes defined in the EPD while utilizing iterative / agile methodologies.
- Developing interfaces and integrations with required internal and external systems in support of business and transaction processes.
- On-site project management, project staffing, training, coaching, and transition support.

## Overall Approach

Our approach will focus on a reimplementation of existing functionality and capabilities to a modern architecture to set the stage for ongoing business modernization and transformation for many years to come.

It is our interpretation that the EPD requires us to modernize the user interfaces for windows-based applications (e.g., mySelect) and 3270 screens to more maintainable web-based applications that adhere to the DMV brand guidelines. Our goal is to update the look and feel of these specific applications, while keeping the processes, data, and core experience consistent with what exists today. This approach will accelerate design activities, enable “like-for-like” testing as much as possible, minimize change management and training needs, and reduce overall risk to the modernization. For other web-based applications, we will replace the functionality in the broker services tier. Applications that connect to the broker tier, such as but not limited to dmv.virginia.gov, EZHaul, etc., are the responsibility of the DMV to update to use the Modernized CSS Solution APIs. This is just one of many examples of how we aim to deliver fast, minimize risk, and enable long-term ownership of the solution.

## Analysis Approach

We propose using our LegacyLift solution to reduce the time, complexity, and risk associated with requirements definition using the existing code base, test cases, requirements, process flows, the code of Virginia, and other sources. Using these sources, our innovative AI solution will aid in the rapid and accurate definition of user stories, requirements, and acceptance criteria that CapTech and DMV can refine, validate, and approve as ready for development. This will reduce the number of CapTech analysts and engineers required for key discovery activities. It will also alleviate some of the up-front time from DMV SMEs and stakeholders by surfacing institutional knowledge that DMV would have otherwise lost due to turnovers and retirements and removing hours of workshops that we would typically need to gather initial requirements.

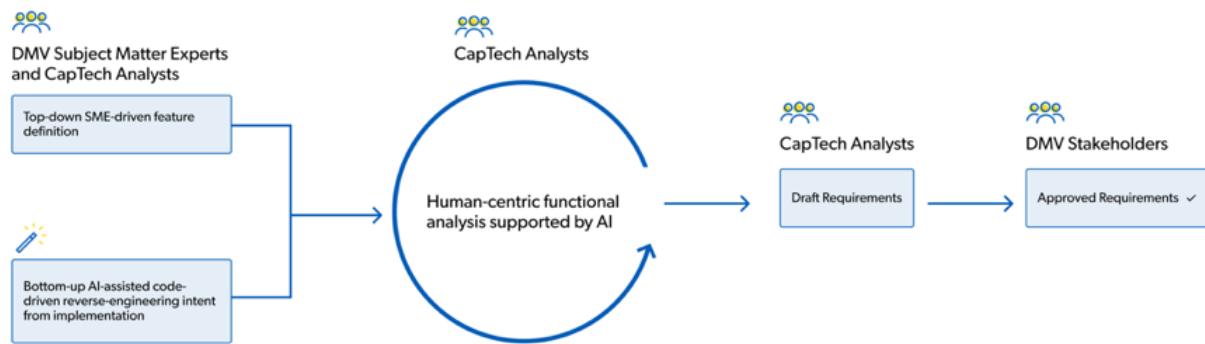


Figure 4 - Analysis Approach

While we will use AI as an accelerator, it is not a replacement for a skilled and thorough analysis team. We will start with top-down SME-driven feature definition based on the scope outlined in the EPD. CapTech analysts will partner with DMV SMEs to establish a high-level understanding of business processes and identify functionality that enables those processes today.

From there, we will assess the outputs from LegacyLift, reconciling our code analysis results with our SME knowledge to begin to assemble a wholistic view of the scope required to replace the mainframe code, broker services, batch processes, and other legacy components. We will continuously iterate and refine using traditional business analysis techniques as well as AI-assisted analysis. Reviewing the existing code will also help to uncover lesser-known scenarios or edge cases to avoid rework later when we discover new information. We will also feed the accepted requirements into LegacyLift after DMV's review to further improve the quality and speed of analysis activities.

AI assisted analysis of process impacted by the Modernized CSS Solution will include:

- The review of existing documentation related to the current state process
- Analysis of the Code of Virginia and other process and procedure documents to validate business rules are met
- AI-assisted analysis of the code and existing test cases
- Creation of future state process flows
- Creation of Features and User Stories that will be developed as part of the solution

More traditional analysis of process impacted by the Modernized CSS Solution will include:

- Field research in the form of shadowing with DMV Customer Service Center employees
- Key stakeholder interviews to develop a thorough understanding of the DMV's "end-to-end" processes

During the project, our primary objective will be to document features and "Must-Have" scope to maintain

existing services. While designing the future state, it is likely that CapTech and DMV will identify process improvements that can increase service and efficiency. For any process change, we will first seek to understand the impact to the project as well as any impacts to end users that may require rework in other systems or training and change management efforts. Based on this assessment, we will aim to implement any improvements to greatly improve service and efficiency in this project with little or no impact on schedule and budget.

Examples of areas that we may jointly agree to improve with little or no impact to schedule or budget may be reorganizing how the system presents information to an end user or reducing the number of steps taken to complete a transaction. We will place any process improvements that we do not address during the project execution phase on a backlog for future consideration and planning.

## Requirements Definition Approach and Terminology

To document and manage the scope for the Modernized CSS Solution, we will leverage agile work breakdown principles and terms to translate DMV's business process and requirements into a hierarchical backlog structure using Themes, Epics, Features, and User Stories.

This structure allows organization and delivery at the team, product/service/solution, and overall project level and will allow us to break down DMV's core lines of business into manageable units of value. Smaller units of working software are easier for stakeholders, developers, and testers to understand and deliver the desired functionality. This scaled agile approach will help teams deliver complete pieces of functionality that are appropriately small enough to test at each level and enables the DMV and CapTech teams to agree on the larger sets of components and capabilities that we need to prioritize in our iterative deployment cycle/milestone plans.

### Units of Work Hierarchy

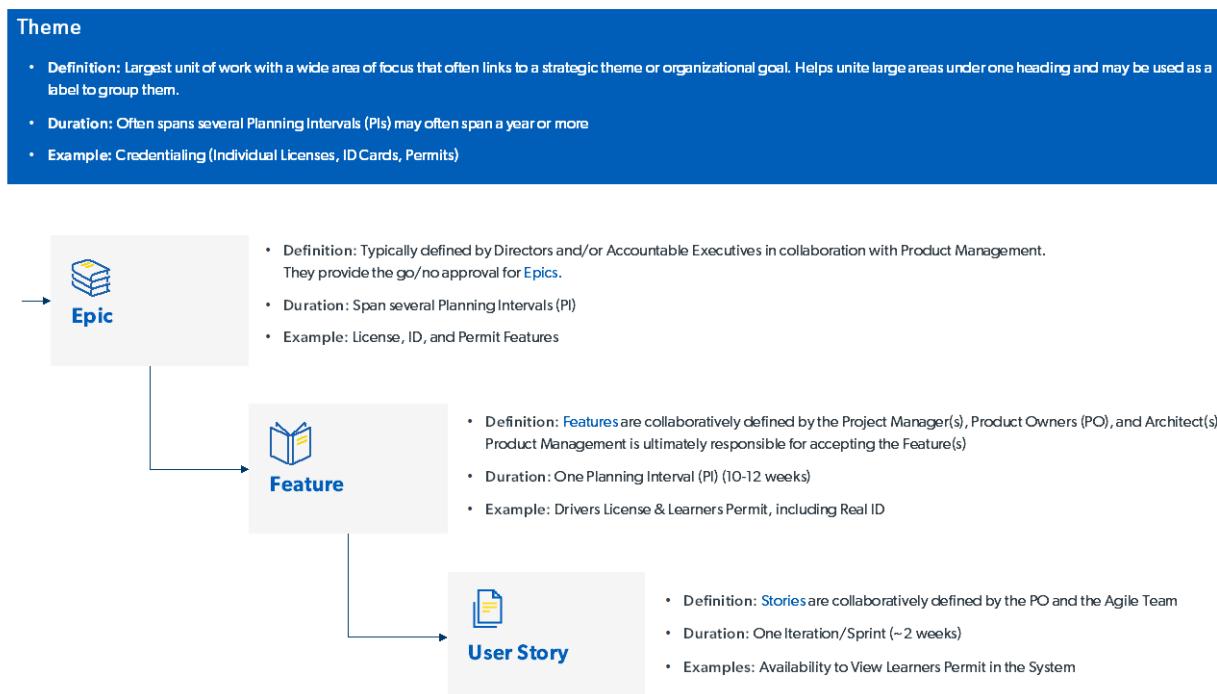


Figure 5 - Units of Work Hierarchy

Based on the information in the EPD and our knowledge of DMV's business, services, and processes, we've developed a baseline of the Themes, Epics, and Features for the Modernized CSS Solution. During Stage 1, CapTech will clarify, elaborate, and refine the Themes, Epics and Features for the "Must Have" scope which we will map out as part of the "Go-Forward" Plan delivered at the end of Stage 1, which will validate our timeline and estimates for Stage 2.

During Stage 2, Feature definitions will serve as the foundation for creating user stories for development. Having clearly defined and agreed upon Feature definitions will provide guardrails to limit expansion or scope and reduce lengthy discussions around whether a specific piece of functionality is in or out of scope.

We provide our initial list of Themes and Epics below. Throughout the remainder of our response to Section 5 B and C in the EPD, we will further elaborate on the initial Epics and Features defined within each Theme (see 3.3-3.21).

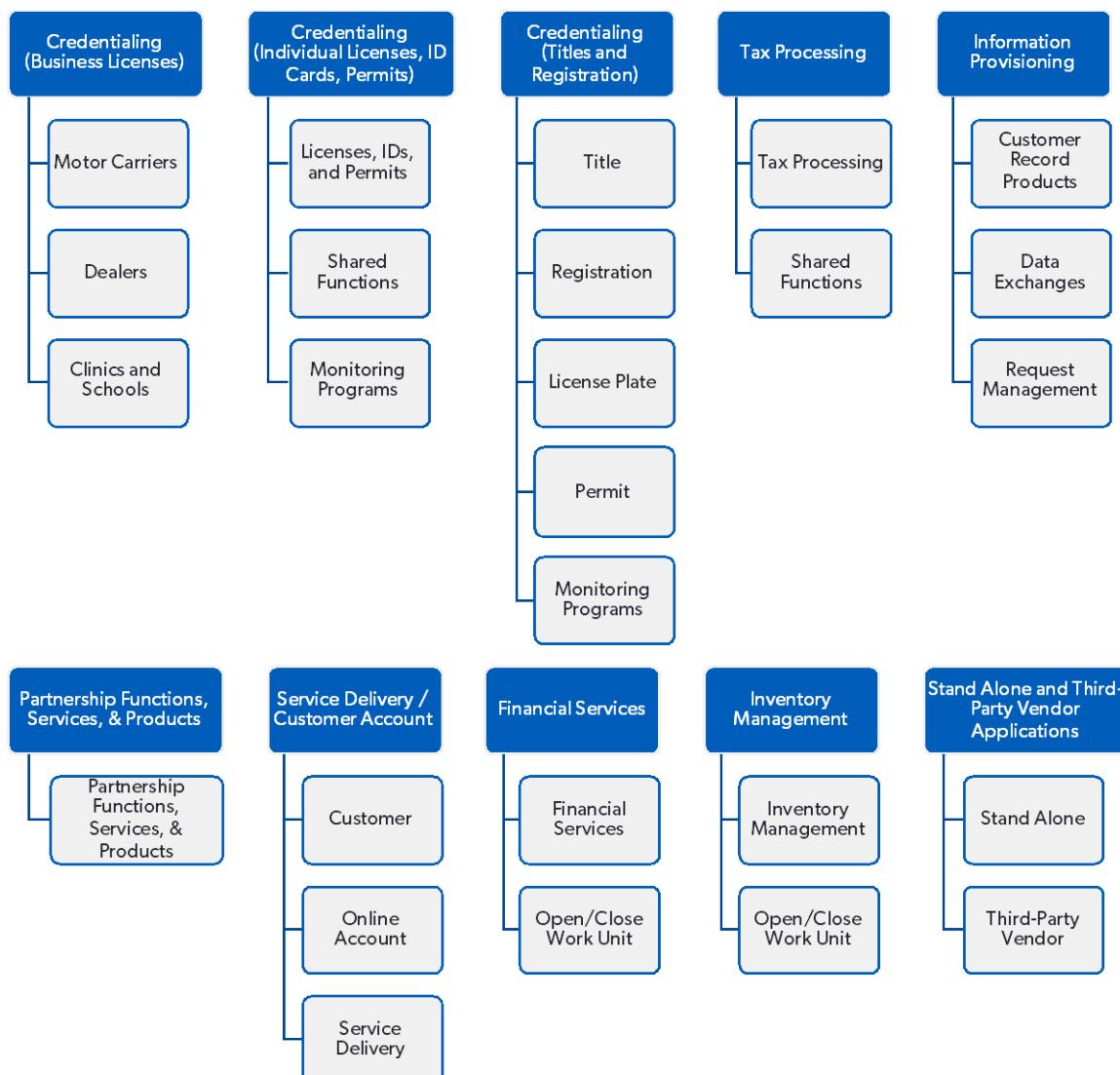


Figure 6 - Initial Themes and Epics

### 3.3 - In Response to Section 5 Part B Paragraph A

#### Credentialing (Business Licenses)

- Functions include:
  - Originals, renewals, reissues, duplicates, surrenders
  - Sanctions associated with business licenses
  - Associated audits
  - Associated hearings
  - Associated tests
- Monitoring Programs include:
  - IRP - International Registration Plan (supported by VirginiaMCS)
  - IFTA - International Fuels Tax Agreement (supported by VirginiaMCS)
- Business Licenses include:
  - Dealer licenses
    - Motorcycle
    - Trailer
    - RV
    - Vehicle manufacturer distributor
    - Dual independent
    - Independent
    - Franchise
    - Dual franchise
    - Salvage
    - Salvage pool
    - Demolisher
    - Vehicle removal operator
  - Driver Improvement Clinic
  - Commercial Driver Training School
  - Third-party tester certification
  - Operating authority for motor carriers and transportation brokers
  - Licenses issued to individuals related to businesses:
    - Salespersons
    - Driver training school instructor
    - Driver improvement clinic instructor
    - Third-party examiner authorization
    - Escort driver trainer
  - Fuels tax license (supported by VAETS)
  - IFTA license (supported by VirginiaMCS)

CapTech will implement the Credentialing (Business Licenses) Theme to provide functionality for two types of businesses - business partners that perform credentialing functions or services in partnership with the DMV and motor carriers that operate in the Commonwealth of Virginia.

Granting operating authority for motor carriers and transportation brokers is an essential step for the subsequent vehicle and tax processing functions that these customers are responsible for. International Registration Plan (IRP) and International Fuels Tax Agreement (IFTA) monitoring programs will apply to these businesses. CapTech requires stakeholder engagement from Motor Carrier Services for feedback, reviews, and approvals.

For businesses that perform credentialing functions or services, such as dealers, driver improvement clinics, driver training schools, and third-party clinics, we understand that DMV licenses businesses, as well as their representatives, which are qualified to perform their authorized duties. CapTech requires stakeholder engagement from Dealer Services and Driver Training Work Centers to understand their current processes and any opportunities for efficiency.

## Credentialing (Business Licenses)

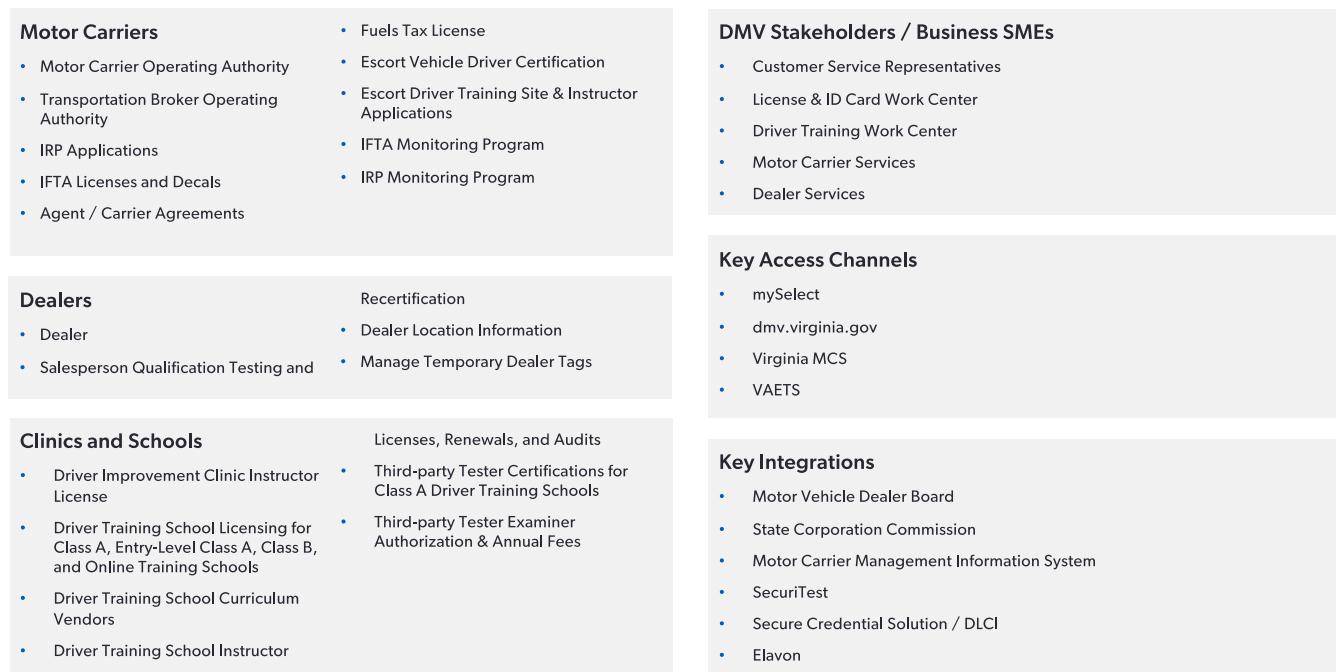


Figure 7: Credentialing (Business Licenses) Theme and Epics

### 3.4 - In Response to Section 5 Part B Paragraph B

#### Credentialing (Individual Licenses, ID Cards, Permits)

- Functions include:
  - Originals, renewals, reissues, duplicates, surrenders
  - Sanctions associated with individual licenses and driving privileges
  - Sanctions associated with identification cards
  - Associated audits
  - Associated hearings
  - Associated tests
- Monitoring Programs include:
  - Crashes
  - Convictions (including DUI and Uninsured Motor Vehicle)
  - Driver Improvement Program (Demerit points and applying Safe Driving points)
  - Insurance Monitoring
  - Medical Review
  - Judgments
  - Youthful driver program
  - Child Support Enforcement – Issuance of suspension notices
  - Ignition Interlock and Virginia Alcohol Safety Action Program
- Individual Licenses include:
  - Driver's license and learner's permit (standard duration and limited duration as well as REAL ID compliant and non-REAL ID compliant)
  - Commercial driver's license (standard duration and limited duration as well as REAL ID compliant and non-REAL ID compliant)
  - Commercial learner's permit (standard duration and limited duration)
  - Motorcycle classification on licenses
  - Motorcycle learner's permit
  - Driver privilege card
  - Disabled parking placards
- Individual Identification Cards include:
  - Adult ID (standard duration and limited duration as well as REAL ID compliant and non-REAL ID compliant)
  - Juvenile ID (standard duration and limited duration as well as REAL ID compliant and non-REAL ID compliant)
  - Special ID

With most Virginia citizens holding a driver's license or ID card, it's easy to see how Credentialing (Licenses, ID Cards, and Permits) is one of the primary lines of business that customers associate with the DMV.

This Theme covers the scope for issuing, renewing, replacing, surrendering, and withdrawing the various types of individual credentials listed in the "Licenses & IDs" Epic. While each credential type has its own unique requirements, we've identified several Features that span credential types, such as knowledge testing and printing, that we capture under a "Shared Functions" Epic.

The "Monitoring Program" Epic covers the implementation of functionality to update credential information and take necessary actions based on key information from outside sources or recurring activities. We assume that DMV currently implements many of the monitoring programs through batch jobs. We will capture the scope to reimplement these functionality-related batch jobs within this Theme.

Much of the process to issue a new credential must happen in-person at one of the Customer Service Centers via mySelect. While we intend to keep much of the functionality in mySelect the same, we will complete User Experience (UX) research with Customer Service Representative (CSR) to observe how CSRs are using current application so that we can best design the new web-based version to continue to support their top processing needs and begin to understand pain points and areas of improvement that we may consider for Stage 2 or capture on the backlog for future modernization.

## Credentialing (Individual Licenses, ID Cards, Permits)

<b>Licenses, IDs, &amp; Permits</b>	<b>DMV Stakeholders / Business SMEs</b>
<ul style="list-style-type: none"> <li>▪ Drivers License &amp; Learners Permit, including Real ID</li> <li>▪ Motorcycle Classification &amp; Learners Permit</li> <li>▪ Commercial Drivers License &amp; Learners Permit, Including Real ID</li> <li>▪ Driver Privilege Card</li> <li>▪ Disabled Parking Placard</li> <li>▪ Adult &amp; Juvenile ID Card</li> <li>▪ License Exchange for ID</li> <li>▪ Special ID</li> <li>▪ Veteran Indicator &amp; ID Card</li> </ul>	<ul style="list-style-type: none"> <li>▪ Customer Service Representatives</li> <li>▪ License &amp; ID Card Work Center</li> <li>▪ CDL/NDR Work Center</li> <li>▪ Medical Review Services</li> <li>▪ Driver Training Work Center</li> </ul>
<b>Shared Functions</b>	<b>Key Access Channels</b>
<ul style="list-style-type: none"> <li>• Knowledge &amp; Skills Testing</li> <li>• Document Scanning &amp; Verification</li> <li>• Photo Image</li> <li>• Printing</li> <li>• Compliance, Orders, and Events</li> </ul>	<ul style="list-style-type: none"> <li>• Vision Screening</li> <li>• Track License / ID Delivery Status</li> <li>• Process NDR Match</li> <li>• Audits, Sanctions, Hearings</li> <li>• Start Anywhere</li> <li>• Collection of Fees</li> </ul>
<b>Monitoring Program Features</b>	<b>Key Integrations</b>
<ul style="list-style-type: none"> <li>• Crashes</li> <li>• Convictions (including DUI and Uninsured Motor Vehicle)</li> <li>• Driver Improvement Program (Demerit points and applying Safe Driving points)</li> <li>• Insurance Monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Medical Review</li> <li>• Judgments</li> <li>• Youthful driver program</li> <li>• Child Support Enforcement – Issuance of suspension notices</li> <li>• Ignition Interlock and Virginia Alcohol Safety Action Program</li> <li>• SecuriTest</li> <li>• Secure Credential Solution / DLCI</li> <li>• AAMVA, EVVE, SSA, USPVS, SAVE, SSA</li> <li>• VSP VCIN</li> <li>• Crash Data</li> <li>• Insurance Companies</li> <li>• Department of Social Services</li> <li>• Department for the Blind and Vision Impaired</li> <li>• Elavon</li> </ul>

Figure 8 - Credentialing (Individual Licenses, ID Cards, Permits) Theme and Epics

### 3.5 - In Response to Section 5 Part B Paragraph C

#### Credentialing (Title and Registration)

- Functions include:
  - Titles: originals, replacements, supplementals, abandoned vehicle titling, and various title maintenance functions
  - Registrations: Originals, renewals, reissues, surrenders, transfers, special reserve plates, fleet renewals, IRP registrations (interface with 3rd party solution that posts plates to CSS record), and various registration maintenance functions
  - Sanctions associated with titles and registrations
  - Associated audits
  - Associated hearings
  - Related issuance of decals and license plates
  - IRP, including transmittal process (supported by VirginiaMCS)
  - Overload permits
  - Trip permits
  - Hauling permits
  - VIN Plates
- Monitoring Programs include:
  - IRP - International Registration Plan (supported by VirginiaMCS)
  - Citation Tracking
  - Insurance Monitoring
  - Vehicle Registration Withholding
  - Emissions

The Credentialing (Titles and Registration) Theme represents one of the largest areas of scope for the Modernized CSS Solution. We have divided this Theme into five separate Epics to begin to decompose the functionality related to Titles, Registration, License Plates, Permits, and Monitoring Programs.

One of the complexities of this Theme is that these activities span a wide range of customer types, access channels, and external partners. From citizens who own their own car to motor carriers managing large fleets to dealers transferring license plates related to a new sale, we will perform analysis and work with stakeholders to thoughtfully refine our features to align to each use case while considering how we can also ensure functionality is easily maintainable and extendable.

From a user interface perspective, we will leverage the same UX activities mentioned above to understand the activities that CSRs must complete in mySelect to inform where any usability or process improvement opportunities may exist.

For the other key access channels, like VirginiaMCS and EZ Haul for motor carriers and the Online Dealer and Temporary Tag Print third-party applications for dealers, we will complete the development to replace the broker services tier within this Theme. We will track dependent activities, such as the updates to these systems to consume the new microservices and the related support for integration testing, separately in the Stand Alone and Third-Party Vendor Applications Theme below in Part 3.9.

## Credentialing (Titles and Registration)

<b>Title</b>	<ul style="list-style-type: none"> <li>• Original Title</li> <li>• Electronic Title</li> <li>• Replacement Title</li> <li>• Substitute Title</li> <li>• Sales and Use Tax Adjustment</li> <li>• Manage Liens and Lienholders</li> <li>• VIN Issue and Maintenance</li> <li>• Review Title Activity and Verify Validity</li> <li>• Casual Sales</li> <li>• Report a Lost or Stolen Vehicle</li> <li>• Abandoned Vehicles</li> <li>• Mechanical / Storage Lien Process</li> <li>• Motor Vehicle Sales and Use Tax</li> </ul>	<b>DMV Stakeholders / Business SMEs</b>
<b>Registration</b>	<ul style="list-style-type: none"> <li>• Original Registration</li> <li>• Reactive, Reissue, Renewal, Surrender, Transfer Registration</li> <li>• Registration Renewal Notices</li> <li>• Fleet Registration</li> <li>• Heavy Vehicle Use Tax</li> <li>• Change Vehicle Weight</li> <li>• Add or Change Vehicle Insurance</li> <li>• Casual Sales</li> <li>• Emissions Information</li> <li>• Decal Issuance</li> <li>• IRP, including Transmittal Process</li> <li>• Highway Use Fee and Mileage Choice</li> </ul>	<ul style="list-style-type: none"> <li>• Customer Service Representatives</li> <li>• Titles and Registration Work Center</li> <li>• Dealer Services</li> <li>• Motor Carrier Services</li> <li>• Insurance Services Work Center</li> </ul>
<b>License Plate</b>	<ul style="list-style-type: none"> <li>• Plate Purchase</li> <li>• Plate Deactivation, Reactivation, and Surrender</li> <li>• Reserve Plates</li> <li>• Souvenir Plate Purchase</li> <li>• Order Sample Plates</li> <li>• Personalized Message Review</li> </ul>	<ul style="list-style-type: none"> <li>• EZ Haul</li> <li>• EZ Reg</li> <li>• EZ Fleet</li> </ul>
<b>Permit</b>	<ul style="list-style-type: none"> <li>• Overload Permits</li> <li>• Hauling Permits</li> <li>• Trip Permits</li> </ul>	<ul style="list-style-type: none"> <li>• NADA</li> <li>• NCIC</li> <li>• VIN Decode</li> <li>• Dept. of Environmental Quality</li> <li>• Elavon</li> <li>• NVMTIS</li> </ul>
		<b>Key Integrations</b> <ul style="list-style-type: none"> <li>▪ Online Dealers</li> <li>▪ Temporary Tag Print</li> <li>▪ Print Sub System</li> <li>▪ International Registration Plan (IRP)</li> <li>▪ Citation Tracking</li> <li>▪ Insurance Monitoring</li> <li>▪ Vehicle Registration Withholding</li> <li>▪ Emissions</li> </ul>
		<b>Monitoring Program</b> <ul style="list-style-type: none"> <li>▪ International Registration Plan (IRP)</li> <li>▪ Citation Tracking</li> <li>▪ Insurance Monitoring</li> <li>▪ Vehicle Registration Withholding</li> <li>▪ Emissions</li> </ul>

Figure 9 - Credentialing (Titles and Registration) Theme and Epics

## 3.6 - In Response to Section 5 Part B Paragraph D

### Tax Processing

- Functions include:
  - Refund applications (supported by Oracle e-Business Suite)
  - Collections/Tax Assessments (supported by VAETS)
  - Associated audits (supported by VAETS)
  - Associated appeals (supported by VAETS)
  - Inspections (Dyed Fuel) and Investigations (supported by Oracle e-Business Suite)
  - Tracking and cross-matching (supported by VAETS)
  - IFTA Transmittals (supported by VirginiaMCS)

The Tax Processing Theme captures the Features listed below related to motor carriers and transportation brokers operating in Virginia, such as the Fuels Tax activities supported by Virginia Excise Tax Solution (VAETS) and IFTA processes supported by VirginiaMCS. While these stakeholders can initiate these transactions by mail or in person via mySelect, a large focus of this Theme will be developing the new microservices to support integration with VAETS and VirginiaMCS. DMV will be responsible for updating these applications and performing key testing activities.

### Tax Processing

<b>Tax Processing</b>	<ul style="list-style-type: none"> <li>• Calculate IFTA Tax Report</li> <li>• Mail Quarterly IFTA Tax Returns</li> <li>• Receive and Process IFTA filings</li> <li>• IFTA Transmittals</li> <li>• Fuels Tax Payment</li> <li>• Fuels Tax Refunds</li> <li>• Diesel Vehicle Fuel Refunds</li> <li>• Heavy Vehicle Use Tax</li> <li>• Motor Fuels Tax</li> <li>• Motor Vehicle Fuels Sales Tax</li> <li>• Virginia Road Tax Fee</li> </ul>	<b>DMV Stakeholders / Business SMEs</b>	<ul style="list-style-type: none"> <li>• Customer Service Representatives</li> <li>• Motor Carrier Services</li> <li>• Tax Services</li> </ul>
<b>Shared Functions</b>	<ul style="list-style-type: none"> <li>• Associated Audits</li> <li>• Associated Appeals</li> <li>• Inspections and Investigations</li> <li>• Tracking and cross-matching</li> </ul>	<b>Key Access Channels / Integrations</b>	<ul style="list-style-type: none"> <li>• mySelect</li> <li>• VAETS</li> <li>• Virginia MCS</li> <li>• PRISM</li> <li>• Oracle e-Business Suite</li> </ul>

Figure 10 - Tax Processing Themes and Epics

### 3.7 - In Response to Section 5 Part B Paragraph E

#### **Information Provisioning**

- Products Related to Customer Records
  - Transcripts – vehicle and driver (multiple types)
  - Compliance summaries
  - Vehicle history reports
  - Crash reports
- Data Exchanges with External Entities
  - State agencies
  - Local government agencies
  - Federal agencies
  - Business partners

As mentioned in the EPD, DMV disseminates information about 6.2 million drivers and ID card holders and more than 7.8 million vehicles to external entities. Securing this information and ensuring its integrity is one of the most important functions of DMV, making the scope of this Information Provisioning line of business one of the most important functions of the Modernized CSS Solution.

To begin to organize the functionality in this Theme, we have created three Epics for Products Related to Customer Records, Data Exchanges, and Shared Features related to establishing and managing the various agreements that DMV has with external entities.

With the large number of integrations in this section, we will rely heavily on DMV stakeholders to communicate with external entities to create awareness of any impacts or actions that we will need these partners to take to accommodate and/or test the new data sharing formats.

#### Information Provisioning

<b>Customer Record Products</b>	<ul style="list-style-type: none"> <li>• Customer Transcripts</li> <li>• Vehicle Transcripts</li> <li>• Vehicle History Reports</li> <li>• Prospective Purchaser Inquiry</li> <li>• Compliance Summaries</li> <li>• Digitized Photographs</li> <li>• Crash Reports</li> </ul>	<b>DMV Stakeholders / Business SMEs</b>	<ul style="list-style-type: none"> <li>• Customer Service Representatives</li> <li>• Data Integrity Work Center</li> <li>• Vehicle Records Work Center</li> <li>• Driver Records Work Center</li> </ul>
<b>Data Exchanges</b>	<ul style="list-style-type: none"> <li>• Virginia State Police</li> <li>• Virginia Highway Safety Office</li> <li>• Commissioners of Revenue and Treasurers</li> <li>• Locality of Virginia Beach</li> <li>• Local Courts</li> <li>• DoD Selective Service</li> <li>• Federal Courts</li> <li>• Federal Motor Carrier Safety Administration</li> <li>• Insurance Companies (e.g. Youthful Driver)</li> <li>• Driver Alert</li> <li>• Motor Vehicle Dealers</li> <li>• Service Companies</li> <li>• Private Security Companies</li> <li>• Attorneys</li> <li>• Etc.</li> </ul>	<b>Key Access Channels</b>	<ul style="list-style-type: none"> <li>▪ mySelect</li> <li>▪ dmv.virginia.gov</li> <li>▪ Phone</li> <li>▪ Email</li> </ul>
		<b>Request Management</b>	<ul style="list-style-type: none"> <li>• Processing ad hoc requests</li> <li>• Authenticating requestors</li> <li>• Formatting data</li> <li>• Recording information releases</li> <li>• Managing subscription services</li> <li>• Calculating fees</li> <li>• Billing invoices</li> <li>• Information Use Agreements</li> <li>• Extranet Transaction Access</li> </ul>

Figure 11 - Information Provisioning Themes and Epics

### 3.8 - In Response to Section 5 Part B Paragraph F

#### **Partnership Functions, Services, and Products**

DMV performs business functions and services and issues products on behalf of external partners. Examples include, but are not limited to:

- Birth Certifications
- Marriage/Divorce/Death Certifications
- EZPASS
- Voter Registration

As a benefit to citizens, DMV administers several services on behalf of other agencies or external partners, like the ability to request Birth Certifications, Marriage/Divorce/Death Certifications, EZPASS, and Voter Registration. The Modernized CSS Solution will continue to provide this functionality to issue products or services and to collect revenue, when applicable.

#### **Partnership Functions, Services, & Products**

##### **Partnership Functions, Services, & Products**

- VDH Birth Certificates
- VDH Vital Records (Marriage, Divorce, and Death) Certificates
- VDOT EZPass
- Department of Elections Voter Registration
- DCJS Private Security Licenses
- DGIF Licenses

##### **DMV Stakeholders / Business SMEs**

- Customer Service Representatives
- Partner Agencies

##### **Key Access Channels**

- mySelect / DMV Select

Figure 12 - Partnership Functions, Services, & Products Themes and Epics

### 3.9 - In Response to Section 5 Part B Paragraph G

#### **Stand-Alone and Third-Party Vendor Applications**

Some DMV core business functions and related processes are supported by stand-alone and/or third-party vendor applications with interfaces to the existing DMV CSS system. Examples include, but are not limited to:

- VAETS – Virginia Excise Tax Solution: Supports fuel tax related processes and functions.
- Mileage Choice Solution: Supports mileage-based user fee related processes and functions.
- VirginiaMCS: Supports processing International Registration Plan (IRP) and International Fuel Tax Agreement (IFTA) transactions and related processes and functions.
- EZ Haul Solution: Supports hauling permits and related processes and functions.
- Oracle e-Business Suite: Supports various financial, tax processing, and inventory management related processes and functions.

CapTech recognizes that DMV has several applications that access information and perform transactions within the existing DMV CSS system. As mentioned above, we include the scope to reimplement the broker services that support these applications in the functionally aligned Themes, such as Credentialing or Tax Processing.

Our approach for maintaining the same level of service for these applications is to identify their use in each of the features within the DMV core lines of business and develop microservices that each application can leverage to perform the same transactions that they do today. We will consider the functionality of these services across multiple features in the design so we can create cohesive services instead of individual feature-based functionalities assembled in an ad-hoc manner.

CapTech will be responsible for developing the services while DMV or third-party vendors will be responsible for updating the applications to call the new services. During feature definition and user story refinement, DMV must identify a primary POC for each application that will be responsible for making any needed updates and complete integration and acceptance testing.

We will use the Stand-Alone and Third-Party Vendor Applications Theme to track the scope owned by the DMV application teams or third-party vendors to integrate the new services into the existing applications and the integration testing completed by these DMV or third-party vendor teams. CapTech will resolve any defects related to the microservices, but the application owners (i.e. DMV application teams or the third-party vendor teams) must address any defects related to the application. In the Staffing Plan section, we will talk more about the expectations and engagement model for these DMV teams. If DMV is interested in CapTech modernizing this and/or other user interfaces, then please see Pricing Worksheet 2 for optional component pricing (in section 11.3).

#### **Stand-Alone and Third-Party Vendor Applications**

<b>Stand-Alone Applications</b> <ul style="list-style-type: none"><li>• Transactions (dmv.virginia.gov) Integration Support</li><li>• VAETS Integration Support</li><li>• Mileage Choice Integration Support</li><li>• Virginia MCS Integration Support</li><li>• EZHaul Integration Support</li><li>• EZFleet Integration Support</li><li>• EZReg Integration Support</li><li>• Oracle EBS Integration Support</li></ul>	<b>DMV Stakeholders / Business SMEs</b> <ul style="list-style-type: none"><li>• Customer Service Representatives</li><li>• DMV IT Support Teams</li><li>• Vendor Application Support Teams</li><li>• Other Application Support Teams</li></ul>	<b>Third-Party Applications</b> <ul style="list-style-type: none"><li>• Online Dealer Integration Support (4)</li><li>• Temp Tag Print Integration Support (5)</li><li>• Fuels Tax Refund Integration Support</li></ul>
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Figure 13 - Stand-Alone and Third-Party Vendor Applications Themes and Epics

### 3.10 - In Response to Section 5 Part C Paragraph 2

#### Service Deliver/Customer Account – Level 0

*Service Delivery is functionality provided at the point of contact that enables successful completion of line of business processes. Points of contact include DMV Customer Service Centers, dmv.virginia.gov, DMV DIRECT (Contact Centers), DMV Select, Mail, Online Dealer, and Motor Carrier Service Centers.*

*Core functionality will include a customer account view of our customers. The customer account view will provide a holistic view of customer activities. Individual and business accounts will be viewed separately except in the case of an individual using a Social Security Number (SSN) to operate a business. The customer account view should enable DMV to consolidate customer data such as transaction history, payment history, vehicle and driver data and other information from separate applications and deliver a simple view that any customer service representative or staff member can use to provide customers with complete and accurate information. Access to information will be role-based, ensuring information is disseminated in accordance with statutes and policies.*

*The Modernized CSS Solution will be built from a true customer perspective and will provide a customer account profile of every customer, business partner, and stakeholder. This customer account profile should provide complete chronological information on every contact and transaction.*

*Information on future contacts, such as vehicle renewals, driver's license renewals, invoices or billing due or past due will be included as well. The system will provide drilldown capabilities to access transaction details. The system will monitor events and make available to the customer and the service provider any outstanding requirements such as pending actions, compliance requirements and renewal information. The system will evaluate the needs of the customer and display required transactions as well as transactions pending in the future. The ability to initiate and save partially completed transactions will reduce total processing time at Customer Service Centers by allowing customers to start a transaction at home or anywhere. Intelligent screen designs will provide field level validation, pre-population of basic information when allowed, enforcement of required fields, automatic calculations, automatic date population, and integration with DMV databases.*

As a key feature of a more customer-centric Modernized CSS Solution, the Service Delivery/Customer Account Theme will establish a common customer record that will be essential for managing other core services and lines of business. This new web-based customer account view will allow for further enhancement over time (as more customer transactions and data become available), it can form the basis of a new, robust customer-facing profile view for DMVNow (including inclusive and mobile-friendly versions).

When talking about customer-centricity, we most often think of the citizens or the people at the end of the value stream for a given service or product. However, employees and associates are often customers of these same systems, earlier in the value stream, with their own goals, needs, and behaviors that the system needs to support and accommodate. mySelect is one of those systems, and a Modernized CSS Solution will include improvements and enhancements as it transitions to a modern, web-delivered experience.

In addition, the civil servants and government employees at DMV are very much a part of the service delivery design for the functions comprising customer accounts. Providing a new, web-based mySelect that is responsive, intuitive, and easy to navigate will provide real benefits to Virginia citizens and DMV customers both directly and indirectly.

Coming out of Stage 2, this Modernized CSS Solution will lay the foundation for future modernization work across their service delivery channels and will enable DMV to explore additional customer relationship management functionality.

## Service Delivery / Customer Account

<b>Customer</b>	<ul style="list-style-type: none"><li>• Create Customer</li><li>• Customer Console</li><li>• Customer Inquiries</li><li>• Customer Alerts</li><li>• Email &amp; Text Preferences</li><li>• Change Name</li><li>• Change Address</li><li>• Change Sex Designation</li><li>• Update Emergency Contact</li><li>• Deceased Customer</li><li>• Administrative Proceedings / Hearings</li><li>• Law Enforcement Investigation Requests</li></ul>	<b>DMV Stakeholders / Business SMEs</b>
<b>Online Account</b>	<ul style="list-style-type: none"><li>• Create PIN</li><li>• Forgot Password</li><li>• Request Temporary PIN</li><li>• PIN Maintenance</li><li>• What Have I Done Online?</li></ul>	<b>Key Access Channels</b>
<b>Service Delivery</b>	<ul style="list-style-type: none"><li>• Transaction History</li><li>• Store Applications</li><li>• Store Contracts</li><li>• Store Correspondence</li><li>• Store User Reports</li><li>• Workflow Solutions</li><li>• Q-Flow Integration</li><li>• Store User Agreements</li><li>• Manage DMV Selects</li></ul>	<b>Key Integrations</b>
		<ul style="list-style-type: none"><li>• AAMVA, EVVE, SSA, USPVS, SAVE, SSA</li><li>• Onbase</li><li>• Q-Flow</li><li>• Address Verification</li><li>• Hearing Office Scheduling System (HOSS)</li></ul>

Figure 14 - Service Delivery / Customer Account Themes and Epics

### 3.11 - In Response to Section 5 Part C Paragraph 2.A

#### **Create Online Account – Level 1**

Online account access is a process allowing DMV customers (both individuals and business customers) with an existing record to perform DMV activities remotely. Online account access enables customers to perform many transactions through our secure network such as, but not limited to, driver's license renewal, registration renewal and records requests, as well as access to record specific information and providing customers with a view of their overall account.

Information can be accessed anytime, day or night, and can be done from anywhere. Online access will provide customers with a single point of contact for all products and services. The customer will be able to view all upcoming and/or outstanding events on their account. In addition, the customer will be able to view their customer profile including personal data such as name, date of birth, and height and weight. They will be able to view and change related addresses, their preferred method of communication, phone number, email address, etc. The online account access will also allow the customer to view data on vehicle ownership and registration, credentials, and historical data. The customer will be able to process and start transactions at home for recall and processing at a later time by a DMV service representative.

To continue to support the nearly 50 self-service transactions to citizens through dmv.virginia.gov, CapTech will include the new services (APIs) for the creation and management of online accounts, as listed above in the Service Delivery/Customer Account (Figure 14), in the Online Account Epic. We will capture other transaction-related services within the other functionally aligned Themes, such as Credentialing or Tax Processing. Our teams will create new services that are like the ones currently used by dmv.virginia.gov now, so that the existing user interface will only need minor changes. Redesigning the dmv.virginia.gov user interface is out of scope for this proposal to help streamline scope and maximize speed and efficiency for retiring the existing CSS solution. If DMV is interested in CapTech modernizing this and/or other user interfaces, then please see Pricing Worksheet 2 (section 11.3) for optional component pricing.

## 3.12 - In Response to Section 5 Part C Paragraph 3.A

### **Grant/Reinstate Privilege & Issue Credential – Level 1**

A privilege can be granted and/or reinstated and the credential can be issued as an original, renewal, duplicate, or reissued document. The issuance process includes the following common activities for all credential types:

- Submit application and documents.
- Scanning, evaluation, and verification of documents.
- Validation of eligibility.
- Testing, training, and inspection when appropriate.
- Collection of fees and product issuance.

Numerous interfaces will be utilized to validate the data supplied by a customer or associated with a customer's identity to verify eligibility to receive a credential. Interfaces include, but are not limited to:

- National Crime Information Center (NCIC)
- International Fuels Tax Agreement (IFTA) Clearinghouse
- International Registration Plan (IRP) Data Repository
- VINtelligence
- Social Security Administration (SSA)
- State Corporation Commission (SCC)
- Virginia State Police (VSP)
- Motor Carrier Management Information System (MCMIS)
- National Driver Registry (NDR)
- Commercial Driver License Information System (CDLIS)
- Systematic Alien Verification for Entitlements (SAVE)
- National Motor Vehicle Titling Information System (NMVTIS)
- Electronic Verification of Vital Events (EVVE)
- United States Passport Verification System (USPVS)
- Digital Image Access and Exchange (DIAE)

Knowledge tests are conducted for credentials, such as driver's license, learner's permit, pesticide license, escort driver certification, salespersons license, and dealer's license, to determine the customer's understanding, implementing, and adhering to the laws associated with the credential. Some tests can be taken remotely through a remote testing provider.

Knowledge tests can be initiated when a customer visits a Customer Service Center and begins a transaction. During transaction processing, information in the Modernized CSS Solution will be electronically routed from CSS to the 3<sup>rd</sup> party SecuriTest Solution queue and the customer will be directed to the testing area. The customer will be assigned a test station where it will administer the test, score the test, and provide test results. The results will be routed electronically back to CSS and the customer will finalize the transaction with a Customer Service Representative. The Customer Service Representative will retrieve the testing data. The appropriate fees will be calculated, payment received (as appropriate) and the product delivered (in person, by mail, computer-generated or data exchanged for the centralized issuance process). The customer's record will be updated and all information associated with the transaction will be saved.

CapTech will implement the “Grant/Reinstate Privilege & Issue Credential” process across several different Themes:

- The Service Delivery / Customer Account Theme (Figure 14) includes the scope to create a new customer, including the various interfaces to verify the customer's identity and eligibility.
- The Credentialing (Business Licenses) Theme (Figure 7) and Credentialing (Individual Licenses, ID Cards, Permits) Theme (Figure 8) includes functionality to issue, renew, replace, or surrender a credential. For reinstatements, this also includes compliance functionality to determine requirements for reinstating a credential. These Themes also both contain features for integrating with the SecuriTest solution to administer knowledge tests as well as point-of-sale solutions to collect fees.

### 3.13 - In Response to Section 5 Part C Paragraph 3.B

#### **Withdraw Privilege – Level 1**

Withdrawal of a customer's privilege is based on the following actions:

- The system monitors actions and events and identifies customers in violation of Virginia Code or DMV policy and initiates a request to withdraw privileges.
- A customer requests to withdraw a privilege or credential by submitting an electronic or written request.
- A withdrawal of a customer's privilege is based on information received from an external source.

The system will monitor actions and events and identify customers in violation of Virginia Code or DMV policy. The customer will be notified that his privilege or credential will be withdrawn or restricted unless the required information is received by a specific date. The system monitors the events and if the required information is not received the credential or privilege is withdrawn. All correspondence will be communicated using the customer's preferred method (e.g., e-mail, first class mail) or as dictated by statute.

Customers will submit electronic or handwritten requests to withdraw a privilege. DMV employees will enter the information and scan supporting documents. The documents will be attached to the customer's record. The system will provide a confirmation for requests that are submitted successfully. The system will identify and generate necessary correspondence needed to withdraw the privilege (e.g., return license plates, surrender identification card, and submit tax report). The system will monitor the customer's record for actions and events required to withdraw the privilege. All correspondence will be communicated using the customer's preferred method (e.g., e-mail, first class mail) or as dictated by statute.

DMV receives data from external sources electronically and in paper copies to withdraw a customer's privilege for violating federal, state, and local laws. Data received in paper copy is scanned and entered into the system by DMV employees. When the data is received the system will match the customer's record to the violation based on the information. Customer records that are not matched will be placed in a queue for DMV employees to research and reconcile. Customer records that are not found will be returned to the external source for validation and re-submission.

Once a credential is issued, it is critical to have processes in place within the Modernized CSS Solution withdraw credentials based on information and notifications from various sources.

"Withdraw Privilege" will apply across the different lines of business for Credentialing, and we will include features for this scope within each of the lines of business described in Figures 7, 8, and 9.

We assume that DMV uses many JCL batch jobs currently to process data from external sources (e.g. courts). CapTech will utilize our LegacyLift approach to gather understanding of how these jobs work and lean on DMV to provide documentation of the business logic contained in these critical JCL batch jobs during Stage 1.

For manual processes, such as customer requests or paper requests received from external sources, we will support the intake, document management, and internal reviews and approvals necessary to manage incoming requests.

## 3.14 - In Response to Section 5 Part C Paragraph 3.C

### **Administrative Proceedings – Level 1**

Hearings and informal conferences are initiated by DMV when a customer wishes to contest an action by DMV. The type of proceeding (whether formal hearing or informal conference) is determined by statute; and the purpose of the proceeding is to determine whether the action taken by DMV should stand, be reversed, or be amended. Examples include:

- The imposition of medical review requirements;
- A suspension/revocation of driving privileges in accordance with the Code of Virginia;
- A suspension imposed due to customer non-compliance with insurance verification or financial responsibility requirements;
- The issuance or recall of a personalized license plate;
- The decision whether to grant, deny, suspend, or revoke a certification to operate as a motor carrier;
- The decision whether to grant, deny, suspend, or revoke a driving school or instructor license;
- The denial of VRS benefits; and
- The withholding of tax refunds as a debt setoff.

Except in the case of a medical review proceeding, granting request for an administrative proceeding may allow a DMV action to be placed in abeyance until the proceeding has been conducted. The hearing officer reviews statements, testimony, evidence, and other information when issuing a written decision to affirm/uphold, modify, or overturn/reverse a DMV action.

Customers submit a request for an administrative proceeding with supporting documents via the DMV website, at a DMV customer service center, or by mail. DMV employees will enter written requests for administrative proceedings into the system and scan supporting documents. The Insurance Services work center will upload information pertaining to financial responsibility (insurance verification) hearings to the Hearing Office Scheduling System (HOSS); and a hearing officer will schedule the hearing through that same system. For all other administrative proceedings, the designated work center will send an email to the Chief Hearing Officer (CHO) and the Hearing Office email ([hearings@dmv.virginia.gov](mailto:hearings@dmv.virginia.gov)) with the request for an administrative proceeding and any supporting documentation for the Hearing Office to add the proceeding to HOSS; and the CHO will assign the case to a hearing officer to schedule the administrative proceeding. The hearing officer will have the ability to view supporting documents and attach additional documents to the file. For financial responsibility (insurance verification) hearings, HOSS will generate a Notice of Hearing Consequence if You Fail to Appear or Comply for the customer, which will be sent via first-class mail, providing the hearing officer's name and the date and time of the scheduled hearing. For all other administrative proceedings, the hearing officer will create a Notice of Hearing/Notice of Default Order or Notice of Informal Administrative Proceeding/Notice of Default Order, which will be mailed via certified mail. After the financial responsibility (insurance verification) hearing is conducted, the hearing officer will send a decision to the customer signed by the hearing officer. After other administrative proceedings are conducted, the hearing officer will draft a decision and electronically route the decision to the CHO for review and approval. The CHO may make edits to the decision and return it to the hearing officer for editing. This process is repeated until the CHO is satisfied with the decision. Next, the decision is forwarded to the Assistant Commissioner for Legal Affairs who may make edits to the decision and return it to the Chief Hearing Officer and hearing officer for additional edits. This process is repeated until the Assistant Commissioner for Legal Affairs is satisfied and then the decision is forwarded to the DMV Commissioner for final approval.

CapTech will include the “Administrative Proceedings” scope within Service Delivery/Customer Account Theme detailed in Figure 14. We assume that proceedings may apply across different lines of business, including Credentialing, Tax Processing, and Financial Management, but that all will tie back at the customer-level.

We understand the importance of taking appropriate actions within the Modernized CSS Solution, such as updating any credentials to put a DMV action in abeyance while an administrative proceeding is underway or updating a credential upon the decision of an administrative proceeding. We have included these Features in the Service Delivery/Customer Account Theme and will partner with the Hearing Office to confirm that we share information appropriately between the Hearing Office Scheduling System (HOSS) and the Modernized CSS Solution.

### 3.15 - In Response to Section 5 Part C Paragraph 3.D

#### **Manage Credential Audit – Level 1**

*DMV conducts audits on titles, records of driver improvement clinics, commercial driver training schools, third-party testers and other credential records to ensure compliance with state and federal laws and regulations. An audit with adverse findings could result in a cancellation of a credential. In some cases, audit candidates are identified through a risk assessment. In other cases, 100% of the licensees are audited each year.*

DMV has important credential audits that determine compliance of existing titles, driver improvement clinics, commercial driver training schools, third-party testers, and other credential records with state and federal laws and regulations. We assume that DMV implements these audits via JCL batch jobs. We will utilize our LegacyLift approach to gather understanding of how these jobs work and lean on DMV to provide documentation of the business logic contained in these critical JCL batch jobs during Stage 1. We will analyze the business logic and determine the proper implementation approach. Based on the microservices architecture, we may implement batch jobs within services or by leveraging data loaded into a data warehouse. Implementation patterns will be determined based on detailed requirements and the best practice approach for each use case. We will then utilize a production-like environment to simulate and confirm the results of these audits.

### 3.16 - In Response to Section 5 Part C Paragraph 4.A

#### Process Information Requests – Level 1

By statute, DMV responds to requests for information by external entities. Information requests originate through many avenues, including phone calls, emails, correspondence, online requests, AAMVA electronic exchanges, and in person. To respond to these requests, DMV must authenticate the requestor and analyze the nature of the request to determine if the requestor is authorized to access the information requested. Provision of DMV data is governed by a complex set of business rules. Authorization is strictly governed by various laws. Depending on who is requesting information, the requestor may be required to supply certain vehicle or customer information to receive the data requested. If the requestor is authorized to obtain the information, DMV will compile the information in the format requested and provide it to the requestor. Certain requests require management approval prior to sending the information to the requestor. Any time data from a customer record (personal information) is released, a record of that release must be maintained in a privacy record, in accordance with state privacy statutes. Privacy data must be maintained as required by law. Information requests can be categorized into two types: ad hoc requests and routine requests. Ad hoc requests are one-time or unique requests for information, which DMV may or may not have readily available, with no expectation that the data be provided on an ongoing basis. In contrast, routine requests often derive from contracts with businesses and other DMV customers and require the provision of certain data on an ongoing basis. Routine requests can also be non-contractual requests for standard types of information products, such as driver and vehicle transcripts. The Code of Virginia governs whether the requestor must pay a fee for access to the information. By law, requests from government agencies are provided at no fee. For example, local government Commissioners of Revenue and Treasurers receive information, free-of-charge, related to all vehicles garaged within their jurisdictions, as well as information on motor vehicle rental taxes paid within their jurisdictions. Under most circumstances, private entities are charged a fee for the information requested. DMV charges a fee for individuals to get a copy of their driver transcript, which includes basic information about the customer (e.g., name, address, date of birth) along with any driving infractions on his record and total driver points accumulated. Insurance companies pay a fee to obtain information on drivers younger than 22 years of age and to obtain driving records for insurance underwriting. For a fee, DMV will notify participating employers whenever one of their driver employees is convicted of a driving-under-the influence (DUI) or reckless driving offense and his driving privileges are suspended, revoked, or disqualified. The fee structure varies by type of data requested and/or type of requestor. In some cases, the fee is based on a per-page charge or per-record matched, which cannot be calculated until the request has been processed. In other cases, there is a standard fee per request.

The “Information Provisioning” Theme described above in Section 3.7/Figure 11 captures the scope related to processing and managing the various products, services, and agreements fulfilled by DMV.

CapTech will include specific Features for validating requests and fees, document management for requests and contracts, capturing approvals for audit and compliance, and other management functions. In addition to the analysis that we'll complete on the current process and system implementation, we will also complete value stream mapping exercises in Stage 2 to confirm we have a thorough understanding of the different steps, hand-offs, and systems involved in this sub-process.

### 3.17 - In Response to Section 5 Part C Paragraph 5

#### Financial Services – Level 0

Financial Services includes collecting and accounting for revenue (accounts receivable), accounts payable, and inventory management. Customers will establish accounts, utilize shopping cart functionality to review outstanding transactions, select specific transactions for payment, and be able to split payments between multiple payment methods. In addition, customers will be able to view their financial transactions as part of the customer account view. System functionality will assist DMV in our goal to promote customer self-service for routine transactions such as paying bills on-line and utilizing point of sale technology. Customers will use point of sale devices to conduct debit and credit card payments and to interact with the system (e.g., to verify their address and other information gathering).

System open and closing functionality will provide the capability of aggregating daily revenues, preparing bank deposits, and reconciling collections to daily sales by Work Unit. Secured inventory items will be assigned to employees at the beginning of each day, inventory items sold will be tracked throughout the day. At the end of the day, the Work Unit will perform close out procedures to include accounting for revenue and associated secured inventory item sales.

We understand that there are financial aspects for individual transactions across the DMV lines of business as well as core financial processes that DMV centrally executes to manage and report on the overall financial performance of the agency. To best manage this scope and plan work across our development teams, we are considering transaction-level financial services and aggregate financial services separately.

Each of the lines of business that collect fees or issue secure inventory, including Credentialing and Tax Processes, will include their own user stories to collect the fees and update the inventory within the scope of that Feature.

The Financial Service Theme includes an Epics for central Financial Services features as shown below in Figure 15.

#### Financial Services

<b>Financial Services</b>	<ul style="list-style-type: none"><li>• Abandoned Vehicles Disbursements</li><li>• ACH</li><li>• Deposit Transactions</li><li>• Finance Utilities</li><li>• Invoice Payments</li><li>• Licensed Agents</li><li>• Over / Shortage Payments</li><li>• Payment Plan Program</li><li>• Refunds</li><li>• Reinstatement Fee Application</li><li>• Returned Checks</li><li>• Revenue Collections and Corrections</li><li>• Settlements</li></ul>	<b>DMV Stakeholders / Business SMEs</b>
<b>Open/Close Work Unit</b>	<ul style="list-style-type: none"><li>• Distribute Petty Cash (Cash Drawer)</li><li>• Resolve Incomplete Transactions</li><li>• Close Cash Drawer</li><li>• Deposit of Daily Receipts</li><li>• Reconciliation of Daily Receipts</li><li>• Record Revenue Collections</li><li>• Print Daily Reports</li></ul>	<b>Key Access Channels</b>
		<ul style="list-style-type: none"><li>• mySelect / DMV Select</li><li>• dmv.virginia.gov</li></ul>
		<b>Key Integrations</b>
		<ul style="list-style-type: none"><li>• Point-of-Sale Applications (Elavon)</li><li>• Oracle e-Business Suite</li><li>• Online Dealer</li></ul>

Figure 15 - Financial Services Themes and Epic

### 3.18 - In Response to Section 5 Part C Paragraph 5.A

#### **Manage Billing and Receivables – Level 1**

Managing billing and receivables requires system functionality to account for revenue being collected via all points of contact. This functionality includes all phases of receivables accounting including the creation and monitoring of billing invoices, accounting for daily revenue from sales transactions, and bill payments, utilization of business rules to calculate fees for transactions generated from any service outlet, utilization of remittance processing technology, and utilization of point-of-sale applications and devices to ensure accuracy of 'in-person' revenue collections. Distribution of all revenue will be based on specific transaction type and associated business rules. Billing invoices will be generated by Oracle e-Business Suite Accounts Receivable module when required for sales of information to external entities, transaction underpayments and other accounts receivable transactions. The Oracle e-Business Suite Accounts Receivable module system will interface/integrate with the Oracle e-Business Suite General Ledger module for submission of revenue data to the state's centralized accounting system. DMV is required to provide customer refunds for basically any transaction. Refunds of revenue transactions occur, as an example, when a customer returns his license plates and is eligible for a refund of a pro-rated portion of the original transaction. Refund transactions will be transferred to the Oracle e-Business Suite Accounts Payable module for payment through the state's centralized accounting system.

As mentioned in Financial Services (Section 3.17), CapTech will include any billing and receivables related to a transaction in the scope of those Features within the Credentialing, Tax Processing, and Information Sharing Themes. This will include scope to calculate fees and collect revenue associated with that transaction as well as integrating with any point-of-sale applications. A few examples would include:

- The “Renew Registration” feature would include the scope to calculate the registration fees, collect fees via point-of-sale system, and integrate with the Oracle e-Business Suite Accounts Receivable (AR) module.
- We included a “Calculate and Collect Fees” feature within the Information Provisioning line of business to capture the business rules and integration to Oracle e-Business Suite AR module to bill external entities.

We captured the revenue refund process as a Feature within the Financial Services Theme, as shown in Figure 15.

### 3.19 - In Response to Section 5 Part C Paragraph 5.B

#### **Open/Close Work Unit – Level 1**

A Work Unit includes all Customer Service Centers, DMV Selects, DMV DIRECTs, Online Dealers, online web processing/transactions, and Headquarters functional areas. Each day, all Work Units will open the system to process transactions and initiate inventory. Work Units will also complete an end-of-day closeout to account for the revenue collected, transactions conducted, and inventory used. Cash drawer functionality will be used to ensure transactions are properly calculated, amount of change indicated, all types of payment methods are accommodated, and as appropriate, interfaced with point-of-sale applications and devices. The point-of-sale system will provide functionality and equipment for customers to interact with the system to answer pertinent questions such as "is this your correct address(es)" or "would you like to register to vote", be presented their total transaction amount for their visit, select their payment method(s), swipe, and sign for their debit/credit card, and agree to their total transaction amount.

Beginning-of-day opening at Work Units includes distribution of petty cash as a change fund and assignment of secured inventory items (this step does not apply to Headquarters Work Units, DMV DIRECTs, or DMV Selects). All Work Units will conduct a beginning-of-day opening to ready the system to conduct transactions. As transactions are processed throughout the day, the system will track all revenue collections and inventory usage. All inventory transactions will be recorded on the customer record, including serial numbers of secured inventory items.

The end-of-day closeout at all Work Units will be conducted on the same day as the work occurs and include the accumulation of all revenue transactions, usage of all secured inventory items, deposit of daily receipts, and the reconciliation of daily receipts to sales. Employees will close out their physical, or virtual, teller [cash] drawers by entering their counted cash, checks, debit, and credit card receipts, and, as appropriate, their ending assigned inventory into the system. The Work Unit Manager will verify the receipts with each employee. Upon verification by the Work Unit Manager, the Work Unit will be closed out in the system. The Work Unit Manager will take the cash to the bank or to the Cashier's Office. The system will evaluate the results of each Work Unit's sales-to-daily receipts. A centralized reconciliation group will use dashboard technology to identify discrepancies between sales and receipts. This group will work with each Work Unit to ensure resolution of discrepancies. Revenue transactions from Work Units with no discrepancies will be sent to the Oracle e-Business Suite General Ledger module to be posted and, upon deposit verification, sent on to the state's centralized accounting system. Inventory receipts, issues, transfers, and receipts are sent to Oracle Inventory at the close of the workday.

CapTech will implement the "Open/Close Work Unit" process across the Financial Services and Inventory Management Themes.

- The Financial Services Theme (Figure 15) includes scope to distribute cash, perform end of day reconciliations, process depots, and record revenue.
- The Inventory Management Theme (Figure 16) includes scope to assign secured inventory, record inventory usage, and return secured inventory at the end of the day.

### 3.20 - In Response to Section 5 Part C Paragraph 6

***Business Intelligence – Level 0***

*Business intelligence capabilities must be available to deliver data to external data reporting system(s) based on the DMV Data Architecture program.*

We will work with the DMV Data Architecture team to understand current delivery methods and determine the best way to continue to meet external data delivery requirements within existing governance frameworks. If we identify a requirement for programmatic data delivery, then we will make data available via an externally facing API, or another mutually agreed upon approach.

### 3.21 - In Response to Section 5 Part C Paragraph 7 Overview and 7.A

#### **Inventory Management – Level 0**

Inventory is maintained in the majority of DMV's Work Units to support the credentialing function. Secured inventory items are the physical products sold to customers who have been granted a privilege. As such, secured inventory items are only issued as a result of a transaction for a credential and an accompanying payment in full. Secured inventory items include, but are not limited to, Vehicle Titles, License Plates, License Plate Decals, and VIN Plates. The system will track issues and voids based on transactional activity and all receipts and transfers of secured inventory items. The Modernized CSS Solution will accumulate daily usage of secured inventory based on transaction activity. Inventory will be updated with the daily inventory usages, receipts, and transfers.

License plates inventory will be replenished through collaboration of DMV and the Virginia Correctional Enterprises.

#### **a. Manage Secured Inventory – Level 1**

Secured inventory items are the physical products sold to those customers who have been granted a privilege; as such, secured inventory items are only issued as a result of a credential transaction. Secured inventory items include, but are not limited to, vehicle titles, license plates, license plate decals, and VIN plates.

The Modernized CSS Solution will include functionality for assignment of secured inventory items to Customer Service Representatives for daily sale of these products, identifying the next inventory item serial number to be issued, and associating the inventory item and serial number with a customer, a transaction, and a fee.

The DMV Warehouse will utilize reorder points for License Plate Decals to determine when to manufacture decals, or place an order to a supplier, and in what quantity. License Plates are manufactured by Virginia Correctional Enterprises who will receive and ship orders directly to Work Units based on license plate reorder points.

Motor Vehicle Dealerships conduct online DMV transactions for titling and registering motor vehicles and partner with third-party vendor solutions for secured inventory functionality. These vendor inventory systems have reorder points that create license plate and decal replenishment orders to Virginia Correctional Enterprises. Online Motor Vehicle Dealerships may utilize 'print on demand' technology to produce a temporary license plate, thereby eliminating the necessity for these entities to handle physical license plate and decal inventories.

Like our approach in the Financial Services Theme, we understand that there are inventory aspects for individual transactions across the Credentialing functions as well as core inventory processes related to the management and supply of inventory across work units. To best manage this scope and plan work across our development teams, we are considering transaction-level inventory management functions and aggregate inventory management functions separately.

Each of the lines of business that collect fees or issue secure inventory, including Credentialing and Tax Processes, will include their own user stories to collect the fees and update the inventory within the scope of that Feature.

The Inventory Management Theme includes an Epics for central Inventory Management and Open/Close Work Unit Features as shown below in Figure 16.

#### **Inventory Management**

##### **Inventory Management**

- Daily Usage of Secured Inventory
- Receipt of Inventory
- Transfer of Inventory
- Reorder Inventory

##### **DMV Stakeholders / Business SMEs**

- Customer Service Representatives
- Titles and Registrations Work Center
- DMV Warehouse
- Dealer Services

##### **Open/Close Work Unit**

- Assign Secured Inventory Items
- Record Inventory Usage
- Return Secured Inventory
- Print Daily Reports

##### **Key Access Channels**

- mySelect / DMV Select
- dmv.virginia.gov

##### **Key Integrations**

- Oracle Inventory
- Online Dealer
- Virginia Correctional Enterprises

##### **Key Integrations**

- Oracle Inventory
- Online Dealer
- Virginia Correctional Enterprises

Figure 16 - Inventory Management Themes and Epics

## 3.22 - In Response to Section 5 Part D Paragraph 1.A

### **General Modernized CSS Solution Requirements**

DMV intends to modernize the existing DMV CSS system by transforming the existing monolithic mainframe application architecture to a scalable and agile microservices-based solution that can be scaled incrementally to adapt to changing business needs while embracing agile methodologies throughout the project lifecycle, from planning to delivery.

The Supplier must provide a comprehensive and detailed narrative describing the proposed plans, approaches, concepts, and methodologies to accomplish this initiative based on the requirements defined in this EPD while working with DMV staff during each stage of the Modernized CSS Solution Project defined in RFP Section 5.E. As part of the detailed narrative, the Supplier must elaborate on how the proposed plans, approaches, concepts, and methodologies will:

- Accomplish a detailed breakdown and deconstruction of the existing CSS applications, interfaces, and components into a microservices-based architecture model.
- Support an iterative and incremental migration of existing functionalities using agile principles.
- Support the development of a microservices solution that can be scaled incrementally to adapt to changing business needs.
- Ensure seamless integration with existing systems and third-party applications using agile integration practices.
- Support the continuous optimization of system performance through agile monitoring and improvement cycles.
- Support the implementation of security measures using agile practices to ensure security compliance requirements and effective response to evolving threats.
- Support the development of a culture of agile maintenance and continuous improvement for the Modernized CSS Solution microservices architecture.
- Support the synchronization of data and components between the new and existing systems.

As part of the proposed approach, the Supplier must provide insights into how each component of the existing CSS system can be modularized and integrated as microservices. Additionally, the Supplier must describe recommendations and best practices that align with DMV goals of increased flexibility and efficiency.

## Solution and Delivery Overview

Rather than responding to each mandatory requirement individually, CapTech will fully comply with DMV mandatory requirements as set forth in the EPD, subject to the assumptions (Part 13).

CapTech will develop the Modernized CSS Solution on a modular and flexible architecture that will allow DMV to easily integrate new capabilities and features. This architecture will set the foundation for DMV to start the shift from an architecture that promotes batch driven processes to an architecture that promotes real-time updates based on an event-driven architecture. We will use open standards and best practices to directly support interoperability and compatibility with other systems and platforms. This will allow for DMV to maintain the application without having to rely on the vendor community.

DMV will receive equivalent modernization benefits through our delivery approach, which will move DMV towards their vision of becoming a more agile and continuous improvement agency. To successfully deliver this solution, CapTech and DMV will establish dedicated teams with fully allocated staff from DMV and the necessary subject matter expertise and authority to support real-time decisioning, feedback, and approvals and adopt the agile principals that will help to ensure continuous feedback and acceptance throughout project delivery. As a result, DMV staff will work side by side with CapTech to adopt an agile maintenance and continuous improvement mindset.

For each of the general requirements in Parts 3.22-3.24 we have listed our high-level approach and referenced the following section where we provide a detailed narrative for each solution requirement.

DMV GENERAL MODERNIZED CSS SOLUTION REQUIREMENTS	CAPTECH DESCRIPTION AND APPROACH
<b>Accomplish a detailed breakdown and deconstruction of the existing CSS applications, interfaces, and components into a microservices-based architecture model.</b>	CapTech's Modernized CSS Solution architecture uses microservices to achieve modularity, providing greater flexibility and improved maintainability for DMV. CapTech will use a Domain-Driven Design (DDD) approach as we define Features (see requirements 3.24) to decompose the DMV's core lines of business into relevant domain microservices and system or functionality-related microservices. Please find details on our technical solution approach in 3.24.
<b>Support an iterative and incremental migration of existing functionalities using agile principles.</b>	We have successfully delivered both large and small engagements using Agile practices by focusing on proactive communication with stakeholders to quickly identify and remove dependencies to develop a continuous flow of work and provide more predictable delivery outcomes. We will align all delivery teams to the prioritized organizational milestones/outcomes by planning upcoming work and aligning dependencies on a quarterly basis. We detail our iterative delivery approach in Project Management Approach, Part 4.
<b>Support the development of a microservices solution that can scale to adapt to changing business needs.</b>	CapTech has delivered projects with a microservices-based architecture successfully by having a detailed understanding of the business and system requirements. This understanding enables us to properly allocate business logic to microservices, resulting in an overall solution that can adapt to business needs while remaining scalable at the individual microservice level.
<b>Ensure seamless integration with existing systems and third-party applications using agile integration practices.</b>	APIs are the industry standard approach to integrating with systems and third-party applications. A microservices-based architecture uses web-based APIs at its core. Additional design considerations performed during the project in an agile manner provide the seamless integration DMV is looking for. During the project, DMV developers will work side-by-side with CapTech architects and lead developers to understand detailed design decisions for integrating with various DMV systems and third-party applications or APIs.
<b>Support the continuous optimization of system performance through agile monitoring and improvement cycles.</b>	We will use lessons from prior iterations during development, validation, and deployment/release to continuously learn and improve during each step of the delivery pipeline to reduce our cycle time and increase the percent (%) of work considered complete and accurate at each step. We will monitor for constraints and long lead times between steps in our delivery pipeline then either align flow of work to maximize those constraints or make changes to mitigate those constraints and enable more efficient flow of work.
<b>Support the implementation of security measures using agile practices to ensure security compliance requirements and effective response to evolving threats.</b>	We will implement security measures in the agile/iterative approach to implementing the Modernized CSS Solution. Although much of the design will occur in Stage 1, any changes in Stage 2 can revisit and adjust the security design to remain ever vigilant to evolving threats. Countermeasure and response implementation will occur in

DMV GENERAL MODERNIZED CSS SOLUTION REQUIREMENTS	CAPTECH DESCRIPTION AND APPROACH
	development throughout Stage 2. Security never ends, and CapTech's approach enables the ability to react to threats at any time.
<b>Support the development of a culture of agile maintenance and continuous improvement for the Modernized CSS Solution microservices architecture.</b>	Our technical team will bring a DevOps culture and approach to establish a continuous integration and continuous delivery/deployment (CI/CD) process that automates, streamlines, and accelerates builds and deployments while integrating code quality inspections and quality assurance across unit, integration, security, functional, and other non-functional testing domains.
<b>Support the synchronization of data and components between the new and existing systems.</b>	CapTech will develop a Modernized CSS Solution that supports the synchronization of data and data-related components from the existing to the new system. We will use the Treehouse Rocket Data Replicate and Sync tool to migrate data from the mainframe to a staging SQL Server. We will then transform the data into its final form in the microservices-based data stores. See Part 3 Section 24 Data requirements for more details.

Table 1 - Solution Requirement

CapTech uses a Domain-Driven Design (DDD) approach to determining the modularization of business logic and functionality into microservices. The Stage 1 Logical Architecture shows an initial view of decomposing the POC functionality into several microservices. Some microservices encapsulate business logic – we call those domain microservices. Some microservices encapsulate another system or functionality, such as printing. We call those system microservices or system APIs. Integration of microservices is a feature of ACA and Dapr, which provides a range of features including service discovery, routing, and mutual TLS.

For more information, see details in the DDD, Section 3.24.

### 3.23 - In Response to Section 5 Part D Paragraph 1.B

*Re-writing the existing DMV CSS Solution is a critical part of DMV’s need to completely transition from a mainframe environment to a completely functional microservices-based solution operating in a Microsoft Azure environment. At a minimum, the Contractor must provide services and support to deliver re-written mainframe applications and migrated data that:*

- *Executes modernized applications that are functionally equivalent to existing DMV CSS system applications in the new target environment at the same or better performance;*
- *Re-establishes all existing integrations and interfaces;*
- *Results in consistent or greater functionality in the target environment; and,*
- *Results in similar interruption of service or better.*

CapTech’s approach to developing the Modernized CSS Solution allows the development of a microservices-based solution that is functionally equivalent (or greater) to the mainframe. This is a rewrite, not a code conversion, so we will need to recreate the intent of the code and functionality in a microservices-based architecture. We will use native Azure services throughout to support the performance requirements while minimizing DMV’s ongoing operational burden – it is not a legacy solution that just happens to run in containers.

CapTech will design the Modernized CSS Solution to replace the 3270 functionalities with a new mySelect system and handle all the integrations DMV requires. DMV can host the solution in DMV’s existing Microsoft VITA subscription, provided VITA supports all the Azure services required. Existing data will be migrated to the future state, microservices-based data stores.

See details in Section 3.26, Tech Solution and Data Migration Solution.

### 3.24 - In Response to Section 5 Part D Paragraph 1.C

For DMV to retire its use of the mainframe, all existing DMV CSS system applications, integrations, interfaces, and components must be completely re-written and re-architected to run as a microservices-based solution utilizing DMV's existing Microsoft Azure VITA subscription, and all existing data must be migrated to the future state environment.

The existing CSS system applications, integrations, interfaces, and components include, but are not limited to:

- Applications, integrations, interfaces, and components defined and described in Section 4.B (Overview of Existing DMV Citizen Services System)
- Front-end User Interface Applications (such as mySelect and mainframe 3270 green screens)
  - CSS Application Code
  - Natural Programs
  - Natural Subprograms
  - Natural Subroutines
  - Natural Help Routines
  - Natural Maps
  - Natural Data Areas
  - Natural Copycode
- Databases (ADABAS)
  - ADABAS Data
  - ADABAS Field Definitions
- Batch / JCL
  - JCL Jobs/Procs
- Integrations
- Table (FDT) Design
- Print sub-systems
- Data warehouses for Audit and Privacy

CapTech's Modernized CSS Solution will create a new mySelect that includes all functionality of the current mySelect and the currently used functionality in 3270 green screens. We will create APIs for all integrations so other applications can call the Modernized CSS Solution. Our teams will develop CSS Application Code functionality in the appropriate part of the new system architecture.

CapTech will analyze the Natural functionalities, incorporate the requirements into agile Features and User Stories, develop them in the new Modernized CSS Solution, and test them thoroughly.

We will decompose the single database into multiple domain-driven databases supporting each microservice. Those translations will be custom from SQL Server MI to CosmosDB.

We will migrate ADABAS data and field definitions to the SQL Server MI leveraging Treehouse Rocket Data Replicate and Sync (RDRS) tool, or another third-party tool defined by the DMV that provides similar functionality. From here the data will be custom translated in the mapping process into the target CosmosDB supporting the microservices.

Using LegacyLift, we will build documentation on batch process functionality and replicate functionality in the modernized CSS solution leveraging best practice for detailed requirements of the batch job.

We will develop integrations using APIs. Externally exposed APIs will be created for third-party vendors and partners to continue interacting with DMV data. Internal systems integration will be implemented using the service bus component of the technical solution.

Leveraging the microservice architecture and design pattern, we will implement Table (FDT) Design as part of the application API object class and persist in the schema-less data store.

Print sub-systems are a type of system API/microservice. CapTech will develop a print microservice to allow the new Modernized CSS Solution to submit print files to the print sub-systems.

Leveraging the RDRS tool, CapTech will migrate and convert the Data warehouses for Audit and Privacy into

a target SQL MI database. CapTech will develop these data warehouses for the modernized CSS solution and backfill the data from the legacy system into the modernized data warehouses.

### 3.25 - In Response to Section 5 Part E Overview

#### ***MODERNIZED CSS SOLUTION PROJECT APPROACH***

*The Modernized CSS Solution project shall consist of two primary stages:*

- Stage 1: *Project Initiation and Proof-of-Concept (POC)*  
*DMV desires completion of Stage 1 within 6 months following Contract execution.*
- Stage 2: *Iterative Agile-based Design, Build, and Delivery of Full Modernized CSS Solution*  
*DMV desires completion of Stage 2 within 3 years following completion of Stage 1 and DMV approval to proceed with Stage 2.*

*DMV reserves the right to terminate the Contract at the conclusion of Stage 1 or at any point after Contract award. Reasons for termination may include, but are not limited to, proof-of-concept results that fail to meet the overall needs of DMV, unacceptable management or performance, insufficient project funding, and/or for convenience of the Commonwealth.*

CapTech acknowledges and confirms DMV's desire to complete Stage 1 within 6 months following Contract execution. While aggressive, CapTech believes it can complete the POC and associated Stage 1 deliverables within 6 months of Contract execution.

CapTech acknowledges and confirms DMV's desire to complete Stage 2 within 3 years following completion of Stage 1 and DMV approval to proceed with Stage 2. With AI assistance including LegacyLift and GitHub CoPilot, CapTech will partner with DMV to execute the project as quickly as possible.

CapTech acknowledges DMV's right to terminate the Contract at the conclusion of Stage 1.

## 3.26 - In Response to Section 5 Part E Paragraph 1

### Stage 1 – Proof-of-Concept Activities

The objective of the Stage 1 Proof-of-Concept is for the Contractor to successfully demonstrate the effectiveness and viability of their proposed plans, approaches, concepts, and methodologies to successfully deliver a comprehensive and complete Modernized CSS Solution. This includes demonstrating the development of applications centered around small, independent, and loosely coupled services (microservices) and then demonstrating the consumption of those services from different user interfaces (for example Blazor UI, Power App, etc.)

During Stage 1, the Contractor shall fully demonstrate their proposed approaches, concepts, methodologies, and capabilities to:

- a. Deconstruct and transform a small sample set of system components defined by DMV into a microservices-based architecture model.
- b. Transform a small sample set of user interfaces into modernized user interfaces consuming the newly developed microservices.
- c. Perform an iterative delivery of the new modernized sample set of components while synchronizing data and components between the new and existing systems.

The Contractor must complete the following Stage 1 activities while working on-site with DMV staff:

- a. Project initiation and planning activities including all related documentation.
- b. Further define and document the scope of the POC.
- c. Further define the POC structure and workflow.
- d. Define and document the business processes, business rules, and requirements of the POC components.
- e. Develop and document detailed system design specifications based on Contractor-facilitated discussions with DMV for the POC components. Specific tasks that will be undertaken during the detailed system design process include, but are not limited to:

- Specification of the technical architecture to be employed and the required configuration.
- Program structure and flow.
- Logical and physical data models.
- Definition of any interfaces between systems.
- Preliminary screen designs.

- f. Train and coach DMV staff participating in the POC on new software and development tools as necessary.
- g. Fully build and demonstrate the working functionality of the following POC sample set of system components:
  - Add and maintain a DMV customer.
  - Issue a basic Virginia title and registration (no liens, one owner).
  - Request vehicle valuation from JD Power NADA value guide, licenses provided by DMV (web API request).
  - Collect title and registration fees (including settlement processing).
  - Produce print data file for a title and registration card.
  - Produce a batch print data file supporting monthly registration renewal notices (demonstrate executing batch solution).
  - System to system integration - Customer inquiry from an external business partner (web API).
- h. Define and document a detailed Go-Forward Plan for the full Modernized CSS Solution project based on the results of the POC. The Go-Forward Plan will also include a detailed project work plan and projected staffing plan based on an agile/iterative development and delivery approach with proposed release cycles.
- i. Provide a detailed presentation of the results of the POC and Go-Forward Plan to the DMV Executive Steering Committee for further consideration and approval.

At the end of Stage 1, DMV will review and evaluate the results of the POC and the Go-Forward Plan. If DMV approves the detailed Go-Forward plan, Stage 2 efforts may proceed for the agile-based iterative development and delivery of the full Modernized CSS Solution.

The Supplier must provide a comprehensive and detailed narrative describing the proposed plans, approaches, concepts, and methodologies to accomplish the requirements of Stage 1 – Proof-of-Concept Activities.

CapTech acknowledges the objective of Stage 1 Proof-of-Concept (POC) is to demonstrate the effectiveness and viability of our proposed plans, approaches, concepts, and methodologies to deliver a comprehensive and complete Modernized CSS Solution.

The Stage 1 Logical Architecture shows the preliminary deconstruction of the Stage 1 POC scope into system components in a microservices-based architecture. The Stage 1 detailed narrative describes the approach to achieve the resulting POC.

The Stage 1 Approach is iterative in nature. CapTech will implement various components from the UI to microservices to new microservice data stores. The POC that CapTech develops will also include provisioning and configuring the selected data migration and synchronization tool for elements of the mainframe data associated with the POC scope. Note that data synchronization is forward only, from the mainframe to the new Modernized CSS Solution. We will not synchronize data from the Modernized CSS Solution back to the mainframe.

CapTech acknowledges and confirms that we will perform Stage 1 while working on-site with DMV staff in accordance with the Staffing Proposal.

The Stage 1 Approach narrative below includes all project initiation and planning activities and related documentation such as scope of the POC, POC structure and workflow, detailed system design specifications, technical architecture specifications, program structure and flow, logical and physical data

model, system interfaces, training and coaching of DMV staff, and working POC with sample set of system components. CapTech will develop a detailed presentation of the results of the POC and Go-Forward Plan to the DMV Executive Steering Committee for consideration and approval.

Stage 1 will set the foundation for the successful launch of a Modernized CSS Solution through a dual-purpose initiative to prove out key technical solution components and assess the functional architecture and scope for Go-Forward Planning. For the technical solution, in Stage 1 CapTech will showcase a proof-of-concept demonstrating a modern, cloud-native, microservices-based solution with a modern web-based customer experience, data migration and synchronization, integration with an external API, exposing an API for partners, execution of a batch process, and creation of a print data file.

In parallel, we will complete detailed analysis and planning to develop a Go-Forward Plan that clarifies and refines our scope for Stage 2 and incorporates lessons learned and refinements from the POC activities. Stage 1 will demonstrate our requirements elicitation, analysis, and documentation process resulting in an approved list of features and roadmap for Stage 2 implementation along with LegacyLift, a fully functional AI solution integrated with DMV's development environment and project management tools. In addition, we will complete stakeholder interviews, user research, and a detailed analysis of the existing mySelect application to lay the foundation for the new, web-based experience.

DMV business stakeholder and SME participation is critical for Stage 1 as we will need them to partner with our analysis team to define and approve the feature list for Stage 2. We will develop our feature roadmap and Go-Forward plan based on the scope defined during Stage 1 and it will be critical to our ability to successfully meet our goals and timelines for the release of the Modernized CSS Solution. We have initial stakeholders and SMEs defined in Sections 4.3 and 4.4 and will confirm this list within the Project Establishment epic described below.

We will deliver Stage 1 iteratively through the established agile framework as described in the Project Management Approach in section 4. Following the principle of delivering on cadence through sprints and PI. Every 10–12 weeks (about 3 months) the Teams will come together to discuss priorities, define objectives, refine work, and resolve dependencies, and align individuals, stakeholders, and Teams. Following the planning session, Teams will develop, deliver, and demonstrate completed work in smaller, 2-week sprint iterations to plan, do, check, and adjust accordingly. We provide the nominal schedule below:

## Stage 1 – Agile Work Plan

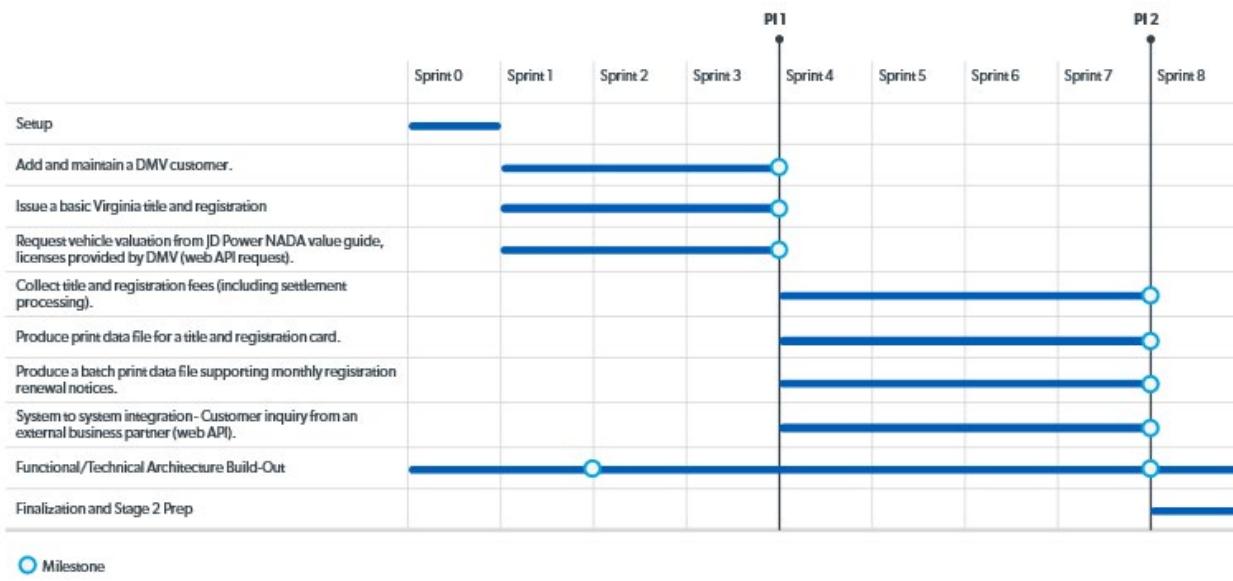


Figure 17 - Stage 1 Agile Work Plan

We will categorize Stage 1 work into five Epics:

1. Project Establishment
2. Architectural Enablers – both Functional Architecture and Technical Architecture enablers
3. Proof-of-Concept
4. Stage 2 Roadmap
5. LegacyLift Implementation

Project Establishment is an initiating Epic to launch the overall CSS Modernization initiative, quickly establish processes and procedures, and build momentum for subsequent Stage 1 epics and deliverables.

Deliverables from this epic include:

1. Project Kickoff Presentation
2. Stage 1 Agile-based Project Work Plan
3. Stage 1 Milestones Deliverable Plan
4. Stage 1 Initial Product Backlog
5. Stage 1 Iterative Release Cycle Plan
6. Stage 1 Staffing Plan
7. VITA Initiation Documentation
8. Azure DevOps Work Management Structure
9. PoC Vision / Scope

The Architectural Enablers Epic focuses on items necessary for the PoC, and subsequent Stage 2 development work, to be deployed. Deliverables from this epic include:

1. Business Processes – Functional Architecture
2. Business Rules - Functional Architecture
3. Established Dev Environment – Data and Technical Architectures
4. Provisioned Azure Instance and Infrastructure – Technical Architecture
5. Repos to Deploy Code – Data and Technical Architectures
6. Third Party Tools Installed - Technical Architecture
7. UX Flows for new mySelect Experience – Customer Experience (CX) Architecture
8. Initial Wireframes – CX Architecture
9. Design System Foundation – CX Architecture
10. Security Architecture - Technical Architecture

The Proof-of-Concept Delivery Epic includes all the work for building the POC. We will elicit, analyze, refine, and document the business processes, business rules, and requirements for the POC components. At the same time, we will assess and refine the technical, data, and customer experience architectures. Using the requirements and architectures, our team will then develop and deploy the POC functionality to prove out the solution architecture and approach. The POC components include:

1. Add and maintain a DMV customer
2. Issue a basic Virginia title and registration (no liens, one owner)
3. Request vehicle valuation from JD Power NADA value guide, licenses provided by DMV (web API request)
4. Collect title and registration fees (including settlement processing)
5. Produce print data file for a title and registration card
6. Produce a batch print data file supporting monthly registration renewal notices (demonstrate executing batch solution)
7. System to system integration - Customer inquiry from an external business partner (web API)

The Stage 2 Roadmap Epic will define and document a detailed Go-Forward Plan for the full Modernized CSS Solution based on the results of the PoC and requirements documented primarily at the Feature level. Some requirements, the ones specifically needed in the first 1-2 sprints in Stage 2, will be documented to the User Story level. Deliverables from this epic include:

1. Stage 2 Agile-based Project Work Plan
2. Stage 2 Milestones Deliverable Plan
3. Stage 2 Feature Backlog
4. Stage 2 Iterative Release Cycle Plan
5. Stage 2 Staffing Plan
6. Go-Forward Plan
7. Executive Steering Committee Presentation

LegacyLift Implementation is the final Epic in Stage 1. The LegacyLift epic covers all the provisioning, configuration, ingestion, and integration work necessary to deploy LegacyLift in DMV's environment. This Epic will run throughout Stage 1, and we will deliver additional functionality in an iterative manner as we complete the work.

## Stage 1 POC Logical Solution Architecture

The initial Logical Solution Architecture for the Stage 1 POC is shown below.

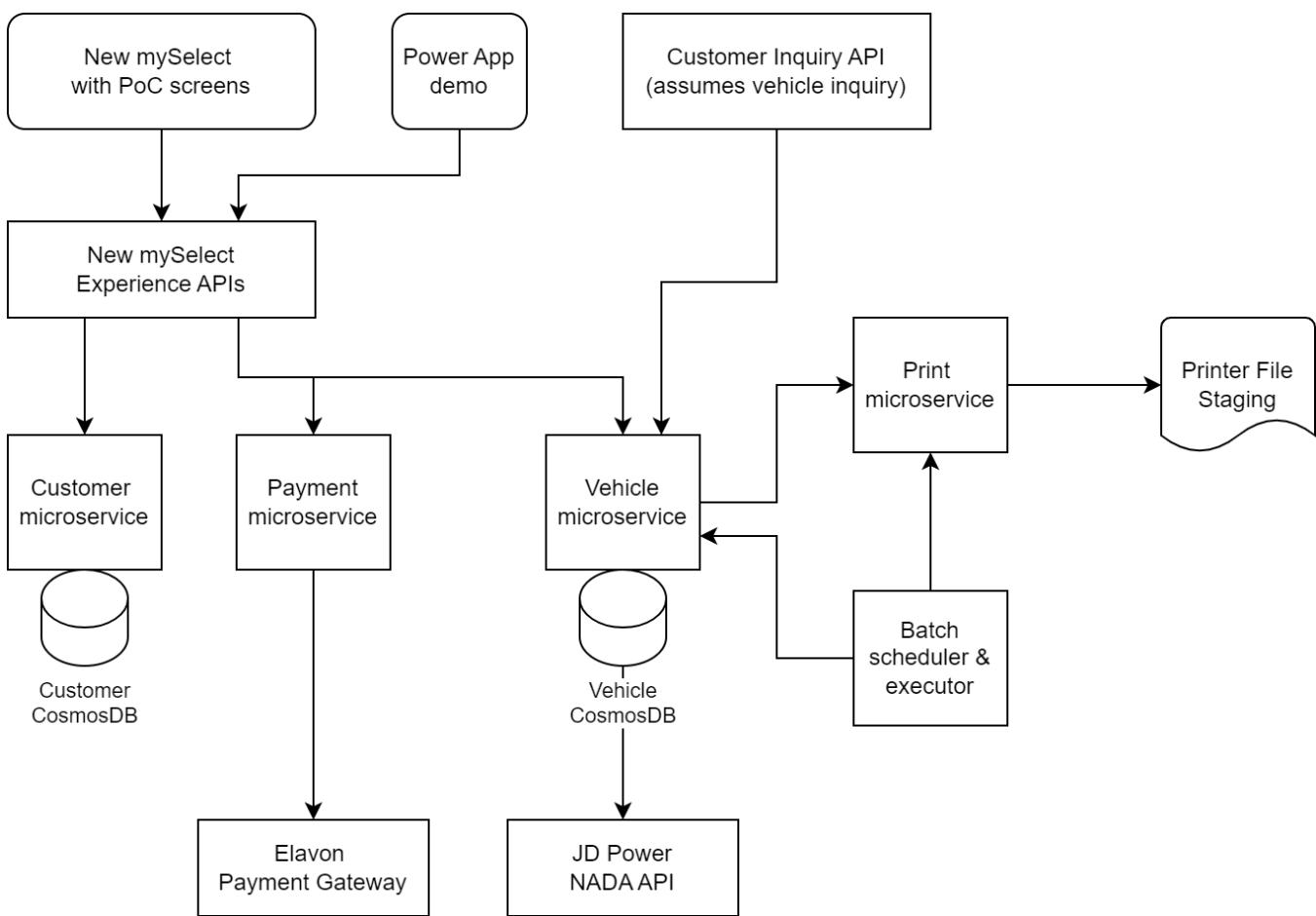


Figure 18 – Stage 1 Proposed Logical Solution Architecture

- **A New mySelect** will be created with Blazor and ASP.NET Core with screens for adding and editing a DMV customer and issuing a basic Virginia title and registration.
- **A Power App demo** will be created to demonstrate how the Power Platform can be used as a UI connecting to an API.
- **New mySelect Experience APIs** will be created with ASP.NET Core to orchestrate, aggregate, and shape calls to and from the domain microservices. This particular Experience API is an implementation of the BFF (Backends For Frontends) pattern.

- **Microservices** will be developed encapsulating the logic in specific domains. The microservices tentatively identified for the POC include:
  - **Customer microservice** – adding and maintaining a DMV customer
  - **Payment microservice** – serving as the intermediary for the Elavon payment gateway
  - **Vehicle microservice** – issuing a Virginia title and registration, calling JD Power's NADA API to obtain a vehicle valuation, and calling the **Print microservice** to create a data file for a single title and registration
  - **Print microservice** – creates print data files serving as the intermediary for the printing equipment.
- **A Customer Inquiry API** to demonstrate an external business partner integrating with the DMV in a system-to-system manner. In this diagram it assumes that the customer inquiry to be demonstrated is getting vehicle information.
- **The Batch Scheduler and Executor** will have a schedule trigger to initiate an Azure Data Factory pipeline that will determine what registration notices need to be mailed from the Vehicle microservice and connect to the Printer microservice to create the print data file(s).

### 3.27 - In Response to Section 5 Part E Paragraph 2 Overview and 2.A

#### Stage 2 – Full Modernized CSS Solution Build and Implementation

During Stage 2, the Contractor will complete the following while working on-site with DMV staff:

- a. Project initiation and planning activities including all related documentation.
- b. Further define and document the scope of the full Modernized CSS Solution.
- c. Conduct a comprehensive analysis and deconstruction of the existing CSS application(s), interfaces, and components to transform to a microservices-based architecture model.
- d. Document comprehensive process flows, user stories, business rules, requirements, and related specifications while following agile methodologies.
- e. Define and document finalized specifications of the technical architecture for the Modernized CSS Solution approach.
- f. Build test plans and documentation (including automated testing). Existing structured testing business rules, process flows, test plans, test cases can be used in this process.
- g. Define and document a comprehensive build and delivery plan including a detailed product backlog and release cycle plan with user stories prioritized based on business value as defined by DMV.
- h. Iteratively build and implement/release the full Modernized CSS Solution components while synchronizing data, as necessary, and components between the new and existing systems.

Acceptance and approval, in writing, will be based on successful reviews of each iteration/release by the appropriate DMV team members and/or the Executive Oversight Committee members.

The Supplier must provide separate comprehensive and detailed narratives describing the proposed plans, approaches, concepts, and methodologies to accomplish the requirements of Stage 2 – Full Modernized CSS Solution Build and Implementation activities under 2 different scenarios:

- a. **Base Scenario (Build From Ground Up)**

Under the base scenario, the Contractor will complete all activities related to Stage 2 – Full Modernized CSS Solution Build and Implementation based on developing from the ground up.

In the Base Scenario, Stage 2 is a full implementation of the Modernized CSS Solution designed in Stage 1. Stage 2 will seamlessly transition from Stage 1 into full-throttle development based on the architecture, code, and data foundations proven in the POC. With the deliverables from Stage 1 providing firm direction, the CapTech and DMV teams will move quickly to start delivering in an iterative manner to a prod-like environment.

Based on learnings from Stage 1, project leadership will help determine any changes to team composition to align around features (and components when needed). The teams will form a team of teams that can deliver Features on cadence at the sprint and PI cycles. This team of teams will continue PI planning together quarterly to draft stories for Features, work out dependencies, and review, add, and mitigate any associated risks. They will continue to evaluate delivery practices on their teams and add improvements into their backlogs to increase flow and reduce defects. The roadmap by PI will be a living document that we jointly adjust based on routine planning, evaluation of both capacity and velocity, and delivered milestones.

We provide a nominal roadmap based on CapTech's current understanding below:

## Stage 2 – Agile Work Plan

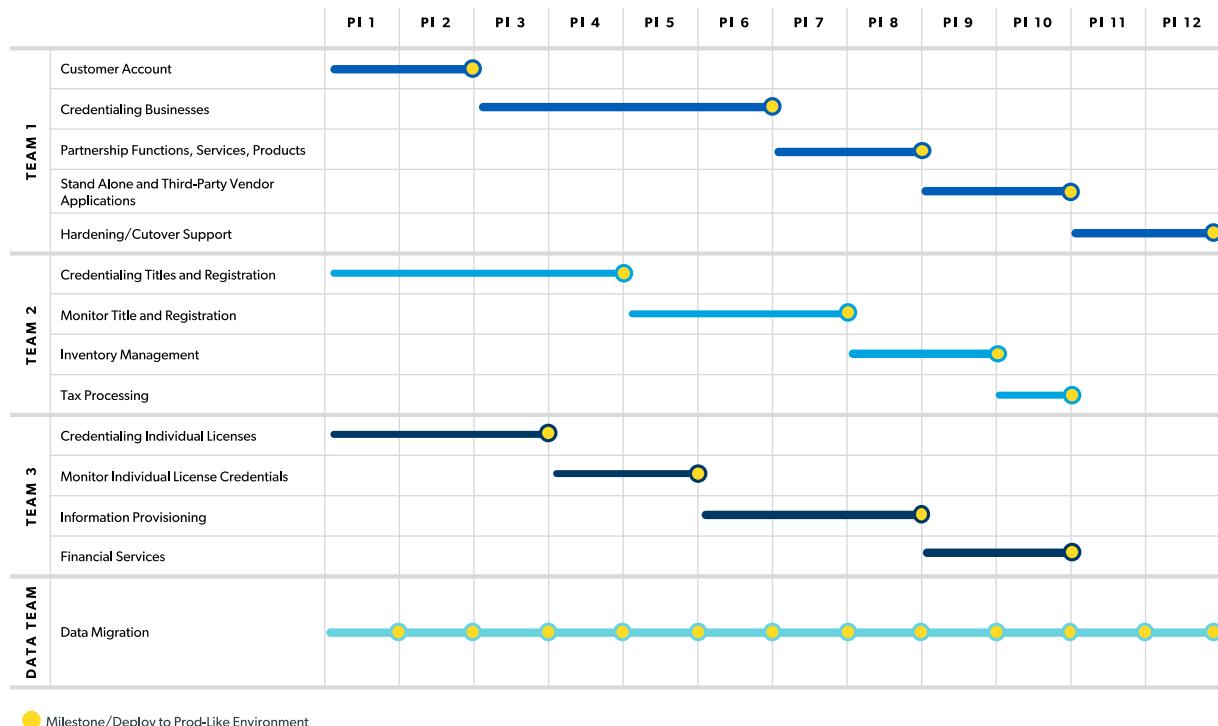


Figure 19 - Stage 2 Agile Work Plan

### Agile summary:

- Sprints: 2 or 3 weeks (will be determined in Stage 1)
- PIs: 4+ sprints, or ~12 weeks long
- Release to prod-like environment at the mid-point and end of every PI for DMV to perform User Acceptance Testing

Our analysis will continue in the early PIs of Stage 2, progressively enhancing features and user stories until all requirements are complete. As that occurs, our analysts will shift their focus from eliciting, analyzing, and documenting requirements to validating that they work in functional and integration tests.

The business analysis team will collaborate with the development and data teams to identify the different data elements that are involved in each process and how they will be created, updated, and impacted by status changes throughout the process.

The overall system will leverage the design of the existing mySelect screens for presenting and gathering information as well as executing transactions. Any transactions that exist solely in the 3270 screens today will be developed as net new screens or additions to existing screen design in mySelect. CapTech will be developing new screens to replace the standalone mySelect application with a web-based application based on modern development principles.

The user interface paradigms for navigation, state management, and screens flows often differ in notable ways between native desktop applications and modern web-based experiences. For ease of transition and

adoption, we propose maintaining fundamental components of the current mySelect implementation—such as taxonomy and grouping of fields and forms—while simplifying page transitions, information hierarchies, and the menu and page-level navigation designs. Current mySelect users should feel at home—yet more effective—with the new screen designs, while new users find the system easier to learn and gain proficiency with.

As appropriate for each Epic, the UX team will conduct usability tests with current DMV Select users using no-code, clickable prototypes of the new web-based experience. We will note observed and reported points of friction or confusion and make recommendations for how the design should be modified to improve ease of use. We will address low-effort issues through immediate revisions to the designs, while non-trivial changes (e.g. those aspects inherited from the current DMV Select) will be added to an enhancement backlog for future assessment and refinement.

Similarly, a CapTech Accessibility SME will review and annotate designs prior to coding, so that the development team can confidently deliver 508 compliant interfaces. Our Accessibility SMEs will also conduct reviews and audits of the developed experience, as part of our Accessibility quality assurance process (please see Assumptions in Part 13).

In addition to working with the development team to create the future state application that will be used by DMV employees and third parties, our analysts will work with the data conversion team to determine what transformations need to be performed on the existing data to validate it works correctly with the new system. Having this end-to-end approach to analysis will reduce the risk of final solution not meeting DMV's objectives by allowing traceability from requirements to developed solution to converted data.

There will be three to four (3-4) primary development teams, an experience and change management team, a data migration team, and a DevOps and quality automation team to fix defects. PIs 1 – 10 will deliver Features and User Stories in an iterative manner. Ordering of epics is based on our current understanding and may be rescheduled or reprioritized by CapTech or DMV subject to constraints around dependencies between epics. For example, the information provisioning epic, which is primarily concerned with externally exposed APIs, would occur after the microservices that it calls are substantially complete.

The nominal roadmap shows development completing at the end of PI 10. PIs 11 and 12 are for system stability and hardening, preparing, and testing cutover, disaster recovery testing, final performance testing, and final preparation for launch. At the end of PI 12, CapTech and DMV will perform final cutover and launch the new Modernized CSS Solution.

Project Management and QA teams will engage throughout Stage 2. For additional information, see the Project Management Plan in Part 4.

CapTech will partner with DMV to implement the fully Modernized CSS Solution architecture. Below is a high-level view of the Logical Architecture.

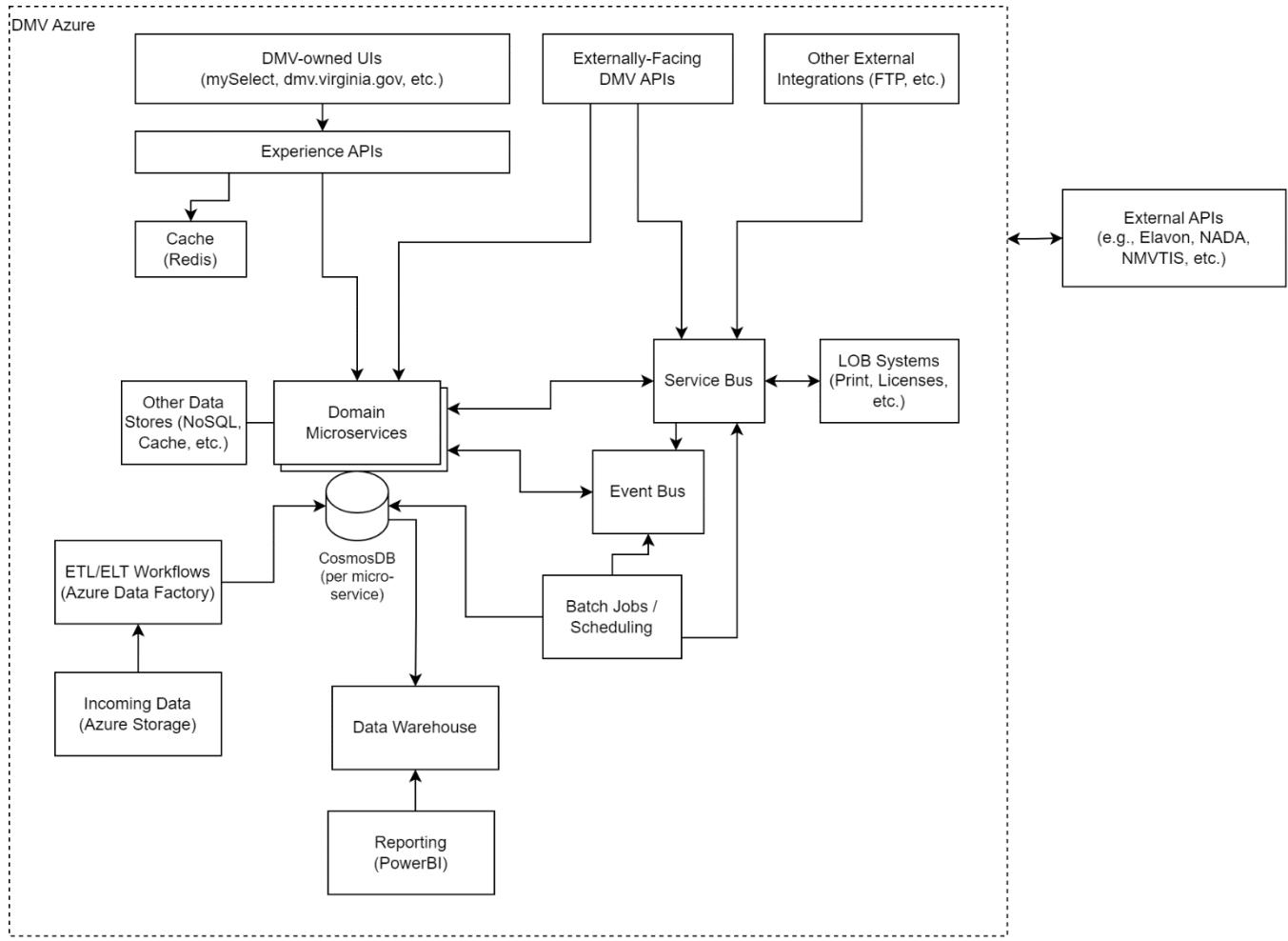


Figure 20 - Modernized CSS Logical Architecture

Below is a view of the Azure Solution Architecture that implements the Logical Architecture. See the Technical Solution (3.27) for more details.

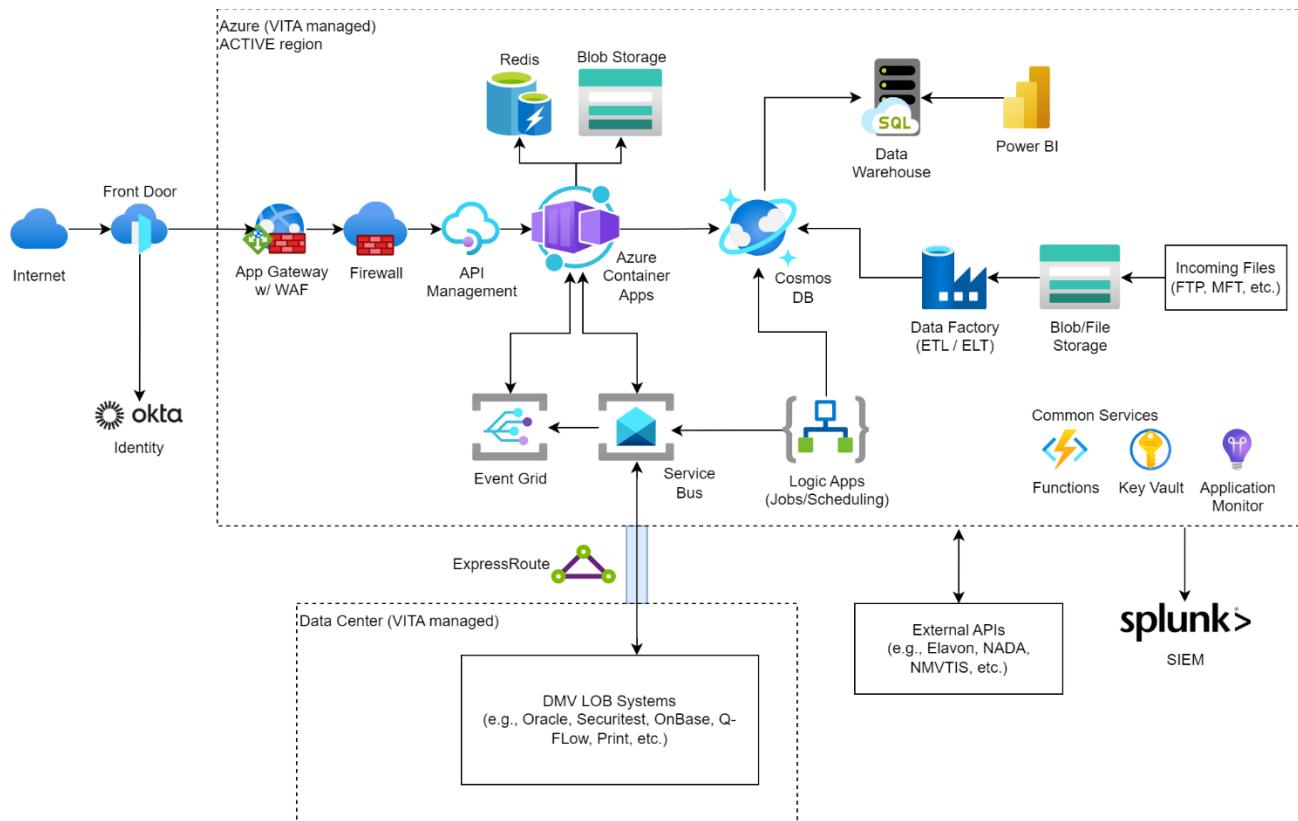


Figure 21 - Azure Solution Architecture

CapTech will replace the Mainframe application which also includes any functionality that is in the Broker server tier. CapTech will develop a new mySelect web application that covers all currently used mySelect and 3270 functionalities. Applications that connect to the broker tier, such as but not limited to dmv.virginia.gov, EZHaul, etc., are the responsibility of the DMV to update to the Modernized CSS Solution APIs. CapTech will attempt to keep the API as close to the original as possible subject to the limitations of the new modern technology platform (e.g., .NET 8, ASP.NET Core, etc.), but DMV should expect some changes. CapTech assumes that no DMV applications call EntireX Brokers directly.

### 3.28 - In Response to Section 5 Part E Paragraph 2.B

#### ***Alternate Scenario (Build From ADOT MVD MAX As Starting Point)***

*Under the alternate scenario, the Contractor will complete all activities related to Stage 2 – Full Modernized CSS Solution Build and Implementation based on utilizing a fully functional modernized solution (MAX) for processing, recording, and retaining of information pertaining to motor vehicle and driver license transactions currently in use by the Arizona Department of Transportation Motor Vehicle Division (ADOT MVD).*

*DMV has acquired the current code for the ADOT MVD MAX system applications under a System Application Agreement and Memorandum of Understanding between DMV and ADOT MVD. DMV may decide to use the MAX system applications as a starting point for developing the Modernized CSS Solution.*

*Under this alternative, there are no options for the Supplier to propose incentives which include provisions for Contractor ownership or Contractor rights to resell the Modernized CSS Solution.*

*DMV will make the final decision related to which scenario will be selected for Stage 2 activities.*

CapTech understands that DMV will have the final decision related to the selection of the scenario that best fits its organizational needs. However, If DMV decides to use ADOT MVD MAX at the end of Stage 1, the initial part of Stage 2 could be a dramatic step backwards. While the epics, features, and user stories defined in Stage 1 will still be relevant, most of the architecture and development efforts will not be applicable. The data synchronization tool configuration portion of the POC will be relevant, but the subsequent transformation and delivery of data to the microservices data stores will be only partially relevant.

There would also be significant uncertainty in CapTech's ability to meet DMV's requirements in the EPD. Functionality requirements, architectural requirements, performance and SLAs, disaster recovery, indeed most of the requirements and specifications in the EPD would need to be reevaluated.

Throughout this proposal effort, CapTech conducted as detailed analysis as time and information presented allowed. While there are positive aspects of the solution, namely the solution is in production for another jurisdiction and the framework has been extended for use with other non-DMV agencies; the underlying technology patterns and frameworks are five to ten years dated, it has limited ability support automated testing due to a configuration driven design and their API clients work operate in the runtime environment. Further complicating the solutions, the solution has a high level of referential integrity making it difficult to spin up demo environments which will be required to enable comprehensive testing.

Given the above, in the event DMV wants to move forward with the ADOT MVD MAX solution CapTech proposes an assessment stage, similar in scope and approach to Stage 1, to assess the capabilities of ADOT MVD MAX. This assessment stage would focus on how MAX can implement DMV's requirements, the gaps between requirements and capabilities, integration approaches to external systems and partners, and the ability to meet desired performance requirements and SLAs. The assessment stage would also stand-up MAX in DMV's Azure cloud and implement DevOps to enable repeatable, automated builds and deployments.

By the end of the assessment Stage, CapTech will deliver a fixed price fixed scope contract to implement ADOT MVD MAX for the DMV.

### 3.29 - In Response to Section 5 Part F Paragraph 1

#### **Mandatory Technical Compliance Requirements**

*The Supplier must acknowledge and confirm their understanding that the Modernized CSS Solution developed by the Contractor and DMV shall comply with the following Commonwealth of Virginia (COV) and DMV policies and standards. To the extent that DMV's security policies and procedures conflict with those of the Commonwealth of Virginia, the policies and procedures that provide the highest level of protection shall take precedence.*

CapTech acknowledges and confirms our understanding that the Modernized CSS Solution, developed collaboratively with the DMV, will comply with the following policies and standards set forth by the Commonwealth of Virginia and DMV:

- Commonwealth of Virginia Policies and Standards
- DMV Security Policies and Procedures

We recognize that the DMV has its own security policies and procedures. In cases where there is a conflict between DMV policies and those of the Commonwealth of Virginia (COV), we will prioritize the policies and procedures that provide the highest level of protection. We are committed to delivering a Modernized CSS Solution that meets the highest standards of security, reliability, and efficiency. We understand that safeguarding sensitive data and system integrity are paramount.

### 3.30 - In Response to Section 5 Part F Paragraph 1.A.1 – 1.A.5

#### **COV ITRM Policies and Standards**

The Modernized CSS Solution shall comply at all times with all provisions of the most recent Commonwealth of Virginia (COV) Information Technology Resource Management (ITRM) policies and standards published by VITA. Copies of the most recent COV ITRM policies and standards are available on the Virginia Information Technologies Agency (VITA) Website: <https://www.vita.virginia.gov/it-governance/itrm-policies-standards/> or a successor URL(s).

As part of the compliance details the Contractor shall provide the mitigating controls that will be employed to address any non-compliance configurations for which DMV will be required to request exception approvals through VITA.

The required COV ITRM policies and standards include, but are not limited to:

- 1) Enterprise Architecture Standard (EA225)

This standard establishes direction and technical requirements which govern the acquisition, use and management of information technology resources by executive branch agencies. This document provides a consolidated list of requirements (in the form of a standard) from the Commonwealth's Enterprise Architecture, including the eight domains that make up the Enterprise Technical Architecture. Provides a single source for Enterprise Architecture related requirements for use by agencies and their business partners.

- 2) Cloud-Based Hosting Services for IT Solutions Policy. (EA300)

The purpose of this policy is to provide direction on how the Commonwealth should create, govern and utilize cloud-based hosting services for IT solutions. This policy applies to everyone providing and managing the provision of IT hosting services for COV IT solutions, including those not considered part of the VITA enterprise.

- 3) Information Technology Accessibility Standard (GOV1 03-00)

The purpose of this Standard is to provide Agencies with the minimum accessibility requirements for the procurement, development, or maintenance of electronic and information technology systems. This Standard requires that Commonwealth employees with disabilities have access to and use of information and data comparable to the access and use by Commonwealth employees who do not have disabilities unless an undue burden would be imposed on DMV.

This Standard also requires that individuals with disabilities, who are members of the public seeking information or services from DMV, have access to and use of information and data comparable to that provided to the public who do not have disabilities, unless an undue burden would be imposed on DMV.

- 4) Enterprise Data Standards

- 5) Information Security Standard (SEC530)

This standard defines the minimum acceptable level of information security and risk management activities for the COV agencies that must implement an information security program that complies with requirements identified in this standard. Agencies may develop their own information security standards, based on needs specific to their environments. Agency standards must provide for protection of the agency's information systems and data, at a level greater than or equal to the baseline requirements set forth in this standard.

The proposed Modernized CSS Solution will strictly adhere to the COV Information Technology Resource Management (ITRM) policies and standards. These policies and standards serve to effectively manage and govern information technology resources within the Commonwealth.

To achieve this, CapTech will reference and align our solution with the most recent COV ITRM policies and standards published by VITA. CapTech has a long track record in Virginia of implementing solutions that meet these policies and standards. We understand the standards cover a wide range of areas, including enterprise architecture, information security, and risk management, among others.

CapTech will work with DMV to address any non-compliance configurations to enable alignment with the COV ITRM policies and standards. Our approach includes controls that will be employed during the initial design phase of the project to correct any deviations and maintain compliance. Key components of this approach include the following:

1. **Monitoring and Reviews:** During the design phase, we will regularly review design decisions with DMV and VITA.
2. **Remediation:** In the event that DMV finds a non-compliant configuration, our team will work with DMV and VITA to identify an alternate solution that conforms to COV ITRM policies and standards.
3. **Exception Request:** In cases where an exception is necessary, we will work with DMV and VITA to gather the required information, prepare an exception request that includes mitigating controls and risk assessment, and submit the exception for review.

As mentioned above, we will work with DMV to implement these controls during the initial design phase of the project. Once the system build has commenced with a mutually agreed upon design, we will jointly review any changes to the standards and policy and evaluate what changes we need to make. If the changes are significant enough to materially affect our schedule and/or scope, then we will need to initiate the project change process.

In alignment with the COV ITRM policies, CapTech's proposed solution will adhere to the state's Enterprise Architecture Standard (EA225). CapTech has extensive experience implementing solutions that conform to these standards. We understand that, among other things, the standards include definition on the relationship between Business Architecture, Information Architecture, Solution Architecture, and Technical Architecture.

We understand that the Enterprise Technical Architecture (ETA) is composed of requirements that span eight key areas:

1. Business Requirements
2. Design and Architecture
3. Availability and Performance
4. Capacity
5. Continuity
6. Integration and Interoperability
7. Technology
8. Security

Throughout the project, we will work with DMV so that the solution meets the requirements across all eight domains of Enterprise Technical Architecture. In cases where deviations from these requirements are necessary, DMV will seek formal approval via the Enterprise Architecture Exception process.

The cloud-based Modernized CSS Solution described in this document aligns with the strategy and objectives described in policy EA300, Cloud-Based Hosting services for IT Solutions Policy. CapTech will reference and adhere to this policy, along with the other policies included in this section, during the design phase of the project.

The solution will be developed in accordance with the COV Information Technology Accessibility Standard (GOV1 03-00) and Section 508 requirements, which includes compliance with WCAG 2.0 AA.

CapTech will provide a team of consultants equipped with unparalleled expertise in design, development, security, and accessibility. Our Customer Experience (CX) team includes members certified by the International Association of Accessibility Professionals (IAAP) as CPWAs (Certified Professional of Web Accessibility), enabling our solutions to be universally accessible.

As part of the accessibility testing process, our front-end developers confirm they are writing conformant code. Development testing will utilize Axe accessibility testing or similar tools. By catching any issues early, they establish reusable accessible code components to be extended throughout the site.

With multiple testing checkpoints during the project, members of our accessibility team use manual testing methods such as screen readers and keyboard-only navigation to confirm the site is navigable, and automated testing of both visual design and code.

Lastly, system testing with an accessibility end-to-end review is conducted to confirm the solution meets all requirements and operates as expected. Note that the application cannot ensure that documents or content

uploaded by external users meet accessibility standards.

The solution will be developed in accordance with the COV Information Technology Accessibility Standard. CapTech will work with the DMV to identify areas where exceptions may be necessary so that DMV can seek formal approval for those exceptions.

The solution, as designed, will conform with the COV's Enterprise Data Standards as defined in the COV ITRM Policies and Standards. We will reference and adhere to this policy, along with the other policies included in this section, during the design phase of the project.

CapTech is committed to delivering a secure Modernized CSS Solution. We are very familiar with the security standards of the COV and DMV, including Information Security Standard (SEC530). We recognize that this policy sets the baseline for security standards that all systems must meet, and we will incorporate this standard as a critical input into the design of the new system.

The Technical Solution Architecture delivered during Stage 2 will describe the system architecture and identify typical areas of security risk within complex multi-tier applications. It will also describe the processes and measures that we will put in place to mitigate identified security risks. However, in keeping with industry best practices, it is in DMV's best interest to engage an independent third party to perform a risk assessment of the proposed security architecture.

Related to security testing, CapTech firmly believes that it is the responsibility of the owning organization to coordinate, manage, execute, review, and approve security validation activities. It is a necessary separation of responsibilities so that the contractor delivering the operational system does not have conflicts in this regard. Therefore, DMV will be responsible for vulnerability and security scans, validating static code analysis results on a regular basis, and penetration testing. CapTech will provide supporting documentation and system access to those individuals whom DMV engages to perform security testing services.

### 3.31 - In Response to Section 5 Part F Paragraph 2.A

#### ***Security and Privacy Baseline***

The DMV security program was developed to maintain compliance with Commonwealth of Virginia Security Standards and other applicable regulatory requirements. The Commonwealth of Virginia Security Standards sourced most of their controls from the most current National Institute of Standards and Technology Special Publication 800-53 (Security and Privacy Controls for Federal Information Systems and Organizations). All controls from these standards are mandatory unless determined otherwise by DMV Information Security and Risk Management (ISRM) staff. These controls combined with the other applicable regulatory requirements are considered DMV's minimum security and privacy baseline.

CapTech understands and the Modernized CSS Solution shall comply with the DMV's mandatory security and privacy baseline. For detailed information on solution security, see the information security section, 3.48.

### 3.32 - In Response to Section 5 Part F Paragraph 2.B.1 – 2.B.4

#### **Mandatory Security and Privacy Requirements**

The Contractor agrees to comply at all times with all applicable federal, state, and local laws and regulations. To the extent that any policy(ies), standard(s), or guideline(s), as incorporated below, conflicts with any such law(s) or regulation(s), the applicable law(s) and/or regulation(s) shall take precedence. Contractor also agrees that any agent of the Contractor (to include subcontractors) utilized for the purposes of developing the Solution shall maintain an equal level of compliance.

Contractor agrees to comply with all provisions of the then-current Commonwealth of Virginia security standards, published by the Virginia Information Technologies Agency (VITA) and which may be found at: (<https://www.vita.virginia.gov/it-governance/itm-policies-standards/>) or a successor URL(s), throughout the term of the Contract as are pertinent to Contractor's operation. Contractor further agrees to comply with all provisions of the DMV's then-current security standards, policies, and procedures as are pertinent to Contractor's operation and which have been supplied to Contractor throughout the term of the Contract. Contractor shall also comply with all applicable federal, state, and local laws and regulations throughout the term of the Contract. Contractor may, at any time, be required to execute and complete, for each individual Contractor employee and/or agent, additional forms which may include non-disclosure agreements to be signed by Contractor's employees and/or agents acknowledging that the Commonwealth information with which such employees and/or agents come into contact with is confidential and proprietary.

Contractor further understands and agrees:

- 1) All Content provided by DMV, or produced under this Contract or agreement with any external vendors, remains the exclusive property of DMV. This Content must reside solely on assets owned, controlled, or leased by the DMV.
- 2) All employees, agents and subcontractors staff supporting the Modernized CSS Solution shall be US citizens or H1B visa holders and physically located in the continental United States.
- 3) Contractor shall notify DMV in writing 30 days before its intention to replace or add any third-party that will have access to the Modernized CSS Solution whether that access is provided by Contractor or Contractor's subcontractors. DMV may reject any additional or new third-parties who may be provided access to the Modernized CSS Solution.
- 4) Contractor, and through Contractor, its employees, agents, and subcontractors, shall immediately notify the DMV Project Manager and the DMV Chief Information Security Officer (CISO) of any degradation, potential or actual breach of privacy or security of the content and application(s) in any systems supporting the Modernized CSS Solution. Contractor shall provide DMV the opportunity to participate in the investigation of the reported situation and to exercise control over reporting the unauthorized disclosure, to the extent permitted by law.

Any unauthorized release of proprietary, confidential, or personal information by the Contractor or any employee, agent, or subcontractor of Contractor shall constitute a breach of its obligations under the Contract. Contractor shall immediately notify the DMV CISO of any Breach of Unencrypted and Unredacted Personal Information, as those terms are defined in Virginia Code §18.2-186.6, and other personal identifying information, such as insurance data or date of birth, provided to the Contractor. Contractor shall provide the Commonwealth, including DMV and VITA, the opportunity to participate in the investigation of the Breach and to exercise control over reporting the unauthorized disclosure, to the extent permitted by law.

CapTech will comply with all federal, state, and local laws and regulations applicable to the Services performed by CapTech under a resulting agreement. To the extent that DMV has specific laws and regulations to which it requires specific adherence, or which are specific to the services being performed and delivered, those laws and regulations should be included in the project requirements in the resulting Statement of Work between the parties. If CapTech utilizes subcontractors to perform services under a resulting agreement, CapTech shall flow down this requirement to that subcontractor and its employees and independent contractors and shall monitor the subcontractor's performance for its adherence to the applicable federal, state, and local laws and regulations and Statement of Work requirements.

CapTech proposes to perform the services using DMV-issued laptops and email credentials, which will ensure that DMV's sensitive data, including personal data, remains on DMV and VITA systems and infrastructure where it can be directly controlled by DMV and VITA and will be accessed, stored, and maintained in accordance with VITA's policies and standards. CapTech currently performs services for the DMV and is familiar with the requirements of VITA and will continue to perform any services awarded under this RFP in accordance with the resulting agreement and applicable federal, state, and local laws and regulations and Statement of Work requirements, including having its employees and any subcontractors execute required on boarding documentation such as Individual Non-Disclosure Agreements.

CapTech agrees that any Content, as it is defined in Section 2.I, Definitions, of the Proposed Contract remains the exclusive property of DMV and such Content must reside solely on assets owned, controlled, or leased by the DMV. To the end, CapTech' proposes to perform the services using DMV-issued laptops and email credentials only.

At the times of employment, all potential CapTech employees are checked for employment eligibility through the federal E-Verify program. CapTech will ensure that all employees and subcontractors performing services under any resulting agreement are US citizen or hold H1B Visa status and will be physically located in the continental United States.

CapTech will provide thirty (30) days' advance written notice (email is acceptable) to DMV before adding or replacing any third parties that will have access to the Modernized CSS Solution and will share any necessary documentation supporting the new third-party onboarding as required. CapTech confirms that it is within DMV's reasonable discretion to reject the addition of such third parties.

CapTech will report any security incidents and/or data breaches in accordance with the terms of the resulting agreement between the parties and in accordance with all applicable laws and regulations, including all applicable data privacy laws.

CapTech will report any security incidents, confidentiality and/or data breaches including, but not limited to Breaches of Unencrypted and Unredacted Personal Information, in accordance with the terms of the resulting agreement between the parties and in accordance with all applicable laws and regulations, including all applicable data privacy laws.

### 3.33 - In Response to Section 5 Part F Paragraph 2.C

#### **Solution Risk Assessment**

An ongoing risk assessment of the Modernized CSS Solution shall be performed jointly by the Contractor and DMV during the project to identify how the security and privacy controls shall be met and remediate any deficiencies in the Solution design. The DMV CISO will provide a risk assessment workbook that will be used for tracking purposes and shall be maintained throughout the term of the Contract.

For completing the Risk Assessment workbook, the Contractor and DMV project team members shall provide:

- List of all software and hardware components and service offerings intended for use in the Solution and version or release level;
- Solution Boundary Diagram(s);
- Data Flow Diagram(s);
- Proposed Network Settings and Firewall Rules (Access Control Lists);
- Technical design document that addresses any other relevant security controls;

DMV ISRM staff will provide:

- Risk assessment workbook;
- Baseline Security Hardening Configuration based on the software and hardware identified;
- Samples of security documents that will be collected during the life of the contract; and

CapTech understands that working in partnership with the DMV to perform an ongoing risk assessment is the best way of achieving a secure solution. CapTech will work in collaboration with the DMV to create and enhance the risk workbook throughout the project.

In Stage 1 and early Stage 2, CapTech will provide the core Azure services and software intended for use in the Solution. As development starts, detailed dependency graphs and Software Bill of Materials (SBOMs) can be used or generated using GitHub Advanced Security features.

Solution Boundary, Data Flow, Security Architecture, and other diagrams will be provided as part of the architecture and design of the Modernized CSS Solution.

A detailed network diagram, including proposed network settings, firewall rules, and ACLs, will be provided to the DMV for use in the jointly developed Risk Assessment workbook.

Content that addresses other relevant security controls will be centralized in a Security Technical Design document for easy reference by DMV and CapTech.

CapTech will partner with DMV to ensure the completion of the Risk Assessment workbook, implement the baseline security hardening, and provide deliverables that conform to DMV security document samples.

### 3.34 - In Response to Section 5 Part F Paragraph 2.D

#### ***Product Release***

*The Contractor and DMV staff will perform a risk assessment to evaluate compliance with baseline security requirements, identify threats and vulnerabilities, and assess alternatives for mitigating or accepting residual risks.*

*As part of the production release the Contractor and DMV shall jointly support key aspects of service delivery for the Solution including but not limited to:*

- *Access Management*
- *Audit Logging*
- *Change and Configuration Management*
- *Continuous Monitoring*
- *Incident Management*
- *Vulnerability Management*

CapTech has extensive experience in delivering secure solutions like the Modernized CSS Solution.

CapTech will partner with DMV to assess risk across the three tiers in the NIST risk management hierarchy: Organization, Mission/Business Process, and Information System (the Modernized CSS Solution). As noted in the information security (3.48), a baseline security architecture has been proposed. CapTech will modify, enhance, and refine the initial security architecture throughout the project to production release.

As part of the production release, CapTech will support key aspects of service delivery, including the items mentioned, for the hypercare period. CapTech will provide DMV with the knowledge and skills to operate the Modernized CSS Solution on its own after the contract concludes.

### **3.35 - In Response to Section 5 Part F Paragraph 3 Overview**

*The Supplier must acknowledge and confirm their understanding that the Modernized CSS Solution developed by the Contractor and DMV will comply with the following solution architecture requirements*

CapTech acknowledges and confirms its understanding that the Modernized CSS Solution developed by CapTech, and the DMV will comply with the following solution architecture requirements.

### 3.36 - In Response to Section 5 Part F Paragraph 3.A Overview

#### Target Architecture

The target architecture for CSS is envisioned as a Microsoft Azure based cloud-native architecture that is secure and scalable. DMV requires an incremental approach to deconstructing our existing monolithic CSS mainframe application into a more scalable and agile microservices-based architecture.

A microservices-based architecture is an approach to building software applications as a collection of small, independent services, each running in its own process and communicating with lightweight mechanisms, often through APIs (Application Programming Interfaces). Microservices break down the application into smaller, loosely coupled services.

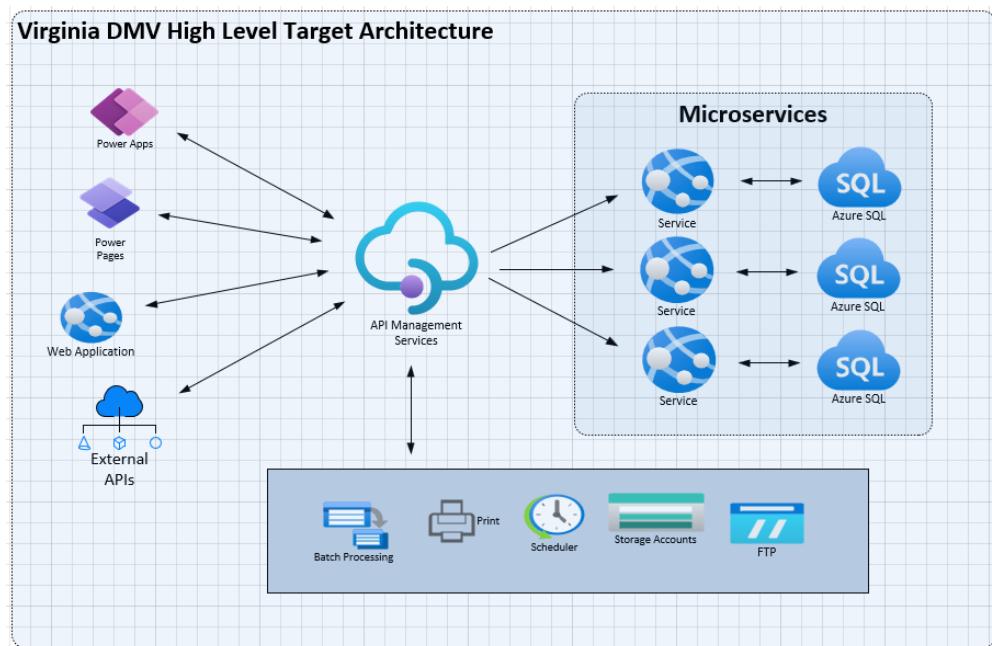
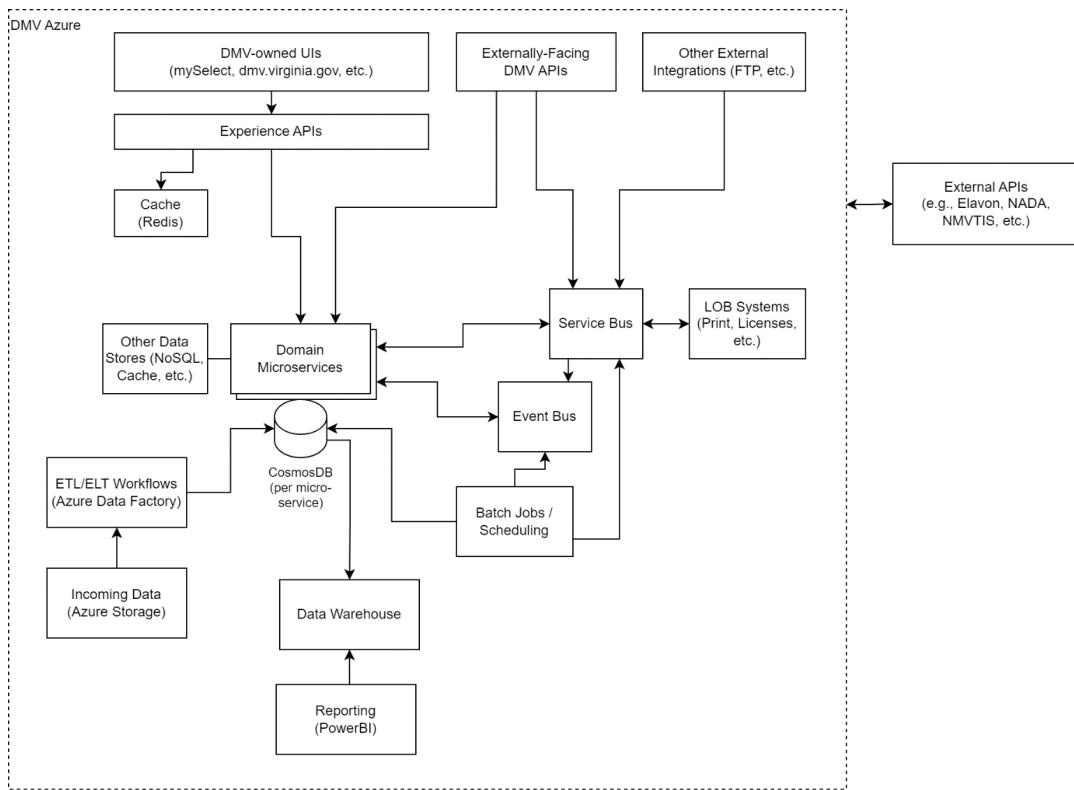


Figure 22 – DMV High Level Target Architecture

In accordance with DMV's requirements, CapTech's solution is cloud-native, secure, scalable, and designed for Azure. The solution architecture enables an incremental approach to deconstructing monolithic mainframe logic and recreating it in an agile, scalable microservices-based architecture. Below is the Logical Architecture diagram.



*Figure 23 - Logical Architecture Diagram*

Starting at the top, each component of the logical architecture is described:

- **DMV-Owned UIs** include applications with a user interface under direct DMV control, such as mySelect or dmv.virginia.gov. Note that mySelect will be redesigned as part of the Modernized CSS Solution, but other DMV-Owned UIs are the responsibility of DMV to update to call the new APIs provided by the Modernized CSS Solution.
  - **Experience APIs** are APIs specific to a DMV-owned UI that intermediate between the Domain microservices for orchestration, aggregation, data shaping, and/or security purposes.
  - Experience APIs hold user-related session state, so an in-memory **Cache** such as Redis is typical.
  - **Domain microservices** are standalone domain services that contain all their business logic and data in a data store such as **CosmosDB**. Other fit-for-purpose data stores, such as NoSQL, in-memory, or graph, are potentially used depending on technology fit for business requirements.
  - The **Service Bus** serves as the primary intermediary between most **Line-of-Business (LOB) systems** and Domain microservices due to its support for reliable messaging, messaging features such as FIFO, batching, sessions, multipart transactions, message ordering, and duplicate detection. The Service Bus also intermediates between **Other External Integrations** and Domain microservices for the same reasons.
  - **Externally Facing APIs** will connect directly to domain microservices for standard request-response calls that read data. If the externally facing API needs to perform a significant or guaranteed update, the Service Bus will be used for the advanced messaging semantics.
  - **External APIs**, APIs that are called by one or more microservices, will be integrated in various ways depending on the requirements, the method of access (e.g., an API call versus a file transfer), and

the nature of the data being requested or sent.

- An **Event Bus** will be used to handle events raised from various sources, including Domain microservices, batch jobs, the service bus, and Azure services. Although DMV is currently heavily batch driven, CapTech envisions a future where much of the batch processes are replaced with a near real-time event driven architecture.
- **Batch Jobs and Scheduling** will handle all the daily, weekly, monthly, semi-annual, and annual batch process schedules. The implementation of the batch jobs will vary depending on the requirements and which microservice(s) need to be accessed.
- **Incoming Data** will land in an Azure blob store whereupon Azure Data Factory will perform **ETL or ELT Workflows** on data that will land in the Domain microservices data stores.
- The **Data Warehouse** is an operational data store that aggregates data across microservices for reporting and analysis purposes using tools like **PowerBI**.

After reviewing the Logical Architecture, the Azure Technical Solution architecture shows the actual Azure services used to implement the Logical Architecture. The Azure Technical Solution architecture diagram is below. Note that this represents the future state operational architecture. It does not cover the use of Azure services during Stages 1 and 2 – for those, see the individual approach sections. For example, the description below does not show the SQL Server Managed Instances used to receive replicated data from the mainframe (see Data Section 3.56).

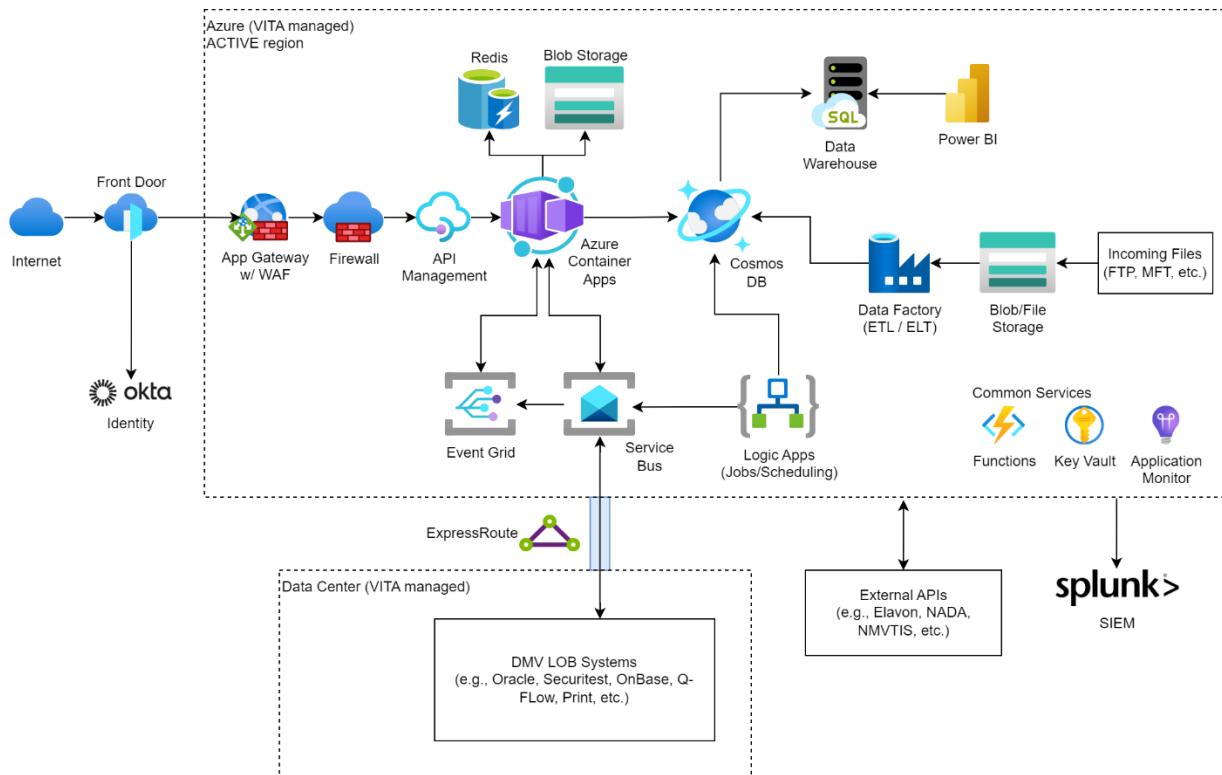


Figure 24 - Azure Technical Solution Architecture

The solution uses the following primary components:

- **Azure Front Door** is used to direct traffic to the active region. The solution uses an active-passive region approach to enable disaster recovery across Azure regions while reducing cost and complexity. The specific active-passive approach, warm spare or cold spare, will be determined during Stage 1 in agreement with DMV. Azure Front Door also provides DDoS (distributed denial of service) protection.
- **Okta** is DMV's Multi-Factor Authorization (MFA) solution. This will remain in place in the new solution to reduce impacts on users.
- **App Gateway with Web Application Firewall (WAF)** provides load balancing and network address translation (NAT) with the optional addition of Azure Web Application Firewall. The Application Gateway with WAF decrypts incoming packets and searches for web application threats such as SQL injection and cross-site scripting. Assuming nothing malicious is found, the packets are encrypted again and sent to the next component.
- **Azure Firewall** is a network security service that provides Level 3 – 7 filtering and threat intelligence. Receiving traffic from the App Gateway, Azure Firewall (Premium) examines the packets and searches for malicious intent. Azure Firewall examines **all** network packets, not just web ones, and provides generic intrusion detection and protection (IDP). Assuming nothing malicious is found, the packets are encrypted again and sent to the next component.
- **NOTE:** The security architecture with App Gateway with WAF and Azure Firewall (Premium) is a Microsoft-developed design pattern for implementing Zero-trust networks with web applications.
- **API Management** includes an API Gateway and Developer Portal. The API Gateway acts as a façade to backend services, verifies API keys or JWT tokens, enforces quotas and rate limits, enables monitoring and reporting, and can potentially transform and/or cache responses. The API Gateway will be used for all DMV-owned UIs, and the Developer Portal will be used for externally facing DMV APIs.
- **Azure Container Apps (ACA)** are the core of the DMV modernized solution. ACA is a fully managed, serverless container service that allows DMV to maintain less infrastructure and save costs while running containerized applications. Azure Container Apps will host all domain microservices, extensive or complex Experience APIs, externally facing DMV APIs, and potentially some batch jobs.
  - **ACA** were chosen over Azure Kubernetes Service because ACA are much easier to manage and maintain than an Azure Kubernetes Service-based solution. CapTech has seen clients struggle to get the value out of an Azure Kubernetes Service solution.
  - **ACA** were chosen over Web App for Containers (using Azure App Service) due to the increased scalability and control that ACA has. Web App for Containers is easier to use than Azure Container Apps, however it would be difficult to ensure that Web App for Containers could scale to meet the DMV's performance requirements.
  - **Dapr** will be used as a sidecar for ACA. The sidecar pattern locates peripheral (non-core) tasks in a container that is attached to a parent container. Dapr in ACA provides service-to-service invocation, state management, publish and subscribe, input and output bindings, actors (units of work designed to scale quickly), observability, secret access, and configuration access and notification features. Dapr also enables scaling HTTP(S) traffic both up and to zero. To scale non-HTTP traffic, KEDA (Kubernetes Event-Driven Autoscaling) scalers can be used.
- **Azure Cache for Redis** is a distributed, in-memory, scalable managed Redis cache. It's used as a Dapr state store component for Azure Container Apps containers that need to store state, as well as potentially other caching needs from non-Azure Container Apps services.

- **Azure Blob Storage** stores large amounts or sizes of unstructured data like text or binary files. Azure Blob Storage will be used by numerous services in the solution. Azure data stores use Blob Storage for backup purposes, and Blob Storage also provides immutable data storage to secure against ransomware attacks.
- **Azure Cosmos DB** is a NoSQL, multi-model managed document database service. Domain microservices will use it as the primary choice of data store. Cosmos DB will support high availability, ACID transactions, and allow for high IO. Additionally, it will simplify data schema evolution and DevOps.
- **Azure Data Factory** is Azure's cloud ETL/ELT (Extract-Transform-Load or Extract-Load-Transform) service for scale-out serverless data integration and data transformation. Azure Data Factory will be used to transform any incoming data and land it in the appropriate microservice data store or data warehouse. Azure Data Factory will also be used for data-driven batch jobs.
- **Azure SQL Server Managed Instance** will be used as the Data Warehouse and Operational Data Store for the Modernized CSS Solution. **PowerBI** will be used for dashboards and analytical reporting. SQL Server Reporting Services (SSRS) will be used for operational and scheduled standard reporting.
  - **Azure SQL Managed Instance** was selected over Azure Synapse Analytics based on current understanding of use cases related to warehousing, reporting, batch processing, and analytics.
  - **PowerBI** was selected over other dashboarding tooling due to maturity in the marketplace, seamless integration with Azure data stores, and currently used at the DMV.
  - **SSRS** will be leveraged for paginated or distributed reports that require printing or distribution as PDF.
- **Azure Service Bus** is a fully managed enterprise message broker with message queues and publish-subscribe topics. Domain microservices hosted in Azure Container Apps will use this as well as integration with DMV's on-prem systems.
- **Azure Event Grid** is an eventing backplane that enables event-driven, reactive programming. It uses the publish-subscribe model. Publishers emit events but have no expectation about how the events are handled. Event Grid is especially useful in registering for and reacting to Azure services events. Implementing Event Grid will provide a foundation for DMV to shift towards a more Event-Driven Architecture after the mainframe is retired. The choice of when to use Azure Service Bus versus Azure Event Grid will depend on the semantics required for the message or event.
- **Azure Logic Apps** can create and run automated recurring workflows with little to no code on a schedule. Not all scheduled jobs will be in Azure Logic Apps due to Azure Logic Apps Workflow definition limits. Azure Functions, Azure Data Factory, and other scheduling options are available with various tradeoffs. CapTech will work with the DMV to identify schedule service decision criteria once the requirements for the various types of batch jobs and scheduled workflows are known.
- **Common Services** will be used throughout the solution. This list includes a select set of highly relevant services and is not exhaustive.
  - **Azure Functions** are a serverless Functions-as-a-Service (FaaS) solution. It is particularly useful for executing small amounts of code that are executed in reaction to events. Developer productivity is high due to Azure Functions handling all the infrastructure.
  - **Azure Key Vault** is Azure's cloud service for securely storing and accessing keys. Key Vault will be used throughout the solution to tightly control access to secrets such as API keys, certificates, passwords, etc.

- **Azure Monitor** Application Insights provides Application Performance Management including a live map, metrics, responsiveness, failures, and the ability to search for transactions.
- **Express Route** is the secure connection from the DMV Azure presence to DMV's on-prem **Data Center (VITA managed)**. Express Route is secure and DMV traffic is not commingled with other traffic on the Internet.
- **External APIs** will be called by Domain microservices directly or through the service bus, depending on the type of call. For example, a read request-response can be initiated directly from a microservice, whereas a call with specific semantics (like guaranteed delivery or message ordering) would use Azure Service Bus.
- **Splunk** is DMV's SIEM tool. Splunk provides an add-on that automatically connects DMV's Azure subscriptions to DMV's Splunk instance to flow data from Azure to Splunk.

### 3.37 - In Response to Section 5 Part F Paragraph 3.A.1

*Modularity: Applications are divided into smaller services based on specific business functions. Each service focuses on a single task, making it easier to develop, deploy, and scale.*

CapTech's Modernized CSS Solution architecture uses microservices to achieve modularity. CapTech will use a Domain-Driven Design approach as Features are defined (see requirements section) to decompose the DMV's core lines of business into relevant domain microservices and system or functionality-related microservices (e.g., a print microservice). Since requirements, technology implementations, and organizational factors and context vary, it is difficult to provide a deterministic approach. CapTech will include DMV stakeholders in relevant design meetings so they can understand the approach, why certain design decisions were made, and how to apply it to future development after the end of the contract.

ACA provides a solid foundation for deploying microservices. In ACA each microservice can be independently scaled, versioned, and upgraded. ACA also provides service discovery and native Dapr integration. Dapr, or Distributed Application Runtime, is deployed as a sidecar to the microservice container. Dapr provides a large amount of relevant functionality, including service-to-service invocation, state management, publish and subscribe, input/output bindings, actors (the ability to encapsulate code and data into reusable objects), observability, secure secret access, and configuration functionality. Dapr enables scaling based on HTTP traffic, which most of the DMV microservice traffic should be. KEDA (Kubernetes Event-Driven Autoscaling) will be used if scaling non-HTTP traffic is required.

Each microservice will be its own code repository to enable independent development. This forces integration to occur using the microservice's exposed APIs, avoiding creating another monolithic application using newer technology.

### 3.38 - In Response to Section 5 Part F Paragraph 3.A.2

*Independence: Each microservice can be developed, deployed, and scaled independently. This means updating or modifying one service doesn't necessarily impact others.*

As described in the Modularity section, the microservices that CapTech delivers will be developed, deployed, and scaled independently. If the microservice's published API does not change, then updating or modifying the microservice will not impact others. For example, if a microservice adds caching to improve performance and deploys the new version, other microservices will not be impacted other than to experience the performance improvement.

However, if there is a change to the API, other services will be impacted. There are options on how to handle this change depending on when the change occurs, the other microservices impacted, the requirements related to the change, and more. During development, it is likely that CapTech and DMV will force impacted microservices to update to another microservice's API updates. This confirms the system represents the latest progress of the project. In final production after cutover, however, microservices can support multiple versions, collaborate with impacted microservice teams, or provide default values and migrate impacted microservices over time. CapTech will provide guidance during Stage 2 on an approach for the DMV to use after the contract ends.

### 3.39 - In Response to Section 5 Part F Paragraph 3.A.3

*Decentralized Data Management: Each service can have its own database, allowing for different data storage technologies that best suit the service's requirements.*

The solution architecture has an Azure Cosmos DB per microservice. This is the default data store technology selection. A microservice may use an additional or alternative data store depending on the requirements in discussion with the DMV.

For event-driven, micro-services applications that have batch processing requirements across services, a database per service design is the recommended approach. For batch processing, additional data stores within the services can be created to support or the batch processing can be off-loaded to a SQL Server MI. For DMV, each approach will be defined during the detailed design phase and will be implemented based on the best architecture for the use case.

### 3.40 - In Response to Section 5 Part F Paragraph 3.A.4

*Flexibility and Scalability: Microservices enable better scalability by allowing individual components to be scaled independently based on demand.*

The technical solution architecture uses containers within ACA. Linux containers with .NET 8 and ASP.NET Core generally use fewer resources compared to Virtual Machine-based deployments. ACA makes it easy to scale based on HTTP or TCP traffic out of the box, with custom scaling possible with additional configuration. When combined with stateless microservices, each microservice can be scaled horizontally to very high-performance levels.

### 3.41 - In Response to Section 5 Part F Paragraph 3.A.5

*Resilience: Failure in one service doesn't necessarily bring down the entire application. Since services are separate, the failure of one service ideally doesn't affect others.*

Resilience between services can be achieved depending on how the interactions between microservices are developed. If a UI is only accessing one microservice to display data and the microservice is not responding, then the UI can gracefully handle the error and work in other parts, but the specific component related to the microservice will not function. Generally, CapTech tries to limit designs where one microservice is synchronously dependent on another microservice. Asynchronous dependence is achieved through the Azure Service Bus, Event Grid, Functions, queues, or other technologies that break a dependency chain.

Each microservice will have “health check” APIs so that ACA can restart a container if it is not responding. With multiple instances or containers of each microservice operating or the ability to roll back to a previous version of a container, a microservice being “down” should be a rare occurrence.

### 3.42 - In Response to Section 5 Part F Paragraph 3.A.6

*Ease of Deployment and Continuous Delivery: Smaller services are easier to deploy, test, and maintain. Continuous integration and continuous delivery (CI/CD) practices are often employed to streamline updates and changes.*

ACA and Azure Container Registry (ACR) are well-suited to CI/CD practices related to containers. Azure DevOps has tasks that enable ACA to build and deploy container apps. ACR has tasks that can be used by CI/CD pipelines if the ACA task is not enough, or to perform container management when a container's base image is updated.

Looking more broadly than ACA, CapTech's solution and approach include building CI (continuous integration pipelines, or "build" pipelines) for all deployable code repositories, including Infrastructure as Code (IaC) repositories using Terraform. CD (deployment pipelines) will be built and used to deploy all artifacts – containers, code, infrastructure, etc.

The diagram below shows the DevOps Architecture CapTech will be implemented as part of the Modernized CSS Solution.

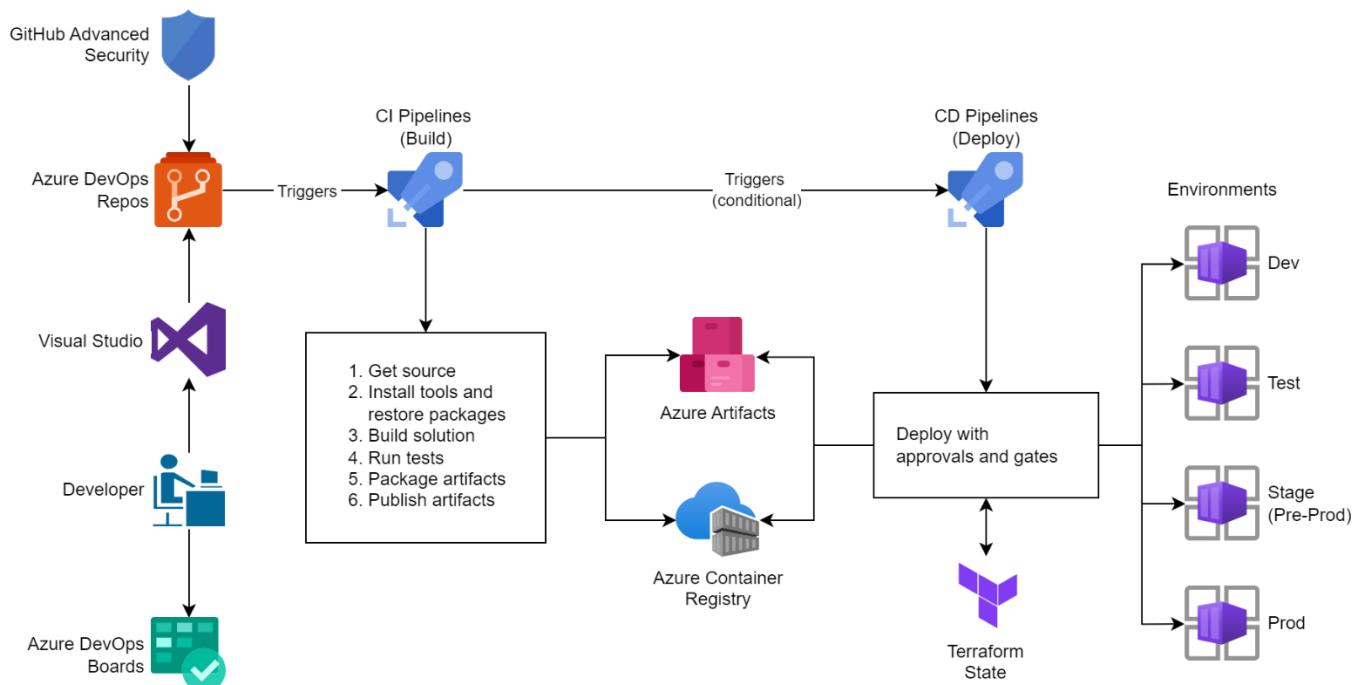


Figure 25 - DevOps Architecture

Starting with the Developer in the lower left corner of the diagram:

- Developer updates Azure DevOps Boards and uses Visual Studio
- Developer commits Visual Studio code to Azure DevOps Repos
- GitHub Advanced Security is run on every commit
- Triggers execute to kick off the CI Pipelines (Build). For the main (development) branch, this is on merge commits, or "PRs"

- Build pipelines perform a clean get, restore, and build, run automated tests, and then package and publish artifacts
  - Code-related artifacts are published to Azure Artifacts
  - Container image updates are published to Azure Container Registry
- Conditional Triggers initiate CD Pipelines (Deploy)
- Conditional triggers depend on the branch and/or environment
  - For example, the development branch/environment may run every time a request is merged to the appropriate branch
  - The test branch/environment may run every night, or every week, or only upon approval of the Test Lead
- Deployment occurs with approvals and gates to Environments, including Dev, Test, Stage (Pre-Prod), and Prod
  - Gates can stop a deployment if the build breaks, or unit tests fail, or an external automated test suite encounters a failed test
  - Approvals can be configured in various combinations to ensure that only approved deployments are performed
  - Deployments can also be configured to occur at specific times
- Terraform State may be updated if there are infrastructure changes

### 3.43 - In Response to Section 5 Part F Paragraph 3.B.1

*The target architecture must be hosted within the existing VITA provided Microsoft Azure cloud environment (subscription) and founded on Azure Services and Azure Data Services (Azure SQL Managed Instance).*

The solution architecture is capable of being hosted within a VITA-provided Microsoft Azure cloud environment. However, the current VITA catalog only includes Infrastructure-as-a-Service (IaaS) services. This is far from the best approach to developing the solution the DMV requires, a microservices-based Modernized CSS Solution.

CapTech's solution architecture uses services that are generally available in Azure commercial cloud where VITA's current cloud environment is hosted. Some Azure services will be used that are in preview, however they are for assisting during development, not part of the runtime operational execution. CapTech assumes that VITA can manage the Azure services used as part of CapTech's Solution Architecture. See section 3.36 for a full list of Azure services used.

### **3.44 - In Response to Section 5 Part F Paragraph 3.B.2**

*The existing Microsoft Power Platform can be used for user interface replacements.*

Power Platform may be used for user interface replacements if a mutual review of requirements determines it is the best solution. Most of the UI is planned to be in Blazor and ASP.NET Core, per DMV's requirements.

### **3.45 - In Response to Section 5 Part F Paragraph 3.B.3**

*All custom code must be written in .NET C#.*

All code will be written in C#. The exact version of .NET used for production launch will depend on the release dates of .NET. CapTech will deliver the solution using the latest Standard Term Support (STS) version of .NET that is available six (6) months prior to completion of *development*. STS versions are supported and patched for three (3) years according to the official .NET Support Policy.

### **3.46 - In Response to Section 5 Part F Paragraph 3.B.4**

*The existing Azure DevOps tenant will be used for configuration management and source code repository.*

CapTech will use the existing Azure DevOps tenant with the assumption that all features are enabled or can be enabled, one or more CapTech project members will be granted Project Collection admin for a new Azure DevOps project collection, and any integration with external services specified in this response or subsequently deemed necessary to meet any requirement of this project are permitted.

### 3.47 - In Response to Section 5 Part F Paragraph 3.C.1

**Service Oriented/Loosely Coupled** - Interfaces should be loosely coupled, backward compatible, self-describing, and offer a low impact to the enterprise if changed. A focus on integration increases the likelihood that future changes can be accommodated. Well defined services limit the tendency to modify services for a purpose for which they were not intended. Loose-coupling allows for more incremental evolution of the system with reduced impact to DMV. The architecture must be flexible, scalable, adaptable, enduring, extensible, and open.

CapTech's solution architecture is service-oriented and loosely coupled. Virtually all the various services and components of the application communicate using HTTP with RESTful APIs. The APIs help enable loose coupling if the interactions between services are designed appropriately. CapTech has extensive experience in both service-oriented and microservices-based systems to design interactions in a loosely coupled manner.

As described in DDD (3.37), CapTech will use a DDD approach to decompose DMV's lines of business and logic into coherent, independent microservices. The factoring of logic is key to enabling a flexible loosely coupled system that is scalable at the microservice level, adaptable, and extensible. Using web standards such as HTTP and a RESTful design approach and having DMV work alongside CapTech creates an open architecture that DMV can own, maintain, and enhance for an enduring solution.

## 3.48 - In Response to Section 5 Part F Paragraph 3.C.2

**Information Security** - Information Security means protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, and/or destruction. Systems implemented should include the following goals of Information Security in their architecting, design, development, and implementation.

- a) Confidentiality: Information is not disclosed to unauthorized parties.
- b) Integrity: Information remains unchanged in transit or in storage until it is changed by an authorized party.
- c) Availability: Authorized parties are given timely and uninterrupted access to resources and information.
- d) Accountability: The traceability of actions performed on a system to a specific system entity.

CapTech's solution architecture has been designed from the ground up for information security. From an architecture and design perspective, the security highlights are:

- Transport Layer Security (TLS)
  - TLS encryption for all external connections: the New mySelect, externally exposed APIs, or other communication methods such as FTPS
  - TLS encryption for all communication within the Azure environment
  - Mutual TLS for all microservices
- Firewalls and Edge Protection
  - Use of Azure Front Door to get network traffic onto the Microsoft global edge network as close to the user as possible
  - Web Application Firewall for HTTP traffic
  - Azure Firewall for other traffic
  - Intrusion Detection and Prevention (IDPS)
- Identity and Access Management
  - Use of an Identity and Access Management (IAM) tool for all user (person) accounts – Okta or Entra
  - Use of an IAM for all service accounts: to enable service account credential rotation, revocation, etc.
- Secure Storage
  - Encryption of data at rest in data stores such as Cosmos DB and SQL Server Managed Instance
  - Encryption of data at rest in Azure Storage
  - Encryption of specific columns of sensitive data within data stores with client-managed keys (e.g., encrypting a Social Security Number column within Cosmos DB)
  - Use of Azure Key Vault to store secure credentials where service accounts are not possible, such as shared access keys, FTP username and password, etc.
- Network Traffic
  - Use of Azure Private Link to keep all DMV network traffic within Azure data center networks
  - Use of Azure Express Route for a dedicated, DMV-only connection to DMV data centers with no commingling of data
  - Design of network segmentation and network routing rules
- Compliance and Monitoring
  - Use of Azure management and monitoring features to simplify management and enable both

- proactive and reactive monitoring of security posture
- o Integration with DMV's SIEM tool, Splunk, for storing audit records in a repository separate from the audited system or system component to so that a compromise of the system being audited does not also result in a compromise of the audit records.

The best way to create secure software is to have a security mindset right from the beginning of the project and not wait and apply security at the end. A secure Software Development Life Cycle (SDLC) process starts with requirements gathering and analysis and continues through every phase of the project.

During the design phase of the project our analysts will define the actors in the system and define how those actors interact with the system and what data they can view and update. Once defined, the architecture team will identify potential threats and define if we have any gaps in our security plan.

During the development phase all code will be reviewed by one or more senior members of our development team. This review will look for code quality issues and adherence standards, but also for any potential security flaws that may be present. Common vulnerabilities identified will generally follow the OWASP Top 10 Standards. All CapTech developers have mandatory annual training on developing code in a secure manner, focusing on mitigating attacks from the OWASP Top 10.

All developed code will be scanned as part of the CI/CD workflows. GitHub Advanced Security provides code scanning for security issues, secrets checked in to version control, and the ability to analyze dependent libraries for reported security issues or version updates. Microsoft Defender for Cloud DevOps security includes additional code scanning tools as well as a unified overview of DevOps security posture.

After peer review and automated code scans, all developed code will proceed through security scans (conducted by DMV) and vulnerability and penetration testing (conducted by an independent third party) prior to production release.

For data in transit, TLS (e.g., HTTPS) security provides confidentiality and integrity protection for data. Mutual TLS will be used in the solution architecture within the Azure network to validate the services at each end of a network connection are who they claim to be by verifying that they both have the correct private key. For data at rest, all data will be encrypted by native encryption that is part of the Azure services. The keys can be Microsoft-managed or DMV-managed. Cosmos DB's Always Encrypted and similar column-level encryption of specific data, such as Social Security Number, will be implemented.

The solution architecture is architected and designed to be highly available within an Azure region, and data is replicated to another region for backup and disaster recovery purposes. See more info in the disaster recovery section 3.55.

### 3.49 - In Response to Section 5 Part F Paragraph 3.C.3

**Identity and Access Management** - The Modernized CSS Solution should dynamically interact with identity and policy services rather than duplicating security management. At minimum, enterprise solutions need to dynamically authenticate against enterprise authentication services. Unless local security is required to match the desired level of risk, systems should not require independent authentication tokens (e.g., username and password). Enterprises achieve elevated security profiles by implementing single sign-on for DMV applications. Flexibility of business rules to protect privacy of information should be considered.

CapTech's solution will use DMV's current IAM tool, Okta, in conjunction with Entra (formerly Azure Active Directory). Entra will be used for service accounts for Azure services due to the tight integration and features for service account management.

In certain cases, other security mechanisms may be required, such as shared secret keys or usernames and passwords, when either user accounts (in Okta) or service accounts in Entra are not possible. In these situations, the access keys, credentials, and/or certificates will be managed in Azure Key Vault and documented appropriately.

### 3.50 - In Response to Section 5 Part F Paragraph 3.C.4

**Data Management** - Data is an asset that has value to the enterprise and is managed accordingly. Business users have access to the data necessary to perform their duties; therefore, data is shared across enterprise functions and organizations. In the enterprise data model, each data source has a trustee accountable for data quality. How the data is defined must be consistent throughout the enterprise. The definitions are understandable and available to all users. Enterprise data must be protected from unauthorized use and disclosure. In addition to the traditional aspects of national security classification, this includes, but is not limited to, protection of pre-decisional, sensitive, source selection-sensitive, and proprietary information.

DMV handles a significant quantity of personally identifiable information (PII) and other sensitive data related to the citizens that they serve. To help protect this data and prevent data loss, CapTech will follow the Principle of Least Privilege throughout the development cycle and work with DMV to define least privileges when granting access to data, building reports and outputs, and sharing data with other data stores. A key component of the principle of least privilege is an understanding of the data being managed. CapTech will work with DMV's data trustees to set up and maintain data classifications for all sensitive data in a way that is consistent with enterprise standards. This will inform access policies.

### 3.51 - In Response to Section 5 Part F Paragraph 3.C.5

**Scalability** - The DMV Enterprise Architecture should be scalable in size, capacity, and functionality to meet emerging business and technical requirements.

The solution architecture is scalable both horizontally and vertically at the various services' levels. Microservices will be significantly scalable in ACA. Other Azure Platform-as-a-Service (PaaS) services are scalable and will be configured to scale in the appropriate manner for each service. A microservices-based architecture enables the DMV to scale functionality to meet emerging requirements.

### 3.52 - In Response to Section 5 Part F Paragraph 3.C.6

**Interoperability** - Software and hardware should conform to defined standards that promote interoperability for data, applications, and technology. Application systems should be developed using standard, common methodologies, and shared resources.

As a top tier cloud services provider, Azure supports and implements standards throughout its technical platform. Microsoft has an Interoperability Principles Program where Microsoft commits to supporting open protocols, open APIs, open access, supporting broadly adopted standards and compatibility, and enabling data portability through industry standard, open formats for import and export.

Specific to the CapTech solution, all communications use industry standards such as HTTP and TCP, TLS, RESTful APIs, and other industry standard communication formats. Architecture, design, and development follow common industry methodologies and approaches. The solution architecture uses microservices to share resources instead of duplicating them.

### 3.53 - In Response to Section 5 Part F Paragraph 3.C.7

***Business Continuity*** - The CSS Enterprise Architecture should ensure that critical business functions will be available to customers, business partners and other entities that must have access to those functions in spite of system interruptions.

The solution architecture is architected and designed to be highly available within an Azure region, and data is replicated to another region for backup and disaster recovery purposes. See more info in the disaster recovery (section 3.55).

### 3.54 - In Response to Section 5 Part F Paragraph 3.C.8

**Supportability/Serviceability** - Supportability/Serviceability is the inherent quality of a system, including design for reliability and maintainability, technical support data, and maintenance procedures, to facilitate detection, isolation, and timely repair/replacement of system anomalies.

CapTech's solution will be designed with supportability and serviceability in mind. CapTech has a proven track record of transitioning solutions to our clients so that they can operate, maintain, and enhance the solution after CapTech is no longer engaged. DMV personnel will be included as part of the development effort so that the DMV can identify any supportability or serviceability concerns at the point of development. Documentation is robust and covers multiple levels of abstraction following the C4 Model, a lightweight standard for documenting software. Maintenance procedures, runbooks, and other support deliverables are available along with Azure services related to application performance management.

### 3.55 - In Response to Section 5 Part F Paragraph 4

#### **Backup and Disaster Recovery**

*The Supplier must acknowledge and confirm their understanding that the Modernized CSS Solution shall include a backup and disaster recovery approach and plan jointly developed by DMV and the Contractor that aligns with Commonwealth IT policy.*

CapTech will work with DMV during design to establish an approach and a plan for backup and disaster recovery. The plan will be critical for business continuity, compliance, and minimizing the impact of disaster scenarios for DMV and the citizens of Virginia. Well-documented procedures allow teams to know exactly how to react during a crisis. Clarity on steps to take minimizes confusion and accelerates response time.

The backup and disaster recovery plan will address the following key areas:

- Roles and Responsibilities
  - Clearly defined roles so everyone knows their specific responsibilities during a disaster
  - Define communication channels, including who should communicate with whom and when
- Disaster Avoidance
  - Describes the technical and business measures employed to maximize system uptime
- Disaster Scenarios and Procedures
  - Exact procedures for recovering systems, restoring data, and resuming operations so that downtime and data loss is minimized
- Data backup goals, strategy, and procedures, including Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO)
- System Monitoring and Operational Health
- Failover Testing
  - Plan for executing multiple, deliberate simulations of a real-world failure scenario
  - Process for validating results and reporting the results of the failover test
- Recovery Validation

#### **Solution Approach**

The solution architecture is designed to deliver an integrated, performant, and robust system. Our high-availability (HA) and disaster recovery (DR) approach leverages an Active-Standby region model within the Azure cloud environment. Here's how it works:

- **Active Region:** This region handles all live traffic, so there is uninterrupted service availability for our applications and users.
- **Passive Region:** In the passive region, we deploy identical code as in the active region, but no live traffic is directed there. It serves as a standby, ready to take over in case of a failure or disaster in the active region.

#### **High Availability Strategy**

Our services are designed to be stateless, with in-memory caching for session state and intermediate outputs as needed. The deployment spans Azure Availability Zones (AZs) within a region, providing redundancy and fault tolerance.

High availability may be configured at the service level or as part of the Virtual Network (VNET) structure, where we set up subnets that span multiple AZs.

All data stores operate as Platform-as-a-Service (PaaS) solutions with multi-availability zones, enhancing resilience. For lower-level components, we plan to maintain high availability and rapid recoverability.

The microservice components built on ACA will be configured to be highly available and fault-tolerant. We will build in redundancy and failover recovery at all layers within the solution, including the web server, data transit layer, logic layer, and data storage layer. This allows failover to occur quickly and with minimal interruption to the user's experience.

## **Data Replication**

The primary database platforms selected, Azure Cosmos DB and Azure SQL MI, are designed to provide redundancy and high availability. We will employ cross-region replication for all permanent data stores. Although replication is asynchronous, the transfer delay between regions is typically well within acceptable SLAs. This minimizes data loss during failover.

## **Storage Replication**

For storage, we utilize Azure storage replication, specifically either Geo-Redundant Storage (GRS) or Geo-Zone-Redundant Storage (GZRS). While there is no published SLA, our observations indicate that replication usually occurs in less than 15 minutes, aligning with industry standards. This replication covers content files, backups, and immutable data.

## **Azure Container Registry Geo-Replication**

Geo-replication for the Azure Container Registry replicates all containers to the paired region, safeguarding the Modernized CSS Solution container images across regions.

## **Services with Specific Requirements**

Certain services may have unique requirements for disaster recovery across regional boundaries. We will address these special cases individually when the service is identified for use in the architecture or design.

## **Recovery Point Objective (RPO) and Recovery Time Objective (RTO)**

- **RPO (amount of data loss):** Our goal is to architect for data loss of up to 60 seconds for permanent data stores, such as CosmosDB and SQL Server, and typically less than 15 minutes for files, depending on DMV requirements. It's important to note that Azure does not provide an SLA specifically for cross-region file-level replication time.
- **RTO (time to return to operations):** The actual recovery time depends on various factors. However, our aim is to have critical services up and running in the backup region within a matter of

hours, ideally even less.

- Note that RPO and RTO requirements may impact solution performance, so the DMV may need to make a tradeoff decision. For example, specifying a one-minute RPO for CosmosDB will force CosmosDB to throttle (limit) transactional performance in the active region if the replication of data to the standby region is delayed for some reason (e.g., network latency, service performance degradations).

### 3.56 - In Response to Section 5 Part F Paragraph 5

#### Database Migration/Synchronization Requirements

Working with DMV, the Contractor must transition from the current database environment to future state while aligning with data governance best-practices and synchronizing data between the existing and Modernized CSS Solutions during the iterative development and deployment process. This includes but is not limited to:

- Database Security
- Ad hoc Capabilities
- Database Performance
- Database Training and Knowledge Transfer

The Contractor and DMV will jointly plan and define the future state capacity requirements to ensure the applications and data will operate at the same level of performance and reliability or better.

The Supplier must provide a comprehensive and detailed narrative describing the proposed plans, approaches, concepts, and methodologies to accomplish data migration and synchronization requirements.

CapTech will deliver new microservice data stores using a combination of Cosmos DB and Azure SQL Managed Instance (SQL MI) will be leveraged in the target state architecture. Cosmos DB will be the preferred data store for microservices while SQL MI will be used as the operational data store / data warehouse.

For security, CapTech will configure Transparent Data Encryption (TDE), Role Based Access Control (RBAC), and Private Endpoints on both systems. Additionally, CapTech will enable Threat Detection on Cosmos DB and SQL MI which will allow for additional monitoring and alerting on the database when suspicious activity and/or suspected breaches are identified.

TDE provides data encryption at rest utilizing Microsoft Managed Encryption Keys. There is also the ability to bring customer managed encryption keys. CapTech will work with DMV to determine during detailed design in Stage 1 if customer-managed encryption keys are the preferred method. Specific columns, such as Social Security Number, can be further encrypted using Cosmos DB's Always Encrypted to limit access to only highly privileged accounts depending on DMV's requirements.

All connections to Cosmos DB, SQL MI, or other data stores will be encrypted using TLS according to the security architecture that CapTech will develop.

RBAC is leveraged to manage who has access to what data in the system. CapTech will work with DMV to implement the Principle of Least Privilege and roles that will provide access to data for only those that need to know. Access to data will be logged appropriately.

CapTech will work with DMV to determine detailed requirements on the data required for Ad Hoc capabilities. This data will be captured and modeled based on DMV's user stories. As noted in Section 3.7 Information Provisioning – Level 0, Ad Hoc requests can take many forms, from including electronic data exchanges to paper reports. Where the required format is in a report and data is in the data warehouse, Power BI or SQL Server Reporting Services will be used. Electronic data exchanges will be implemented based on requirements from the SQL MI data warehouse. With the event-driven microservices architecture, events can also be leveraged to replicate data to a database designed and modeled for Ad-Hoc requests. CapTech will potentially implement this depending on DMV's requirements, impact to schedule, and ease of testing.

CapTech will work with DMV to determine detailed database performance requirements for specific databases and services and align with capabilities of Azure Data Services to support the overall performance requirements specified in Appendix 1 (Appendix G – Contractor Performance Requirements).

CapTech will suggest technical training on the underlying Azure data technologies. Once DMV has

completed external training, CapTech will complete knowledge transfer sessions including DMV resources joining the CapTech development teams and implementing features.

Database Training and Knowledge Transfer will follow the overall approach for training and knowledge transfer. Learning paths will be provided, and DMV staff will be identified and responsible for completing the learning paths. After that DMV staff will be incorporated into the data teams and will be responsible for completing project delivery work. Knowledge transfer sessions will be held, questions answered, and documentation provided. Please see Part 8 Training Proposal for more details.

CapTech will work with the DMV to define capacity requirements and define performance and reliability requirements based on the modernized architecture and solution implementation.

Data migration is a critical component of the DMV CSS modernization effort. Having complete and accurate data will be vital to developing, testing, and validating the modernized CSS application. Given the make-up of DMV's environment including 260 ADABAS files that make-up transactions, summary, and historical data, detailed planning and acceleration tools will be key to a successful migration.

CapTech will utilize the Stage 1 POC to prove out the tools and process to develop the larger data migration plan to be implemented in Stage 2. During Stage 1, CapTech will work with DMV to further understand and document migration requirements for the Virtual Tape and GDGs.

CapTech's high level approach to database migration is to first extract data from the Mainframe files, load the data into relational tables in SQL Server Managed Instance (SQL MI), leverage Azure Data Factory to transform the data, and load to the target CosmosDB. By first staging the data in the Mainframe format, we can validate the initial extract and load process. We then perform the transformations and load to the target in a separate process. This allows for validation at two steps providing more opportunities for testing and reducing risk in the migration process.

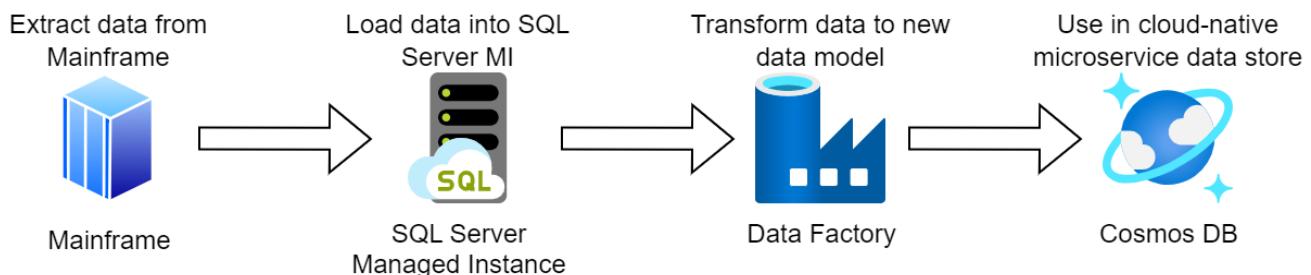


Figure 26 - Data Migration Process

In Stage 1, we will focus on four key aspects of the data migration solution: security, data extraction, data load and conversion.

- **Security Configuration:** Before moving any data, CapTech will work with DMV admins and data governance experts to set up the target environment for handling access and permissions to meet data privacy and protection requirements.
- **Extract, Load, Transform:** CapTech will leverage a common pattern to migrate data: extract from the mainframe, synch data with Treehouse Rocket Data Replicate and Sync (RDRS), enrich data with

SQL, then load data into Cosmos DB.

- **Data Extraction:** CapTech plans to utilize a third-party tool, Treehouse Software Rocket Data Replicate and Sync (RDRS). If DMV has a tool that provides similar functionality, CapTech is open to evaluating the functionality and capabilities to support the data migration. The RDRS tool will be utilized to accelerate the process of extracting data from the ADABAS files in a form that can be loaded into Azure. For Stage 1, we will work with DMV to understand data synchronization use cases and full migration requirements to confirm our selection of third-party tooling. Once confirmed, we will work with ADABAS DBAs to get the tool installed and configured. For Stage 1, we will target an MVP installation and usage of the tool and work with DMV to define a subset of data from the mainframe to migrate to support the services for People Credentials and Vehicle Credentials. The migrated data will prove out the functionality for Stage 1 and the full migration process will be identified in detailed design and go-forward plan.
- **Data Load:** CapTech will leverage RDRS to extract the data from ADABAS into a SQL Managed Instance in the target environment. In this step, data will retain its native format from ADABAS with only minor required transformations which will simplify validation.
- **Data Transformation:** Lastly, CapTech will transform and enrich the data to load it into the schemas created for the Stage 1 POC application. Using a tool such as Azure Data Factory, data will be loaded into one or more schemas designed for the microservices-based application and made available for the POC.

In Stage 2, CapTech will build upon the work done in Stage 1 and fully implement the components needed for a full data migration. For this, we will execute the following steps: replicate transactional data from ADABAS, load future state schemas, replicate data warehouses to Azure, set up data synchronization between mainframe and azure, and set up processes to migrate file storage such as GDG and Virtual Tape. This will support development of the new application while preserving traceability of the data.

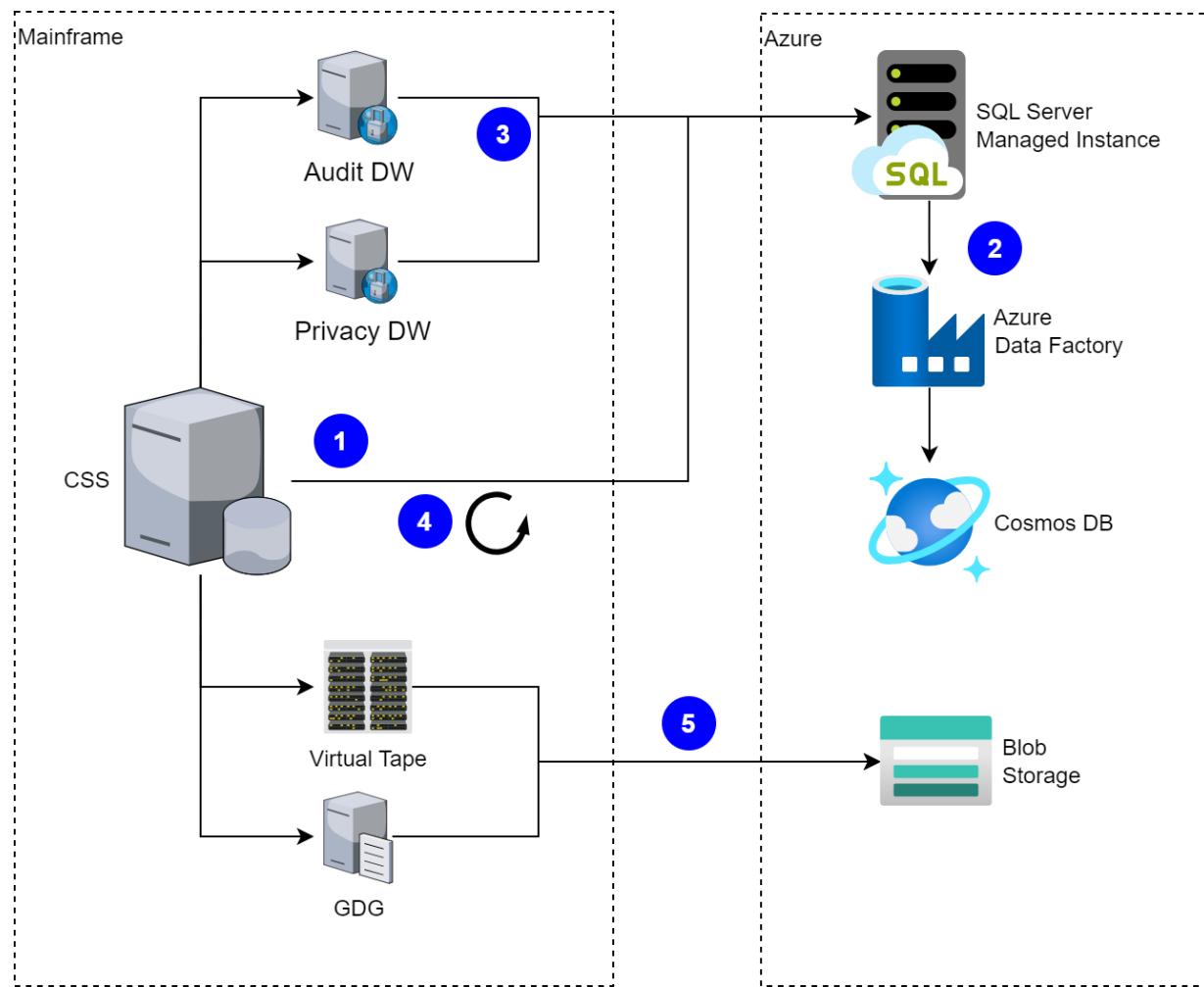


Figure 27 - Mainframe to Azure Data Storage

1. **Replicate transactional data from ADABAS:** CapTech will build out the data extraction MVP from Stage 1 to bring all ADABAS transactional data into a SQL Managed Instance database. This process will preserve the structure of the source data while converting EBCDIC to ASCII and converting MU/PE fields into child tables to allow for relational storage. By storing the data in Azure as close to its native format as possible, we will enable simple validation that all records are accounted for and that all values populate as expected.
2. **Load future state schemas:** CapTech will continue to build out data synchronization processes between Azure Managed Instance and CosmosDB. We will transform and reshape the source data as necessary for the service-specific data structures in CosmosDB using the tools configured in Stage 1. This will allow us to refresh the data as necessary throughout development.
3. **Replicate data warehouses:** CapTech will replicate the audit and privacy data warehouses to corresponding databases within the SQL Managed Instance. This process will work identically to the replication of the transactional data utilizing the tools that have already been established in Stage 1.
4. **Set up data synchronization between mainframe and Azure:** CapTech will work with DMV to set up consistent refreshes between ADABAS and Azure Managed Instance. We will consult with DMV or their DBA team to configure data synchronization at the required interval. Once this synchronization is configured, the Azure Managed Instance database can stay current with changes as they occur in the source system. We do not expect that the same configuration will be required for

the audit and privacy data warehouses. From a timeline perspective, we anticipate that replication-based synchronization will not be needed for the POC (Stage 1).

5. **Migrate GDG and Virtual Tape:** CapTech will migrate additional storage objects including Virtual Tape and GDGs. This migration will occur once during development to confirm that all required objects are successfully transferred and once again at go-live to transfer the latest set of objects. During the design phase, we will work with DMV to understand the use cases for Virtual Tape and GDGs to determine the appropriate migration for these artifacts. If it is determined that the functionality of all or part of the Virtual Tape or GDG files are naturally handled by other components or platforms within the modernized architecture, then some portion of the available artifacts may not be migrated.

At the conclusion of the design phase, CapTech will present a data migration and conversion plan deliverable. The plan will detail high level designs such as:

- Specific tools for each migration component
- Configurations required
- Security and access specifications
- Roles and Responsibilities
- Approximate timing for each step

At a more detailed level, the plan will lay out:

- Data mapping principles
- Format for data mapping documentation
- Data migration testing and validation

### 3.57 - In Response to Section 5 Part F Paragraph 6

#### **Documentation Requirements**

*In addition to the deliverables and documentation described elsewhere in this document, the Contractor must provide documentation for the following key items:*

- Security compliance related documentation
- Batch processing documentation
- Data mapping and validation
- Integration Solutions (i.e., Broker calls)
- Training

Security compliance-related documentation will be provided. The security documentation is covered in detail in Section 3.48.

During Stage 1, DMV will provide CapTech with detailed documentation on all batch jobs. CapTech will leverage this information in Stage 1 to define a go-forward plan. In Stage 2, CapTech will complete detailed requirements and detailed design of the batch jobs and how they are implemented in the modernized CSS application. Each batch job will be documented and determined if the functionality will be replicated in the target system or if the modernized architecture can handle the functionality of the batch process in a different pattern.

- The Batch Processing Documentation will include:
  - Inventory of batch processes
  - Description of the process as provided by DMV
  - Rationalization of processes to determine what needs to remain a batch process, what report can be created in the reporting application, and anything no longer relevant as functionality is contained within a resource
  - Requirements of the batch process
  - Detailed design

Data mapping and validation documentation will be provided. See Section 3.26 and 3.56 for details on the Migration Plan and the Conversion Plan, which include data mapping and validation.

In addition to documentation described elsewhere, integration solution documentation, or Broker calls, will be covered at multiple levels. At the service design level, calls between microservices and calls from externally exposed APIs to microservices will be documented. At the API/microservice layer, the API will be documented according to the OpenAPI Specification which provides developer-friendly documentation with a live API at lower environment levels (such as development or test environments). APIs are created from code repositories, and each repository will have developer-level documentation as well.

Training documentation will be provided. Part 8 Training Proposal covers this in extensive detail.

### 3.58 - In Response to Section 5 Part F Paragraph 7.A – 7.C

#### Change Management Requirements

The objective of the DMV change management process is to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes to IT infrastructure in a secure manner.

- a) The Contractor shall participate in the DMV change management process when applicable.
- b) The Contractor shall provide a copy of all artifacts generated during the testing of proposed changes to the Modernized CSS Solution for DMV review.
- c) The Contractor shall work with the DMV to mitigate or reduce any residual risk to an acceptable level.

Specific to IT infrastructure, CapTech understands the importance of a comprehensive change management process for minimizing the risk associated with change, business continuity, meeting compliance obligations, and providing transparency. CapTech has experience working in change management processes at various state agencies in the Commonwealth of Virginia. Typically, these change management processes involve review by a governing body, such as a Change Advisory Board (CAB).

In collaboration with DMV, we will engage in a thorough review and risk assessment for each proposed change to IT infrastructure. When areas of risk are identified, CapTech will work with DMV to assess the impact of the risk. Our goal is to identify potential risks early and develop strategies to mitigate or reduce any residual risk to an acceptable level, as defined by DMV standards.

CapTech will provide the required artifacts and documentation to support the change management process, including architecture diagrams, test results, impact analysis documentation, etc.

We will participate in the change management process when applicable. It is our assumption that participation in the change management process will be required prior to design approval and again prior to deployment of the CSS Modernization solution. We assume that we will have administrative control over the non-production environments and infrastructure during the implementation phase, such that frequent and recurring change management reviews are not required for each change outside of the produce environment.

Note that additional details are covered in Part 4: Project Management Proposal, specifically the Configuration Management Plan (4.7), and the production launch in Part 7: Deployment Plan.

### 3.59 - In Response to Section 5 Part F Paragraph 8

#### **Non-functional Requirements**

The Supplier must acknowledge and confirm their understanding that the Modernized CSS Solution shall be developed jointly by the Contractor and DMV in a manner to comply with each of the following requirements related to Availability, Capacity, Integrity, Maintainability, Performance, and Scalability principles.

CapTech acknowledges and confirms its understanding that the Modernized CSS Solution will be developed jointly by CapTech and DMV in a manner to comply with each of the following requirements related to Availability, Capacity, Integrity, Maintainability, Performance, and Scalability principles.

#	CATEGORY	NON-FUNCTIONAL REQUIREMENT	CAPTECH'S RESPONSE
1	<b>Availability</b>	<i>The Modernized CSS Solution shall provide greater than 99.9% up-time on a 24/7, 365 day per year basis (excluding planned system maintenance downtime).</i>	CapTech will design the Modernized CSS Solution to provide 99.9% uptime, as measured by: # of seconds the Modernized CSS Solution is completely unavailable (i.e., no screens work in mySelect and all API calls return errors) divided by total # of seconds in a year.  Planned system maintenance downtime or issues caused by factors or actions outside of Contractor's control will not count towards the # of seconds the Modernized CSS Solution is unavailable.
2	<b>Availability</b>	<i>The Modernized CSS Solution shall provide for high availability, redundancy, and scalability at all tiers (presentation, application/business logic, and data).</i>	CapTech's solution architecture is designed for high availability, redundancy, and scalability at all tiers within a Microsoft region. A standby region will be configured for disaster recovery purposes in the event of regional Azure outages. See disaster recovery section for details.
3	<b>Availability</b>	<i>The Modernized CSS Solution shall not have a single point of failure for each critical component of the solution.</i>	All components will be developed to be highly available within a region. A standby region will be configured for disaster recovery purposes in the event of regional Azure outages. See disaster recovery section for details.
4	<b>Availability</b>	<i>The Modernized CSS Solution shall maintain session state where applicable in the event of failover.</i>	Session state will be maintained in an external, highly available cache in the event of a failover within a region. Session state will not be replicated across regions. See tech solution for more details.
5	<b>Capacity</b>	<i>The Modernized CSS Solution shall have a fully scalable architecture designed to incrementally upgrade to meet demands of increased usage.</i>	The solution architecture is scalable throughout to incrementally scale out and/or up to meet usage demands. See tech solution for more details.

#	CATEGORY	NON-FUNCTIONAL REQUIREMENT	CAPTECH'S RESPONSE
6	<b>Capacity</b>	<i>The Modernized CSS Solution shall support more than 300,000 customer transactions per day.</i>	<p>The Modernized CSS Solution will be configured to support more than 300,000 customer transactions, where transaction count is the total # of API calls across Experience APIs, externally exposed APIs, and microservices APIs across a typical pattern of usage.</p> <p>Excludes any time periods where the system is performing a failover activity or is under a cybersecurity attack (e.g., a DDOS attack).</p>
7	<b>Integrity</b>	<i>The Modernized CSS Solution shall provide internal processing controls, including the capability in the event of a system failure to automatically restore the system to its last consistent state before the failure occurred.</i>	<p>For high availability within a region, the Modernized CSS Solution will be able to confirm last consistent state in the event one of the Availability Zones within a region has issues.</p> <p>For disaster recovery, the Modernized CSS Solution will be able to restore the system to a consistent state subject to the Recovery Point Objective (RPO) requirements. See disaster recovery section for more details.</p>
8	<b>Maintainability</b>	<i>The Modernized CSS Solution shall include remotely accessible tools that facilitate monitoring of Application Users and management of all application services.</i>	The Modernized CSS Solution will include integration with Azure Monitoring to facilitate monitoring of application users and management of services from the Azure Portal, which is remotely accessible.
9	<b>Maintainability</b>	<i>The Modernized CSS Solution shall include tools for monitoring and optimizing performance on web, application, batch and data tiers when needed, which provide dynamic environment changes that minimize system downtime.</i>	The Modernized CSS Solution will include integration with Azure Monitoring to facilitate monitoring of application performance management of services from the Azure Portal.
10	<b>Maintainability</b>	<i>The Modernized CSS Solution shall provide a mechanism for reverting to previous releases of implemented functionality.</i>	ACA has a feature called revisions. Revisions are a snapshot of each version of a container app. Revisions provide significant useful functionality – for this specific requirement, however, revisions make it easy to redirect traffic to a previous revision, thus reverting to a previous release's functionality. For components outside of ACA, there are ways to revert functionality that CapTech will detail with the DMV.

#	CATEGORY	NON-FUNCTIONAL REQUIREMENT	CAPTECH'S RESPONSE
11	<b>Maintainability</b>	<i>The Modernized CSS Solution shall have change management support capabilities that can be applied automatically (re-apply program modifications to a new release for example).</i>	CapTech will onboard and train DMV staff to be able to maintain the system. If the requirement is to be able to apply a production hotfix change, which is made to a branch off of the production version of code, to the next release version of code, then branching and merge requests in Azure DevOps can achieve this functionality.
12	<b>Performance</b>	<i>The Modernized CSS Solution shall provide safeguards to ensure no user-initiated query or process will negatively impact system performance beyond an established threshold.</i>	<p>In most cases user-initiated queries or reports will run on read-only replicas (or secondaries) of the writable data store, thus minimizing negative impacts to performance.</p> <p>The primary data store, Cosmos DB uses provisioned throughput, so queries that exceed the throughput will likely be rate limited. Cosmos DB also has features like Burst Capacity that can be used to satisfy requests that might temporarily exceed allocated performance configurations.</p> <p>Similar safeguards will be added to other data stores.</p>
13	<b>Performance</b>	<p><i>The Modernized CSS Solution shall complete 95% of online transactions within three (3) seconds (real time) and 100% within ten (10) seconds (near real time).</i></p> <p><i>For the purposes of this requirement, the transaction is defined as a user-initiated event. Thus, from the time the user clicks the mouse or presses "Enter" until the time when a response is returned to the user, or the user is free to perform another action.</i></p>	<p>The Modernized CSS Solution will be developed to complete 95% of real time online transactions in 3 seconds, where a transaction is explicitly defined as a real time transaction. The number of real time transactions performed in 3 seconds or less divided by the total number of explicitly defined real-time transactions.</p> <p>System shall complete 99% of transactions within 10 seconds where a transaction is explicitly defined as a near real time transaction. Number of near real time transactions completed in 10 seconds or less divided by the total number of near real time transactions.</p> <p>Both metrics exclude any transactions that occur during a high availability or disaster recovery failover event due to a cause outside the Contractor's control.</p>
14	<b>Performance</b>	<i>The Modernized CSS Solution shall allow for up to 3,000 concurrent Application Users while meeting the response time and throughput requirements. Concurrent users are defined as Solution Application Users who are logged on</i>	The Modernized CSS Solution will be able to support up to 3,000 concurrent Application Users, where a concurrent Application User is a person logged in and performing solution

#	CATEGORY	NON-FUNCTIONAL REQUIREMENT	CAPTECH'S RESPONSE
		<i>and/or actively performing solution functions.</i>	actions.
15	<b>Scalability</b>	<i>The Modernized CSS Solution shall provide an architecture that easily accommodates multiple, extensible resources for presentation, application/business logic, and data tiers.</i>	The Modernized CSS Solution architecture will accommodate multiple, extensible resources for presentation, application and business logic, and data tiers.
16	<b>Scalability</b>	<i>The Modernized CSS Solution shall be scalable in size, capacity, and functionality to meet emerging business and technical requirements.</i>	The Modernized CSS Solution will be designed to be scalable in size, capacity, and functionality to meet emerging business and technical requirements.

Table 2 - Non-Functional Requirements

## Part 4 – Project Management Proposal

## 4.1 - In Response to Section 5 Part G Overview

### **PROJECT MANAGEMENT REQUIREMENTS**

The Supplier must provide a comprehensive narrative describing the proposed project management approach that includes:

- Project Oversight and Control
- Project Management and Governance

CapTech understands the critical success factors and common pitfalls that put projects at risk. We know the mutual importance of clear scope boundaries and management, proactive communication with stakeholders, and clear and agreed-upon dependencies and expectations. We take a pragmatic approach to how we structure our teams and decide on the best approach to iteratively design, develop, and deliver for our clients. Our proven method of structuring teams and leveraging tailored scaled agile delivery frameworks to collaborate with our stakeholders and their supporting institutions. Our ability to create well-reasoned and realistic plans and hold all stakeholders accountable for success has been key to our successful agile delivery. Our local staffing capability aligns to our focus on being open, honest, and transparent as we manage our projects and navigate each project's unique workflow, delays, risks, and impacts.

With this type of engagement, the focus is on the sustained, more predictable flow of work using continuous refinement to meet evolving needs which helps increase the throughput speed of each of the agile teams to meet commitments. Built-in quality is at the forefront of all delivery, with teams adhering to a structured quality management standard. CapTech will leverage the power of agile teams and the team of teams using a thoughtful approach towards dependency management and structured planning. Demos will be conducted throughout the deployment as well as at the end of each planning interval (PI) to gather feedback which will help to inform the future development work.

We take a holistic approach to each engagement by thinking through and planning all facets of the project delivery, helping our clients achieve their mission and vision. We understand the immense challenges institutions face when implementing new projects and transformative changes. We believe Agile principles are paramount to reducing risk and delivering desired outcomes in an efficient and timely fashion – and we align those principles and practices to necessary governance and compliance requirements within a government delivery environment.

## 4.2 - In Response to Section 5 Part G Paragraph 1.A

*The DMV Project Manager and Contractor Project Manager are jointly responsible for overseeing the entire project. The Contractor Project Manager must manage all Contractor activities associated with this project and serve as the Contractor central point of contact. The DMV Project Manager will manage all DMV activities associated with the project.*

The DMV Project Manager will manage all DMV activities associated with the project.

The Project Leadership Team will be key to the success of the project through project oversight, by providing transparency and visibility into all project aspects, and by facilitating work so the team completes deliverables within the allocated timeline and budget. This partnership between the DMV leadership and the CapTech team is designed to hold each other accountable to project objectives. Effective project oversight and control is maintained through the following key points:

- **Vision and Direction:** Effective project leadership provides a clear vision and direction for the project and shares that knowledge and approach with all project team members, so the team understands the project goals, objectives, and the desired outcomes. This aligns the efforts of the team members towards a common purpose, so that everyone is working towards the same end goal. This engagement will require cohesiveness and alignment between the DMV and CapTech.
- **Manage Flow:** To achieve a continuous flow of work through the system, we will work with DMV on several required key project management functions:
  - **Stakeholder Management:** For this project to be successful, identified Subject Matter Experts (SMEs) must clarify requirements and be available to the team throughout the project. Project leadership involves managing various stakeholders, including the project sponsor, end-users, and team members. It provides effective communication, collaboration, and engagement with stakeholders throughout the project lifecycle. This helps in understanding their expectations, addressing concerns, and managing any changes or risks that may arise.
  - **Decision-Making:** Project leaders make timely and informed decisions to keep the project moving forward. They gather relevant information, analyze options, and consider input from team members and stakeholders. Effective decision-making helps address project challenges, resolve conflicts, and maintain project momentum.
  - **Monitoring Flow:** Project leaders must make sure the project is meeting expectations at each milestone and make necessary corrections if the project veers off course. Our approach and scaled frameworks will improve the time it takes to move epics through their lifecycle. Epics and Features will be visualized in a Kanban system to limit work-in-process (WIP), reduce batch size, and reduce the length of development queues resulting in faster time to value.
- **Team Empowerment:** A strong Project Leadership Team empowers the team by providing support, guidance, and resources required for success. They foster a collaborative and inclusive work environment, encouraging team members to take ownership of their work, make decisions, and contribute their expertise. The presence of an Agile Coach on the Project Leadership Team will maintain focus on fostering a community of empowerment and self-organization.
- **Risk Management:** Project leadership plays a critical role in identifying, assessing, and managing risks throughout the project. They proactively identify potential issues, dependencies, and obstacles that may impact project delivery. By implementing risk mitigation strategies and contingency plans, project leaders help minimize disruptions and keep the project on track.

Alignment and accountability between the DMV Project Manager and the CapTech Project Manager throughout the project lifecycle are a core function of the oversight and success of the project. Without those measures, missteps begin to surface throughout the project. To achieve collaboration CapTech will work with the DMV to define the following activities:

- **Regular Alignment Meetings**

- Cadenced meetings between the DMV Project Manager and the CapTech Project Manager to discuss project progress, issues, risks, and alignment of objectives.
- Provide an opportunity to align with both parties and address any discrepancies or concerns.

- **Coordinated Project Management**

- Responsible for compliance with Commonwealth Project Management Standards issued by VITA
- Collaborate on defining the initial project scope, setting, and monitoring of milestones and objectives, and allocating resources.
- Collaborate with both project managers contributing to the development, monitoring, and updating of project plans and timelines.

- **Shared Communication Channels**

- Establish shared communication channels, such as email distribution lists, work management tools (Azure DevOps (ADO), SharePoint, etc.), or other communication mediums to facilitate seamless sharing of information between the DMV and CapTech.
- Both project managers and the product teams require access to relevant project documentation, updates, and communications in a timely manner.

- **Establish and Monitor Project Metrics**

- Establish project metrics towards objectives for status reporting and continuously work with teams on improvement areas.
- Compile metric results and present them to key stakeholders and work with teams on continuous improvement areas.

- **Issue Resolution Protocol**

- Establish a clear protocol for resolving issues and conflicts that may arise throughout the project at the team and project level.
- Define escalation paths and procedures for addressing issues that cannot be resolved at the project manager level.
- Establish a process for the monitoring and reporting of issues.

- **Regular Status Reporting**

- Implement a regular status reporting mechanism weekly and monthly where both project managers provide updates on project activities, milestones achieved, and any issues encountered.
- Supports transparency and accountability on both sides and helps identify areas where additional support or intervention may be needed.

- **Scope and Schedule Change Management Processes**
  - Manage changes to project scope, deliverables, or requirements, sees that any major changes are properly documented, approved, and communicated to relevant stakeholders.
  - Coordinate between PMs and internal team members to assess the impact of changes on project objectives and timelines.
- **Risk Management Collaboration**
  - Collaborate on the identification of risk owners that require DMV support and risk mitigation.
  - Regular meetings between PMs to review and reevaluate all outstanding risks and consolidate for review with the Project Leadership Team.
- **Quality Management**
  - Define quality management standards for project deliverables.
  - A Definition of Ready (DoR) and Definition of Done (DoD) is defined for all project deliverables.
  - Both project managers are aligned on quality expectations.
- **Continuous Improvement Initiatives**
  - Foster a culture of continuous improvement by working with the Scrum Masters to identify opportunities for optimization.
  - Collaborate on the creation and actioning of a continuous improvement project backlog.

By aligning these activities, we work toward avoiding these negative outcomes:

- Miscommunications and misalignments in project objectives and requirements
- Delays in project timelines and milestones due to disagreements or disputes
- Increased risk of quality issues and project failure without effective oversight
- Strained relationship between the DMV and CapTech
- Potential reputation damage and financial loss for both parties involved

To facilitate CapTech activities, the CapTech Project Manager will address and manage the following:

- **Resource Management**
  - Confirm the contracting party has adequate resources allocated to the project, including personnel, equipment, and materials.
  - Coordinate with the DMV Project Manager to schedule resource deployment according to project requirements and timelines.
  - Conduct onboarding/offboarding activities of CapTech staff.
- **Epic and Feature Refinement**
  - Collaborate with stakeholders within the DMV to gather project requirements/acceptance criteria (Epics and Features), including functional and non-functional specifications before each PI.

- Collaborate with Scrum Masters to optimize the skills and strengths of team members.
- **Quality Management**
  - Monitor and collaborate with Scrum Masters and Technical team members on built-in quality.
  - Collaborate with Scrum Masters to identify and reduce recurring quality issues.
  - Collaborate with the Quality Management Lead to understand quality issues across teams.
- **Communication**
  - Own communication between the CapTech team and other project stakeholders, including the DMV and internal team members.
  - Own communication with the Project Leadership Team and Executive Steering Committee members.
- **Risk Management**
  - Support the development of risk mitigation plans to identify high-level project risks.
  - Monitor identified risks per PI and report them to key stakeholders.
- **Budget and Cost Control**
  - Manage CapTech's budget and expenses, sees that expenditures are within the agreed-upon budget and aligned with project objectives.
  - Monitor costs associated with CapTech activities and identify opportunities for cost optimization or efficiency improvements.
- **Schedule Management**
  - Develop and maintain the agile-based project work plan and milestone deliverable plan that align with overall project timelines.
  - Monitor CapTech team progress against the work plan, identifying any delays or deviations and taking corrective action as necessary.
- **Performance Evaluation**
  - Conduct regular performance evaluations of the CapTech team, providing feedback on strengths and supporting continuous improvement.
- **Contract Compliance**
  - Comply with all contractual obligations, including deliverable deadlines, quality standards, and reporting requirements.
  - Monitor compliance with legal, regulatory, and industry standards applicable to the project and CapTech's activities.
- **Support VITA Submissions**
  - Support the DMV Project Manager with VITA submissions as they arise.

To facilitate DMV activities, the DMV Project Manager will address and manage the following:

- **Issue Management**

- Support the removal of blockers and impediments at the Project level that are impeding flow.
- Identify stakeholder availability for prioritization discussions and timely decisions, as needed.

- **Stakeholder Management**

- Identify and engage key stakeholders within the DMV, including end-users, executives, and subject matter experts.
- Work with the correct stakeholders on their availability for Epic and Feature identification and refinement before and during the relevant PI.
- Identify and work with the DMV liaison partnering with third-party organizations that will be dependent on the new DMV solution.

- **Resource Allocation**

- Expedite the onboarding/offboarding process for CapTech teams.
- Allocate internal resources, such as personnel, budget, and equipment, to support project activities.
- Coordinate with other departments or teams within the DMV on resource availability throughout the project including licenses, system access, hardware, software, etc.

- **Risk Identification and Mitigation**

- Identify DMV-specific risks and uncertainties that may impact project success, including technical, organizational, and external factors.
- Provide an overview of prior relevant projects and share previously identified risks and issues.
- Identify appropriate stakeholders to develop risk mitigation strategies and contingency plans to minimize the likelihood and impact of identified risks.

- **Quality Management**

- Identify and coordinate DMV stakeholders, SMEs, and End Users to:
  - Attend relevant team and program demonstrations, walkthroughs, and reviews.
  - Build User Acceptance Test plans for component functionality.
  - Execute User Acceptance Testing and reporting of issues identified during testing windows defined with the overall project plan and Quality Management Plan.
- Provide written notice to CapTech of Component Acceptance and Final Solution Acceptance.

- **Communication and Reporting**

- Support communication between the CapTech team and other project stakeholders, including the DMV and internal team members.
- Support communication with the Project Leadership Team and Executive Steering Committee members.
- Own communications between members of the DMV internal team providing project support.

- **Closure and Transition**

- Confirm project deliverables are completed satisfactorily, documented in a shared space for DMV, and handed over to the appropriate stakeholders or operational teams.
- Conduct post-project reviews and lessons learned sessions to capture insights, identify opportunities for improvement, and inform future projects within the DMV.

## 4.3 - In Response to Section 5 Part G Paragraph 1.B

*To facilitate a mutually beneficial contractual relationship, the parties will establish a joint Executive Steering Committee ("Steering Committee"), consisting of DMV and Contractor senior management personnel, including personnel involved in the project.*

*The roles and responsibilities of the Steering Committee include but are not limited to:*

- 1) Identifying potential issues which may arise during the performance of the Contract.
- 2) Discussing and assigning roles and responsibilities.
- 3) Establishing methods for quickly resolving potential disputes.
- 4) Setting rules for communication and decision making.
- 5) Monitoring and measuring the business relationship between the parties.
- 6) Acting as a final decision board for escalated problems.

*Meetings of the Steering Committee may be held at any time during the Contract term should DMV, at its sole discretion, determine that meeting(s) would be beneficial to the contractual relationship. The Contractor agrees to participate in all such meetings. In addition, Contractor may at any time submit a written request to DMV for a meeting of the Steering Committee, which DMV will not unreasonably deny.*

An Executive Steering Committee will be established to oversee and guide the project, encouraging alignment with strategic objectives, efficient collaboration, and timely issue resolution between the DMV and CapTech committee members. The meeting cadence and agenda may be amended as necessary with the consensus of the committee members if changes do not compromise the committee's integrity or objectives. Changes in approach are subject to approval by both the DMV and CapTech, signifying their commitment to the effective governance and success of the modernization project. The matrix below is an example of the roles and responsibilities of the Executive Steering Committee.

ROLE	DESCRIPTION
<b>DMV Executive Sponsor</b>	A senior executive from DMV that has the authority to make decisions, allocate resources, and champion the project within their organization.
<b>CapTech Executive Sponsor</b>	A senior executive from CapTech who provides oversight, guidance, and support from the service provider's perspective.
<b>DMV Project Sponsor</b>	An individual who serves as the primary advocate for the project, responsible for securing funding, resolving high-level issues, and aligning to strategic objectives.
<b>Accountable Business Owners</b>	Responsible for accepting Epics and Features based on PI demos.
<b>DMV Project Manager</b>	Responsible for day-to-day management of the DMV project stakeholders and resources, including planning, execution, monitoring, and controlling. They serve as the primary point of contact for project-related communication.
<b>CapTech Project Manager</b>	Responsible for day-to-day management of the CapTech project stakeholders and resources, including planning, execution, monitoring, and controlling. They serve as the primary point of contact for project-related communication.
<b>CapTech Technical Leads/Architects</b>	Provide technical expertise and guidance, aligns the solution with best practices, scalability, security, and performance requirements.
<b>DMV Enterprise Architect(s)</b>	Provide critical knowledge of DMV architecture and technical dependencies and is responsible for providing key feedback and approvals for technical deliverables.

ROLE	DESCRIPTION
<b>DMV Information Security Officer</b>	Provide critical knowledge of DMV and VITA security policies and standards and is responsible for providing key feedback and approvals for technical and security deliverables.
<b>CapTech Quality Management Lead</b>	Oversee the quality management process, including testing strategies, defect management, and sees that the final deliverables meet the required quality standards.
<b>CapTech Change Manager (optional)</b>	Manage the organizational change associated with the transition from mainframe to cloud-based solutions and sees that end-user training is planned and completed to avoid disruption to business operations.
<b>Key Stakeholder(s) (optional)</b>	Representative(s) from various departments or business units within both organizations have a vested interest in the project's success. This may include individuals from communications, training, operations, finance, and customer service.
<b>Subject Matter Experts (SMEs) (optional)</b>	Expert(s) in specific domains relevant to the project, such as mainframe systems, cloud infrastructure, security, compliance, creative, etc. They provide valuable insights and guidance on the project's success.

Table 3 - Example: Executive Steering Committee Roles and Responsibilities

This cross-section of roles for all aspects of the project, including technical, managerial, and strategic, are appropriately represented, fostering collaboration and alignment between the DMV and the CapTech team.

Establishing a joint Executive Steering Committee for the modernization project is crucial for alignment, strategic direction, and decision-making. Key responsibilities of this committee include, but are not limited to:

- Provides necessary decision-making
- Provides strategy and vision
- Adherence to organizational policies, standards, and applicable laws and regulations
- Sets and approves budget
- Conflict resolution

Executive Steering Committee meetings will address the following six key functions:

## 1. Identifying Potential Issues

- Review project progress and proactively address emerging challenges to minimize their impact on project delivery.
- Discuss the impact of upcoming legislation on the project.

## **2. Discussing and Assigning Roles and Responsibilities**

- Collaborate with project stakeholders to define and assign roles and responsibilities.
- Clarity and accountability for all project-related roles.

## **3. Establishing Methods for Quickly Resolving Potential Disputes**

- In the initiation phase, establish a process for how to best resolve differences or conflicts between DMV and the CapTech team.
- Review escalation paths and procedures for prompt resolution of issues.

## **4. Setting Roles for Communication and Decision Making**

- Establish high-level communication protocols, including frequency, channels, and stakeholders involved.
- Define decision-making criteria and authority levels for various project aspects.

## **5. Monitoring and Measuring Business Relationship**

- Regularly assess the relationship between the DMV and the CapTech team during cadenced touchpoints.
- Measure collaboration effectiveness, satisfaction levels, and alignment with project objectives.

## **6. Acting as a Final Decision Board for Escalated Problems**

- Regularly assess the relationship between the DMV and the CapTech team during cadenced touchpoints.

The Executive Steering Committee will convene monthly. Additional ad-hoc meetings may be scheduled as needed to address emerging challenges or critical decisions.

## 4.4 - In Response to Section 5 Part G Paragraph 1.C

A Project Leadership Team will be established to be responsible for project oversight and management activities as well as providing daily coordination and monitoring of project tasks and team leadership support. At a minimum, this team should consist of key DMV and Contractor project staff.

The members of the Project Leadership Team, working together, shall be jointly responsible for project management activities as defined during the project initiation stage as well as developing and maintaining an integrated project management plan, including a detailed project work plan.

The establishment of the Project Leadership Team will play a crucial role in Agile-based project delivery. The Project Leadership Teams will guide the Agile process, facilitate collaboration, and issue resolution among and between product teams, to achieve project success.

A sample structure for what a Project Leadership Team meeting entails:

- **Purpose:** Alignment of Project Leadership Team Members and overall project plan review
- **Agenda Topics:** Project alignment, risks/issues, impediments, epic/feature breakdown, project plan review
- **Frequency:** Once every two weeks, or ad-hoc if needed
- **Participants:** The following matrix describes the roles that would comprise the Project Leadership Team

ROLE	DESCRIPTION
<b>DMV Project Manager</b>	Responsible for managing the DMV team along with collaborating and facilitating the project's overall timeline, budget, and scope within the Agile framework with the CapTech Project Manager. In Agile projects, the role of the traditional project manager may be adapted to an Agile Project Manager.
<b>CapTech Project Manager</b>	Responsible for managing the project's overall timeline, budget, and scope within the Agile framework. They collaborate with the DMV Project Manager, Product Owners, and Scrum Masters achieving a successful project delivery.
<b>Technical Leads/Architects</b>	Provide technical leadership and guidance, so that the project's architecture aligns with the organization's technology strategy. They collaborate with the development team to define the technical vision, make architectural decisions, and support the scalability and maintainability of the solution.
<b>Agile Coach</b>	Guide the team in adopting and implementing Agile practices effectively. They provide guidance on Agile principles, facilitate Agile events, and help the team continuously improve their Agile processes.
<b>DMV Accountable Business Owner(s)</b>	Approve that the Epic and Feature correctly specify all requirements and provide acceptance of completed Features and Epics.
<b>Quality Management Leads</b>	Responsible for the quality of the project deliverables. They define the testing strategy, coordinate testing efforts, and work closely with the development

ROLE	DESCRIPTION
	teams to identify and resolve any quality issues.
<b>Development Team Leads</b>	Responsible for leading the development team, coordinating their work, and the delivery of the project. They provide technical guidance, mentorship, and support to the development team members.
<b>Scrum Masters</b>	Help the team understand and implement Agile methodologies, remove obstacles, and foster a collaborative and self-organizing environment. The Scrum Master is a facilitator and servant-leader who work with Teams to adhere to Agile principles and practices.
<b>CapTech Product Owners</b>	Represent the client or business stakeholders and is responsible for defining and prioritizing the project's requirements and deliverables. They work closely with the development team to meet the client's needs and provide business value.
<b>DMV Product Owners</b>	Approve that the User Story correctly specifies all requirements and accepts User Stories during Sprints to validate requirements have been met.

Table 4 - Sample Project Leadership Team Participants

The outlined Project Leadership Team roles allows for effective leadership, collaboration, and delivery within an Agile framework. This team will work together to prioritize work, make informed decisions, and adapt to changes throughout the project's lifecycle.

The Project Leadership Team will operate as a collaborative Solution Team and will jointly be responsible for reviewing and approving all changes to the Project Management Plan.

Other responsibilities of this team include:

- Confirm project expectations are met at each milestone
- Evaluate value stream flow for optimal delivery on a continuous basis
- Remove impediments
- Foster self-organization and team empowerment
- Support, guide, and provide resources for project success
- Set strategy and direction for teams ahead of the next PI
- Monitor teams to adhere to deliverable quality standards
- Resolve conflict

## 4.4 - In Response to Section 5 Part G Paragraph 1.D

*Resolution of all issues must first be sought at the lowest possible level. Issues requiring escalation will begin with the relevant members of the Project Leadership Team and then if the issue remains unresolved, escalation will then continue to the joint Executive Steering Committee.*

CapTech will define an escalation process to resolve emerging issues effectively and efficiently and address them with the appropriate level of authority. The escalation process defined below outlines the process with proper checkpoints to determine if and when issues reach the Project Leadership Team and the Executive Steering Committee:

- **Team Level**

- Initial attempts to resolve the issue will be made at the team level.
- Team members will collaborate to identify and address the issue using available resources and expertise.
- If the issue cannot be resolved at the team level within a reasonable timeframe (e.g., within one working day), it will be escalated to the Project Leadership Team.

- **Project Leadership Team Checkpoint**

- The Project Leadership Team will review the escalated issue and assess its impact on project objectives, timeline, and resources.
- **Conditions for Escalation to Executive Steering Committee:** If the issue meets any of the following conditions, it will be escalated to the Executive Steering Committee:
  - Poses a significant risk to project success or requires decisions that exceed the authority of the Project Leadership Team.
  - Efforts to resolve the issue at the project leadership level have been unsuccessful, or the issue requires input or direction from senior management.
  - Potential organizational or strategic implications that warrant the attention of the Executive Steering Committee.

- **Executive Steering Committee Checkpoint**

- Executive Steering Committee will conduct a thorough review.
- Assess the severity and impact of the issue on project objectives, strategic goals, and the relationship between organizations.
- **Conditions for Decision-Making:** a final decision on issue resolution based on the following criteria:
  - Alignment with strategic objectives and contractual obligations.
  - Impact on project timeline, budget, and deliverables.
  - Implications for organizational priorities, resources, and stakeholders.
  - Input from relevant subject matter experts and stakeholders.

Throughout the escalation process, all relevant information, discussions, and decisions should be documented and communicated to stakeholders promptly.

Clear channels of communication should be established for transparency, accountability, and alignment

throughout the escalation process.

The structured escalation process with clear checkpoints and criteria for escalation provides mitigating steps for issues to be addressed at the appropriate levels with only critical path issues and decisions reaching the Executive Steering Committee.

## 4.5 - In Response to Section 5 Part G Paragraph 2 Overview

### Project Management and Governance

The Supplier must submit a comprehensive project management and governance proposal. Based on input and discussions with DMV, the Contractor must maintain (throughout the project) the overall project management plan and related documentation including on-going updates to the comprehensive project work plan that addresses all project tasks, effort, and associated resources required to accomplish the requirements identified in this EPD to implement the Modernized CSS Solution.

Successful delivery efforts focus on returning right-sized increments of value and building sustainably toward the long-term vision and outcomes needed within the institution. Teams will plan their work quarterly using PIs and deliver value through short iterations (or “Sprints”), each resulting in defined outcomes. This approach is enabled by flexibility, strong communication, and a certain degree of improvisation. We believe it is critical to test and learn on a small scale and adapt to the learnings and progress seen in practice. Through this approach, we can maximize DMV’s success in delivering reliable services that meet customers’ needs and drive impactful institutional change.

We will use Epics and Features to capture large chunks of work. The Executive Steering Committee will prioritize the Epics while the Project Leadership Team will support breaking down Epics into Features and if needed, prioritize them. The Features will be broken into User Stories, creating the Team’s product backlog.

Teams will work in a set of agile events throughout the sprint. The Scrum Master will coach Agile best practices and work with the Team to adhere to these practices, followed through backlog refinement, sprint planning, team syncs, reviews, and retrospectives to stay aligned on scope, priorities, and progress. Scrum Masters and Project Managers will continuously collaborate, so the product backlog items align with the project schedule, objectives, and scope. See section 4.6 for more details on the end-to-end process flow of the scaled Agile approach.

Using the proposed Iterative Delivery Methodology below, the benefits for DMV include:

- **Predictability** – CapTech works rigorously to reduce uncertainty, so project delivery stays in line with expectations. This allows DMV leaders to better plan and manage resources.
- **Transparency** – Coordinated teams plan PIs together, resulting in a shared understanding of the outcomes to be delivered and the associated risks and dependencies.
- **Flexibility** – Our methodology allows DMV to pivot as priorities adapt in alignment with the vision and project scope, providing the capability to reconfigure plans during each PI.
- **Built-In Quality** – Teams will adhere to quality standards resulting in better system performance, improved velocity and delivery predictability, and an improved ability to innovate, scale, and meet compliance requirements.

## 4.6 - In Response to Section 5 Part G Paragraph 2.A

### Project Management Methodology

An agile/iterative project management methodology and approach must be utilized to manage this project. DMV is currently transforming to an agile approach and envisions scrum teams tied to DMV products. The Supplier must describe their proposed approach and how this proposed approach will align with the DMV agile transformation efforts.

The proposed methodology and approach must also conform with Commonwealth of Virginia Project Management Standards issued by the Virginia Information Technologies Agency. See <https://www.vita.virginia.gov/policy-governance/policies-standards-guidelines/> for more information.

CapTech proposes using a scaled Agile PI approach to collaboratively plan prioritized work for the upcoming quarter with Teams using the Scrum framework for planning and execution throughout Sprints within the PI. This approach has been proven and replicated across varying clients and industries with a focus on alignment, organizational structure, and flow of work. The below narrative describes our agile/iterative approach.

To achieve enterprise objectives, large pieces of work (Epics) will be prioritized and broken down into smaller pieces of functionality (Features). Quarterly planning will be conducted to align on upcoming PI objectives, and the creation of Team Backlog items to be worked within Sprints, with Feature delivery being showcased in the form of a demonstration to key stakeholders. This scaled Agile approach is akin to the floor of a manufacturing plant, designed to optimize the flow of work through the system for fast feedback and time to value. Below is an end-to-end scaled Agile approach using quarterly planning called a PI focused on breaking down and optimizing the flow of work.

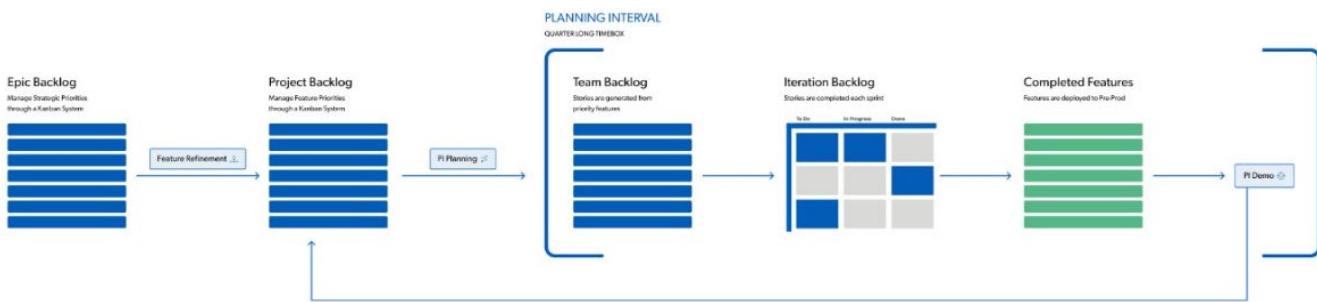


Figure 28 - End-to-End Scaled Agile PI Approach

Epic Backlog Input and Prioritization will be driven by the Executive Steering Committee. See the Executive Steering Committee level (4.6) for more details on the roles and cadence of this Executive Leadership group.

**Planning Intervals (PIs)** are a quarter-long consisting of multiple sprints and are synchronized across Teams to align on focused outcomes, dependencies, and risk mitigation. Features are refined prior to the PI planning session so that Teams can break down and schedule the work across the PI sprints during PI planning more easily.

**Epics** are the top-level, large efforts that are managed by the Epic Kanban. Epics may take more than one PI to deliver, and work is divided across Teams. Epics tend to be more strategic and of most interest to the executive steering committee level. Epic backlog may be Enablers, which can be used to define any activity that improves the Team in support of foreseeable business needs.

**Features** are the children to Epics. Features represent part of an Epic that is implementable, demonstrable,

and contains a full piece of functionality. Features are comprised of stories and are to be completed within one PI, typically between one sprint and ~3 months. A Feature can be worked on by multiple Teams but often may be owned by one Team. Features are particularly important, as they are the level at which work is committed in a PI.

**Stories** are the children to Features and reside on one team backlog. Stories are small units of value that make up a feature and can be completed in one sprint. They are often drafted in preparation for a PI and refined during sprint planning before the start of the sprint for which they are slated.

Teams, shared services, and other key stakeholders agree on the Features that will be delivered during the PI. Functional and enabling stories that complete the Features are drafted during the two-day planning event, as well as dependencies discussed and noted. Teams then agree to and commit to the delivery of the objectives defined in the PI Planning meeting. The outputs of a PI are completed Features, with Features deployed to the Pre-Prod Environment. This functionality is demonstrated to key stakeholders to showcase progress against the Agile work plan and to receive necessary feedback.

Development will progress in a series of time-boxed Sprints or “Iterations”. At the beginning of each Sprint, the Product Owner will review the product backlog and select the highest priority or most sequentially sensible items for refinement and then development. This allows for the team to maintain a narrow focus on the most important functionality, while also building a comprehensive system in steps. The team aims to deliver and demo working solutions to key stakeholders as frequently as possible using this approach. Sprints are two-week intervals that the teams will execute. Stories will be closed within a single sprint. Sprints have their cadence which is explained in the Team Section below.

The graphic below is an example of how Teams work in a synchronized Sprint delivery cadence and operate inside of PI.

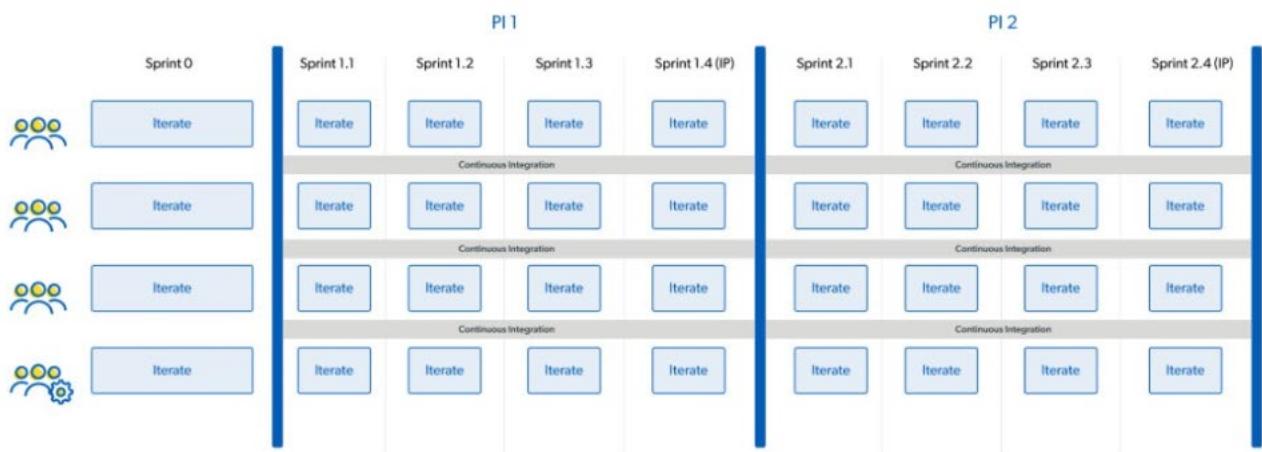


Figure 29 - Multi-Team Synchronized Sprint Delivery Cadence

PI Planning will be a quarterly cadenced event, usually in person, that will bring in a set of Prioritized Features from the Project Team into a Backlog for the Development and Shared Services Teams to work on. During this two-day event, the teams will pull the prioritized Features into their backlogs and break down the work into user stories. These stories will be refined, tee-shirt-sized, and forecasted into upcoming

sprints. The cumulation of all teams' forecasts for the PI will be the outcome of this event (PI Roadmap), along with a list of Risks and Dependencies. While work can be done with paper and pen while in-person, getting all the work and data into Azure DevOps is the expectation. This PI Roadmap will be a key artifact for Solution Syncs throughout the PI.

The graphic below is an example of PI Planning (PIP) agenda, assuming in-person attendance. This two-day event can be customized for remote attendance, if needed.

PIP AGENDA (IN PERSON)		
	Day 1	Day 2
8:00 - 9:00	Welcome & Icebreaker	Planning Adjustments
9:00 - 10:30	Solution Vision	Team Breakouts
10:30 - 11:30	Architecture Vision & Development Practices	Final Plan Review & Lunch
11:30 - 1:00	Planning Guidance & Lunch	Project Risks
1:00 - 4:00	Team Breakouts	Confidence Vote
4:00 - 5:00	Draft Plan Review	Plan Rework (as needed)
5:00 - 6:00	Management Review & Problem Solving Managers, Leadership, Product	Planning Retrospective & Moving Forward

Figure 30 - Customizable Quarterly PI Planning Agenda

**Solution Syncs** will be Project-focused conversations on progress, escalated impediments, and changes to scope or roadmap. These will occur twice a week or more as needed and will include Key Stakeholders from all levels. See the Solution Level section below for more details on the team and cadence of the Solution Team.

**Mid PI Demos** will be an interim demo, mid-way through the PI, to showcase completed Features and enabling quick feedback.

Within the PI, execution will be completed by Development Teams as Sprints. The graphic below showcases the process the Scrum framework uses throughout the iteration.

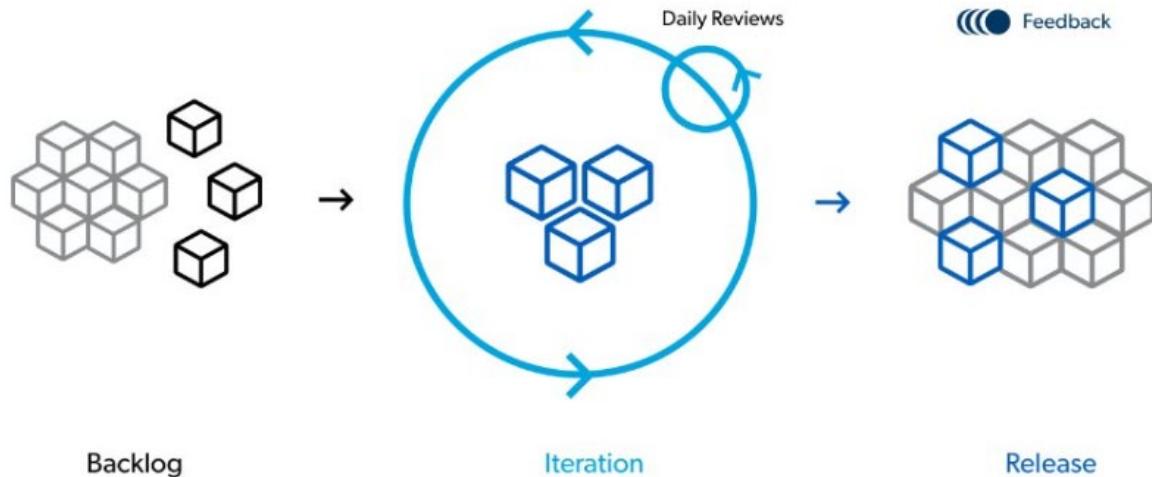


Figure 31 - Scrum Framework Flow of Value Delivery

The last sprint of every PI will be understood as the **Innovation and Planning Sprint (IP)**. This will be focused on the Hardening of existing work, the Planning of new work and the Training of Team members. No work will be “pre-planned” in the IP sprint.

During the IP Sprint, we will conduct a **PI Retrospective and Problem-Solving Workshop**. This will include all stakeholders and focus on observing data, enabling conversations, identifying root causes, and generating improvement items for the teams’ backlogs.

As part of the PI Retrospective and Problem-Solving workshop, the **PI System Demo** will consist of demonstrations of completed Features from this now completed PI. Each Feature will be a cumulation of multiple stories integrated into a single solution. This PI Demo can generate feedback and enable a shift in priorities for the upcoming PIs. That feedback will be reflected in the Project Backlog and will be prioritized accordingly.

All Artifacts from the process described above will be captured and reviewed within Azure DevOps (ADO), with screenshot samples below.

**Boards:** Kanban boards are used to visualize progress of Work Items from a specific backlog against the SDLC (Epic, Features, Stories, Bugs).

The screenshot shows a Kanban board with four columns: New, Active, Resolved, and Closed. The New column contains three items: '44 Comprehensive Stakeholder Training Program', '46 Advanced Security Framework Implementation', and '47 Enhance System Interoperability and API Integration'. The Active column contains two items: '43 Application Modernization and Refactoring' and '45 Implement CI/CD for Agile Development', both in the 'Doing' state. The Resolved column contains one item: '42 Secure and Efficient Data Migration' in the 'Doing' state. The Closed column contains one item: '41 Modernize Core Infrastructure' in the 'Done' state.

Figure 32 - Sample Epic Kanban Board in Azure DevOps (ADO)

The screenshot shows a Kanban board with five columns: New, In Development, In QA, and Closed. The New column contains seven items: '62 Interoperability Testing and Documentation', '61 API Development for External Integration', '60 Implementation of Advanced Security Measures', '59 Security Audit and Gap Analysis', '58 DevOps Team Training and Implementation', '56 Development and Delivery of Training Programs', and '54 Refactoring for Cloud-Native Architecture'. The In Development column contains two items: '57 CI/CD Pipeline Development' and '54 Refactoring for Cloud-Native Architecture'. The In QA column contains three items: '51 Data Migration Planning', '52 Data Cleansing and Preparation', and '53 Application Inventory and Prioritization'. The Closed column contains three items: '50 Legacy System Assessment', '49 Cloud Infrastructure Setup', and '48 Modernize Core Infrastructure'.

Figure 33 - Sample Feature Kanban Board in Azure DevOps (ADO)

## Part 4 – Project Management Proposal – Section 5 Part G Paragraph 2.A Response

The screenshot shows a Kanban board in Azure DevOps with the following layout:

- New:** Contains two items: '64 Integrate Service Mesh for Advanced Service-to-Service Communication' (Parent) and '69 CI/CD Pipeline Performance Report Dashboard' (Parent).
- In Development:** Contains three items: '67 Test Automation Tools Configuration' (3), '68 Automation Tools Integration' (3), and '63 Cloud-native target architecture diagram' (5).
- In QA:** Contains two items: '66 CI/CD Pipeline Infrastructure Setup' (5) and '65 SPIKE: Select CI/CD Tool for Team' (2).
- Closed:** Contains one item: '65 SPIKE: Select CI/CD Tool for Team' (2).

Figure 34 - Sample Story Kanban Board in Azure DevOps (ADO)

**Dependencies:** Managed via roadmap visualizations with lines connecting dependent work items, reviewed regularly.

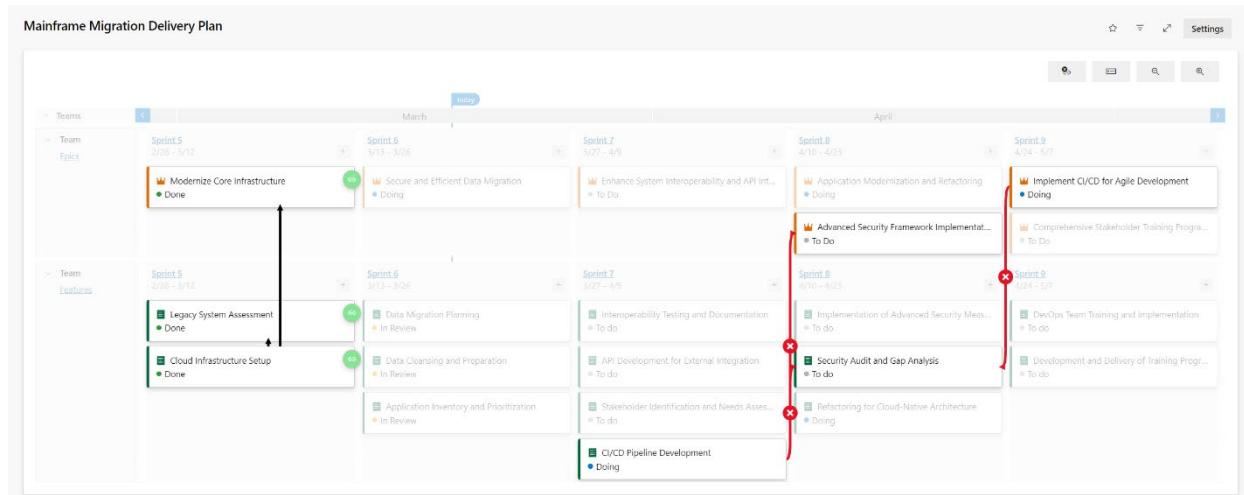


Figure 35 - Sample Dependency Visualization in Azure DevOps (ADO)

Part 4 – Project Management Proposal – Section 5 Part G Paragraph 2.A Response

**Risks:** Captured in backlogs, linked to work items, and managed on ROAM boards at the Team and Project levels.

Board	Analytics	<a href="#">View as Backlog</a>	Risks	Filter	More
New	<	Owned 2/5	Accepted 1/5	Mitigated 1/5	Resolved
<a href="#">+ New item</a>		<a href="#"> 40 Data Security Breaches</a> Risk Categ... Technical Impact High	<a href="#"> 39 Budget Overruns</a> Risk Categ... Financial Impact Medium	<a href="#"> 35 Potential Data Loss Upon Migration</a> Risk Categ... Technical Impact High	<a href="#"> 38 Integration Challenges</a> Risk Categ... Technical Impact High
		<a href="#"> 36 System Downtime</a> Risk Categ... Operational Impact High			
		<a href="#"> 37 Skill Gaps</a> Risk Categ... Strategic Impact Medium			

*Figure 36 - Sample Risk Board in Azure DevOps (ADO)*

⚠ RISK 37\*

## 37 Skill Gaps

 Unassigned  0 comments [Add tag](#)

 Save & Close  Follow    

State  Owned Area ScaledAgileProject\Team  
Reason  Moved to state Own... Iteration ScaledAgileProject  
Updated by Brice Ashby: Mar 12  
[Details](#)   

### Description

Insufficient expertise in managing and operating the new system environment, leading to inefficiencies and errors.

### Custom

Risk Category  Strategic  
Risk Impact  Medium

### Discussion

 Add a comment. Use # to link a work item, ! to link a pull request, or @ to mention a person.

### Deployment

 To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

### Development

 Add link  Link an Azure Repos commit, pull request or branch to see the status of your development. You can also [create a branch](#) to get started.

### Related Work

 Add link  Add an existing work item as a parent

  44 Comprehensive Stakeholder Training Program  
Updated 32 minutes ago,  To Do

Figure 37 - Sample Risk Board detail in Azure DevOps (ADO)

**Roadmaps:** Generated from the Work Items and Dependencies and managed daily via Team syncs and planning sessions.

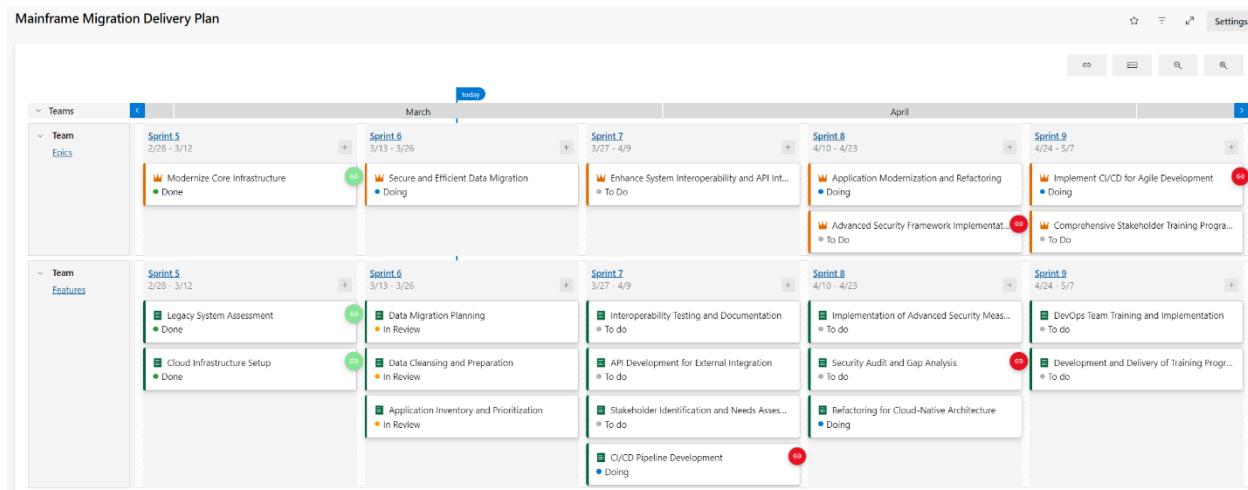


Figure 38- Sample Epic and Feature Roadmap in Azure DevOps (ADO)

CapTech has extensive experience in Agile frameworks of many kinds and customizes its approach based on client need, readiness, and limitations. CapTech proposes a scaled Agile approach for DMV with the Scrum framework being leveraged at the Team level.

### Team Level Events

TEAM EVENT	CADENCE	DESCRIPTION	ATTENDEES
<b>Sprint Backlog Refinement</b>	Weekly	Break down Features into user stories, and review prioritized user stories to understand	Scrum Team, Tech Leads
<b>Sprint Planning</b>	Beginning of each sprint	Determine how much of the team backlog the team can deliver during an upcoming iteration and summarize those stories into a set of iteration goals.	Scrum Team
<b>Team Sync</b>	Daily	Inspect progress toward the iteration goal, communicate, and adjust upcoming planned work	Scrum Team
<b>Sprint Review</b>	End of each sprint	Inspect iteration outcomes, present the results of their work to key stakeholders, and assess progress toward the iteration goal and PI objectives.	Scrum Team, Key Stakeholders, Project Managers

TEAM EVENT	CADENCE	DESCRIPTION	ATTENDEES
<b>Sprint Retrospective</b>	End of each Sprint	Reflect on the iteration and derive new ideas to improve its process and the solution.	Scrum Team

Table 5 - Team Level Events

## Sample 2-Week Sprint Schedule

SUN – 1	MON – 2	TUE – 3	WED – 4	THU – 5	FRI – 6	SAT – 7
			Sprint1 Sprint #1 Planning	Daily Stand-Up	Daily Stand-Up	
SUN – 8	MON – 9	TUE – 10	WED – 11	Daily Stand-Up	Daily Stand-Up	SAT – 14
			Backlog Refinement			
SUN – 15	MON – 16	TUE – 17	Sprint 1 Review	Sprint #2 Planning	Daily Stand-Up	SAT – 21
	HOLIDAY		Sprint 1 Retro			
SUN – 22	MON – 23	TUE – 24	WED – 25	Daily Stand-Up	Daily Stand-Up	SAT – 28
			Backlog Refinement			
SUN – 29	MON – 30	TUE – 31	Sprint 2 Review			
			Sprint 2 Retro			
			Sprint 2 User Acceptance Testing			

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Participants:  VDH Business Team  Technical Team



Figure 39 - Sample Sprint Schedule

## Team Level Roles

TEAM ROLE	FUNCTION
<b>Scrum Master</b>	Servant leader and coach for an Agile team who facilitates team events and processes and supports teams in delivering value. This person encourages continuous improvement and educates the team in agile framework best practices and approaches. They optimize flow by identifying and removing impediments for the team and guiding the resolution of team issues.
<b>Engineers</b>	Cross-functional team members are responsible for the delivery of work items that meet the Definition of Done, including unit testing. Provide development and collaboration strategies (paired programming, test-driven development, etc.) to optimize delivery and improve the flow of work. This role may include a variety of engineers (software, data, DevOps, etc.)

<b>DMV Product Owner</b>	Approve that the User Story correctly specifies all requirements and accepts User Stories during Sprints to validate requirements that have been met.
<b>CapTech Product Owner</b>	Responsible for maximizing the value delivered by the team and aligning the team backlog with customer and stakeholder objectives. This person is closely aligned with the business and technology strategy.
<b>Quality Assurance Analyst</b>	Support testing initiatives following the Quality Management plan of the functionality of work items.
<b>Business System Analyst</b>	Understand and translate technical requirements into User Stories and partner with the Product Owner making sure the product backlog is robust, defined, and prioritized. This role will support the Feature regression testing so disparate team code is functional when merged.
<b>Team Technical Lead</b>	Provide technical direction to the team developers and facilitates best practices. Works with the Lead Architect to align technical strategies and cascades this information to the team. Supports breaking down Features into User Stories for the team's product backlog.

Table 6- Team Level Roles

## Team Level Agile Work Products

WORK PRODUCT	DESCRIPTION	CRITERIA
<b>Working Software</b>	Completed User Stories	Code is developed in a lower environment and pushed into Prod-Like Environment, denoting its readiness to be used.
<b>Definition of Done (DoD)</b>	User Story DoD has been met	The user story meets the acceptance criteria, unit tests pass, and reviewed by the Product Owner for completeness.
<b>Updated Product Backlog</b>	The backlog is revised and prioritized for upcoming sprints and PIs	User stories are reprioritized, refined, and meet the Definition of Ready (DoR) before starting work on them.
<b>Retrospective Results</b>	Team retrospective results are documented	Improvement items are added to the product backlog and reviewed throughout the PI.

Table 7 - Team Agile Work Products

## Solution Level Events

SOLUTION EVENT	CADENCE	DESCRIPTION	ATTENDEES
<b>Epic and Feature Refinement</b>	Monthly	Determine the priority of Epics in the Solution backlog and provide high-level refinement of the scope. Prioritized Epics should be broken into manageable Features to be reviewed with Teams.	Technical Architects, RTE, Agile Coach, SMEs (as needed), Product Owners, Scrum Masters, DMV Project Manager, CapTech Project Manager
<b>PI Planning</b>	Once per PI	One to two days during the Innovation and Planning Sprint.	Everyone
<b>Solution Sync</b>	Twice per Week	30 mins, twice a week to Inspect progress toward the iteration goals, speak to escalated impediments and dependencies.	Scrum Masters, Product Owners, RTE, Agile Coach, DMV Project Manager, CapTech Project Manager
<b>Mid-PI Demo</b>	Once per PI	Interim completed features demoed for feedback.	Everyone
<b>PI System Demo</b>	Once per PI	Formal demo of Features that will be deployed into pre-production.	Everyone
<b>PI Retrospective and Problem-Solving Workshop</b>	Once per PI	Discuss what went well and areas for improvement learnings from the PI.  NOTE: this can be combined with the PI System Demo for efficiency	Everyone

Table 8 - Solution Level Events

## Solution Level Roles

Refer to Table 4 in section 4.4 for details on solution level roles.

## Solution Level Agile Work Products

WORK PRODUCT	DESCRIPTION	CRITERIA
--------------	-------------	----------

<b>Status Reports</b>	Weekly and Monthly reports to Leadership outlining project health across Teams.	Content to include: <ul style="list-style-type: none"> <li>• Progress against objectives</li> <li>• Key risks/issues status</li> <li>• Key dependencies status</li> <li>• Team agile metrics</li> </ul>
<b>Refined Features</b>	Feature prioritization and refinement activities to build out the scope of work.	<ul style="list-style-type: none"> <li>• Description is refined and understood.</li> <li>• Acceptance Criteria are populated.</li> <li>• Definition of Done is written</li> </ul>
<b>Working Features</b>	The primary measure of project success is working functionality.	<ul style="list-style-type: none"> <li>• Features have been deployed to a Production-like environment.</li> <li>• Features pass regression testing</li> </ul>
<b>Updated Project Plan</b>	The project plan should be updated with changes in scope, risks/issues, and other factors.	<ul style="list-style-type: none"> <li>• The project plan is being continually reviewed and if needed, revised.</li> <li>• The project plan is shared with the Executive Steering Committee</li> </ul>

Table 9 - Solution Level Agile Work Products

## Executive Steering Committee Level Events

EXECUTIVE STEERING COMMITTEE EVENT	CADENCE	DESCRIPTION	ATTENDEES
<b>Executive Steering Committee Meeting</b>	Monthly (and ad hoc as needed)	Review of progress against objectives, status of Epics, review of prioritization and funding/budget, review, and approval of change requests	DMV Executive Sponsor, DMV Project Sponsor, CapTech Executive Lead, DMV Project Manager, Technical Lead/Architect, CapTech Project Manager, Change Management Lead, Quality Assurance Lead, SMEs (optional), Key Stakeholders (Optional)

Table 10 - Executive Steering Committee Level Events

## Executive Steering Committee Roles

For details, refer to Executive Steering Roles in section 4.3.

## Executive Steering Committee Agile Work Products

EXECUTIVE STEERING COMMITTEE WORK PRODUCT	DESCRIPTION	CRITERIA
<b>Key Decisions</b>	Key decisions made by the Executive Steering Committee should be communicated to the Solution Team timely.	<ul style="list-style-type: none"> <li>• Decisions on a change in scope</li> <li>• Epic prioritization</li> <li>• Risk/Issue resolution</li> <li>• Conflict resolution</li> <li>• Change request approvals</li> </ul>

Table 11 - Executive Steering Committee Agile Work Products

CapTech has been managing projects within the Commonwealth of Virginia for more than twenty years, since before the Project Management Division (PMD) was established in the Code of Virginia in 2003. Several of our project managers are Qualified Commonwealth IT Project Managers and are familiar with the VITA oversight requirements.

This Modernized CSS Solution will be considered a Category 1 project due to its scope, risk, and complexity and will require the highest level of oversight from VITA PMD during the duration of the project.

The EPD is asking CapTech to comply with Commonwealth Project Management Standards issued by VITA, DMV is also asking us to follow an agile based iterative delivery model. We will work with the DMV to meet all Commonwealth Project Management Standards issued by VITA while harnessing agile methodologies to increase transparency, demonstrate iterative delivery, and reduce risk. Where a VITA standard conflicts with an agile practice, CapTech will comply and conform to Commonwealth Project Management Standards unless expressly directed to follow a different approach as directed by DMV.

We are confident that we will be able to satisfy VITA's need to continuously monitor project planning, status, risk, and performance by working closely with the DMV Project Manager, VITA PMD, and any other VITA leadership as needed.

## 4.7 - In Response to Section 5 Part G Paragraph 2.B.1

### **Project Management Plan and Work Plan**

The project shall begin with an initiation stage which will include, but not be limited to:

- a) Establishing (and updating on an on-going basis) all components of an overall project management plan and related documentation. This includes, but is not limited to:

- Project Organization Plan and Functional Team Structure
- Roles and Responsibilities
- Project Communications Plan
- Risk Management Plan
- Change Management Plan
- Configuration Management Plan
- Quality Management Plan
- Project Performance Plan
- Contingency Plan
- Any Documentation Required by VITA

Templates describing the information that may be required by VITA can be found at <https://www.vita.virginia.gov/policy-governance/project-management/project-management-templates-tools/>.

Supplier must submit samples of the components of the overall project management plan and approach with its proposal. Supplier must identify critical factors to address during each of the project milestones.

During the initiation stage, CapTech will work with DMV to finalize the project management plan and the work plan, which will be a living document throughout the project. These documents will be reviewed and updated in collaboration with DMV. If a change in approach and documentation is required, this will be agreed upon between CapTech and the DMV with discussions led by the respective Project Manager.

The initiation stage is followed by a build stage where teams collaboratively plan, build, test, and deploy prioritized work items to a prod-like environment. To complete the project, there will be a final cutover stage to release all work items to Production. Refer to the Project Organization and Team Structure section 2b for details on deliverable objectives for each stage, as well as section 2a on the scaled agile approach.

We consider the Complete Project Work Plan to be a living document that will continually be updated throughout our iterative development approach, and we will review updates as needed and at least before each PI. Sample documentation is provided for the key focus areas below that will make up the Project Work Plan:

- Project Organization plan and Functional Team Structure (Appendix 5)
- Roles and Responsibilities (Appendix 6)
- Project Communications Plan (Appendix 7)
- Risk Management Plan (Appendix 8)
- Change Management Plan (Appendix 9)
- Configuration Management Plan (Appendix 10)
- Quality Management Plan (Appendix 11)
- Project Performance Plan (Appendix 12)
- Contingency Plan (Appendix 13)

CapTech's Project Management Plan will incorporate best practices from:

- CapTech's proven, holistic Agile delivery approach and best practices, outlined in Section 2a.
- DMV input and recommendations

- State of VA required standards

The following table provides specific examples of best practices CapTech brings to DMV:

MANAGEMENT APPROACH AREA	CHALLENGES AND LESSONS LEARNED	BEST PRACTICES APPLIED TO DMV PROJECT
<b>Leadership</b>	Leadership and project managers are in the weeds with no time for strategy, overall picture, innovation, creating a sense of urgency, etc.	Leaders understand how to lead in an agile environment; governance and oversight should focus on supporting and removing organizational barriers and impediments
<b>Quality Management</b>	When only incorporated into testing, much more re-work and bugs -risks to timelines and delivery and reputation	Built-in up front with the Definition of Ready and Done at all steps and a holistic, collaborative DevOps approach that focuses on reducing the largest bottlenecks and deployment of small pieces regularly
<b>Human Resource Management</b>	Team members (core or satellite) who are not fully dedicated for whom this major project is not a priority become blockers to progress	Persistent teams with dedicated team members move the fastest. Try to consider team structure changes only as necessary and at PI breaks.
<b>Agile Frameworks</b>	Not adhering to agile and lean principles including working together and limiting work in progress for example impedes delivery	Foster continuous improvement with dedication to agreed-upon events, policies, and team agreements such as retros and regular backlog refinement – discipline counts!
<b>Startup</b>	It takes a substantial amount of time and resources to ramp up a large project and requires involvement from state staff.	Establish development categories, work estimation models, and design patterns based on our previous work experience to lessen our ramp-up time and provide a good baseline for initial discussions. Our extensive work on large-scale government initiatives provides us the knowledge and ability to provide immediate value upon joining and implementing/refine policies and practices in collaboration with the DMV.

Table 12 - CapTech Project Management Best Practice

## Project Organization Plan and Functional Team Structure

Stage 1 includes an initiation stage as well as the development of the POC. The initiation stage will create the environment and plans that will guide the DMV and CapTech teams through the entire project. The Project Management Plan and the Work plan created and finalized in the initiation phase will incorporate DMV and

State of VA requirements as well as CapTech’s overall project management proposal leveraging experience delivering similar projects and initiatives using Agile principles and frameworks.

Stage 1 will consist of an Agile team to deliver the scope of the POC as well as a system team to provide the technical runway needed to design, develop, and deliver the POC. During Stage 1, the Project Leadership Team and the Executive Steering Committee will be formed, and necessary documentation will be created outlining expectations, roles and responsibilities, deliverables, and key outcomes from each group.

Once Stage 1 is completed, CapTech and DMV will discuss and plan the roadmap objectives and approach for Stage 2, including additional teams (DevOps, development, CX, etc.) and the revision of Project Management Documentation focused on scaling the project size and scope. Stage 2 will continue to focus on getting off the legacy mainframe by structuring teams to be initiative/value-stream focused including the refinement, CX design, development, and testing of all functionalities. Teams will plan their work together using Pls during this stage of development and deploy functionality to a Prod-like environment.

Immediately following Stage 2 is a period of product readiness activities before a cutover. Functionality is moved into the Production environment and validated for completeness. A team will be responsible for managing the release to Production, providing hypercare activities immediately following cutover for a determined amount of time, and responsible for triaging, prioritizing, and fixing defects post go live.

For sample documentation, refer to the Project Organization Plan (Appendix 5).

## **Roles and Responsibilities**

Refer to sections:

- 4.3 for Executive Steering Committee roles and responsibilities
- 4.4 for Project Leadership Team (Solution Level) roles and responsibilities
- 4.6 for Team roles and responsibilities

For sample documentation, refer to the Roles and Responsibilities plan (Appendix 6).

## **Project Communication Plan**

Effective communication is paramount to the success of any large-scale modernization project. The Project Communications Plan is based on CapTech’s successful delivery of similar-sized projects for other State Agencies throughout the United States. During Stage 1 of the program, our Project Manager will work with the DMV Project Manager to identify key stakeholders and their extended stakeholder groups. This information is used to identify the method and frequency of project communication, captured within the Project Communications Plan. This information is used to set required information standards within the project management tools that will be used to support the DMC CSS program.

The Project Communications Plan is intended to plan for all project stakeholders to be kept informed of project status, action items, and key milestones in a timely and effective manner. The plan covers the following:

- **Stakeholder Descriptions and Roles:** Outlines the information to be communicated to the identified stakeholders, the role of each stakeholder, and the description of project-related stakeholder communications activities.
- **Project Meetings:** Describes the types of meetings, and purposes of the meeting, identifies the designated facilitator/meeting invitees, and the purpose of the meeting, and outlines the frequency of convening meetings.
- **Tracking Action Items:** Action Items will be gathered in formal meetings as well as outside meetings on informal channels and will be tracked through the completion of the activity. The CapTech Manager is responsible for tracking and actioning items.
- **Project Reporting and Correspondence:** DMV CSS Stakeholders will be provided with clear and frequent communication that highlights project progress. The CapTech Project Manager will work with the DMV Project Manager to manage the reporting process and engage with project stakeholders if more detail is required. Our Project Manager is available for ad hoc status reporting and responsive to other additional reporting and meeting requirements as requested by the DMV CSS program team. The Project Communication Plan will list each communication type, the owner, recipients, delivery mechanism, and frequency.
- **Plan Update and Refinement:** As the project evolves and moves forward, project management stakeholders may change, preferred communication methods may need to be updated, or more effective communication channels may be identified. The Project Leadership Team will meet quarterly to review the Project Management tools and processes, including the Project Communications Plan, and identify what is working well and what needs to be modified to increase communication efficacy. If agreed and if necessary, the Project Communications Plan will be updated, and those changes will be communicated to all impacted stakeholders.

For sample documentation, refer to the Project Communications Plan (Appendix 7).

## Risk Management

The Risk Management plan outlines the people, process, and technology requirements needed to support a successful Risk Management function within the DMV Project. The DMV CSS Risk Management function seeks to create and implement a risk management culture that is rooted in all program participants feeling safe to raise risks and issues and that is supported through effective risk management training for all program participants. Through this culture, risk management will help the DMV Project achieve the following strategic results:

- Preparation for anticipated bad occurrences so that they don't turn into costly surprises
- Risks are appropriately mitigated and do not require reactive responses
- Focus on the most important work, not just the most pressing

To summarize, this Risk Management Plan process:

- Defines the risk management culture that offers a safe place for all DMV participants to raise and manage issues and risks

- Provides a consistent methodology for identifying, reporting, and managing risks and issues
- Establishes a formalized approach to escalate project-related risks into program-related risks
- Recommends the review cadences to evaluate risks regularly
- Provides an approach to identify and manage issues. Additionally, it provides clarity on how risks can manifest into issues
- Clearly defines roles and responsibilities to support Risk Management tasks throughout the DMV CSS Program
- Showcases the tools used to log issues and risks in a centralized repository
- Highlights the program processes and artifacts used to effectively report risks

Risks can also be managed in Azure DevOps for visibility to all project stakeholders, as shown in the screenshots above.

For sample documentation, refer to the Risk Management Plan (Appendix 8).

### **Scope and Schedule Change Management Process**

The following process will be subject to the applicable terms in the resulting negotiated contract between CapTech and DMV.

Scope and Schedule Change Management Processes are critically important given the diverse and numerous stakeholders engaged with the products and services that DMV provides. In Stage 1, CapTech will work with the DMV SMEs and Business Analysts to further refine the scope of Epics, Features, and work to create Stories – descriptions of system features from the users' perspective. CapTech and DMV will then jointly estimate the relative "size" of each Feature using a Fibonacci sequence (i.e., 1, 2, 3, 5, 8, etc.). CapTech will work with DMV to prioritize the Feature backlog into PIs and the Story backlog into the cycles in which a team will develop them within the PI, called Sprints. Teams will estimate and/or refine the estimate of the relative size of each Story during PI planning and again during Sprint Planning using "story points", which will also utilize a Fibonacci sequence. This iterative approach, along with large-scale planning exercises during each PI allows us to further refine and prioritize requirements later into development. For more details, refer to Part 4, section 4.6 regarding the scaled Agile approach.

To be successful, CapTech and DMV must mutually come to an initial agreement of scope during Stage 1 based on the estimated total size (i.e., sum of all size estimates) of the minimum, "Must Have" Features. Based on this agreement, we will present any required changes to price, schedule, or team composition to the Executive Steering Committee as part of the Go-Forward plan. After establishing this scope baseline and updating the contract to reflect those changes, CapTech and DMV must formally review and agree to a refined agreement of the minimum, "Must Have" scope on at least a quarterly basis (i.e., every 3 months) during PI planning, at which time we will also amend the contract as needed.

There may be times when CapTech or DMV identify significant changes in scope that challenge the project's budget and timeline. DMV Project Managers will document these changes in the form of Project Change Requests. Project Change Requests will include a detailed description of the change, statements on organizational impact or need, workload or size estimates, and recommendations. DMV understands

CapTech will not perform any work on scope related to Project Change Requests until the Executive Steering Committee approves the changes, and DMV and CapTech update the contract to reflect approved changes.

The Scope and Schedule Change Management Process will adhere to the following, and any delays not caused by CapTech (e.g., late completion of dependent tasks) may in themselves result in a change request if those delays impact the project schedule or prevent/impede teams from performing work to sustain project activities:

- The CapTech and DMV Project Managers will communicate and share the Project Change Request with the Project Leadership Team.
- The Project Leadership Team will review the Project Change Request during the Project Leadership Team Checkpoint meeting, at which time Project Managers and/or Project Team Members can provide additional context or information regarding the Project Change Request. During the Project Leadership Team Checkpoint meeting, the Project Leadership Team will either:
  - Reprioritize or refine the project scope to remove the need for the Project Change Request.
  - Confirm the Project Change Request as necessary to accomplish the overall objectives of the DMV and/or the minimum, "Must Have" scope of the project.
- The CapTech and DMV Project Managers will communicate and share the confirmed Project Change Requests with the Executive Steering Committee.
- The CapTech and DMV Project Managers will present confirmed Project Change Requests to the Executive Steering Committee.
- The Executive Steering Committee will review the confirmed Project Change Requests during the Executive Steering Committee Meeting, at which time Project Managers and/or Project Leadership Team members can provide additional context or information regarding the Project Change Request. During the Executive Steering Committee Meeting, the Executive Steering Committee will either:
  - Reprioritize or refine the project scope to remove the need for the Project Change Request.
  - Approve the Project Change Request as necessary to accomplish the overall objectives of the DMV and/or the minimum, "Must Have" scope of the project. Approval requires signature by the DMV Executive Sponsor, the DMV Project Sponsor, and the CapTech Executive Lead or their designated alternates attending the Executive Steering Committee meeting.

If approved, the CapTech and DMV Project Managers will document the decision, and will update, store, and share supporting project documentation with all impacted stakeholders. The Project Managers will communicate the decision to the Project Leadership Team and all Project Team Members and will work directly with the Scrum Masters and Product Owners on any backlog updates.

If needed, the Project Managers will also update and communicate any risks on the Risk Log associated with

the change. The Project Managers will facilitate the formal change of the contract to reflect the approved changes and any required changes to price, schedule, or team composition before work can begin on the approved changes. Project teams can begin work after the contract reflects the approved changes.

CapTech and DMV agree to make good faith efforts to reduce and expedite the Project Change Request Process as much as is reasonably possible to sustain ongoing project activities.

CapTech also asserts that we will require Project Change Requests when any delays not caused by CapTech (e.g., late completion of dependent tasks) occur if those delays impact the project schedule or prevent / impede teams from performing work. In addition to this those expectations we define in this section about the Scope and Schedule Change Management Process, we include several additional foundational assumptions around the timeframe in which we expect DMV to perform, complete, or approve work in Part 13 (Proposal Assumptions) and Part 11 (Pricing, Incentives, and Payment Response assumptions). CapTech and DMV agree to establish and treat these expectations in a similar manner to non-functional SLAs of the system, and DMV understands any non-conformance to these expectations may necessitate a Project Change Request.

We intend this Scope and Schedule Change Management process to establish clarity and alignment around how to handle project changes to enable the completion of the Modernized CSS Solution as quickly and with as high quality as is reasonably possible. Our intention is not meant to in any way penalize DMV, but rather to establish a framework by which CapTech and DMV can easily enter good faith negotiations and collaborate throughout the project regarding scope, schedule, and price. We believe this process will help accomplish the goals and objectives of the DMV while ensuring all parties perform their respective responsibilities and remain accountable to enabling timely completion of the Modernized CSS Solution in alignment with DMV's "Must Have" requirements.

For sample documentation, refer to the Change Management Plan (Appendix 9). For more details, refer to Part 13 (Proposal Assumptions).

## **Configuration Management**

Configuration Management is the continuous process of identifying and managing changes to the CSS Replacement system and infrastructure throughout the development process. The Configuration Management Plan codifies how system configuration is stored and maintained; the controls for configuration changes, including audits; and the various roles and responsibilities of those involved. The Configuration Management Plan also defines the methodology for configuration identification and control of releases and changes to configuration items.

The Configuration Management plan will include the following:

- Configuration Management Strategy
  - Component Versioning
  - Version Control
  - Managing Secrets
- Application Configuration
  - For each major component of the system:

- Dependencies
- Application settings and descriptions
- Container management
- Infrastructure Configuration
  - Layered Infrastructure Approach
  - Layer Configuration (layers 0 – 2)
  - Ready for
- Inputs / Outputs

The template for this is coupled with Change Management and is related to change control items governed by the Change Control Process, including Scope, Schedule, Budget, and Performance Plans.

For sample documentation, refer to the Configuration Management Plan (Appendix 10).

## **Quality Management**

During Stage 1, CapTech will produce a comprehensive Quality Management Plan, documenting the overall for Stage 2 approach to testing, environment management, and defect management.

This plan will identify:

- Types of testing that will be performed by CapTech and DMV
- Sample test scripts, including User Story and Feature acceptance criteria and entry/exit criteria for the levels of testing
- A documented defect management process, including triage and remediation approach
- Process documentation and sample reporting for defect metrics
- An initial testing schedule and set of resource requirements for CapTech and DMV during development, testing, and hardening phases of the project
- Testing tools to be used during development, testing, and hardening phases of the project
- Documentation of the feature and final acceptance processes to secure DMV approval

This plan will be completed during Stage 1. During each PI, CapTech and DMV will update the strategy as additional information is available and opportunities to refine our approach are identified.

Detailed test scripts for components and features will be defined in an iterative manner.

- User Story test scripts will be identified based on user story acceptance criteria. These are refined prior to accepting the story into a sprint for development and will happen iteratively throughout the project.
- Features and Components test scripts will be identified based on Feature acceptance criteria (including functional and non-functional requirements). These are refined prior to accepting the Feature into a PI for execution.

Specific test execution plans for Feature and Component testing will be updated on a PI-by-PI basis and will be based on specific testing needs for that PI Increment. A high-level plan will be identified during Stage 1 for resource planning but will be committed to at each PI boundary.

For sample documentation, refer to the Quality Management Plan (Appendix 11).

## **Project Performance Plan**

CapTech will create a Project Performance Plan to set key metrics and objectives and measure progress against them to track project success. The Project Performance Plan will be reviewed and finalized during the initiation stage and metrics will be measured and reported throughout the project.

There are several key reasons to conduct a Performance Plan for a technology project:

- Sets clear objectives for the project. It outlines the specific goals, targets, and performance indicators that need to be achieved. This clarity is so that everyone involved in the project understands what is expected and can work towards those objectives.
- Allows for ongoing monitoring of the project's progress. It helps track key objectives and provides a framework to measure success against predetermined benchmarks. By regularly reviewing and analyzing performance data, the CapTech and DMV Project Managers will identify any deviations or issues early on and take corrective actions to keep the project on track.
- Enables the identification of performance gaps or areas where the project is not meeting the desired standards. By comparing actual performance against the defined targets, project managers can identify areas that require improvement or additional resources. This allows for timely interventions to address issues to support project success.
- Promotes accountability among project team members. By clearly defining roles, responsibilities, and performance expectations, individuals are held accountable for their contributions to the project. This fosters a sense of ownership and motivates team members to deliver their best work.
- Facilitates a culture of continuous improvement by providing a structured approach to review and analyze project performance. It allows for lessons learned to be captured and applied to future projects, enabling organizations to enhance their project management practices and achieve better results over time.

The project performance plan will include:

- Performance Goal (Defines success of the Project Objective)
- Measurement Method (Describes how the performance goal is measured)
- Timing (Describes when to measure)
- Responsibility (Identifies who is responsible for measuring)
- Reporting (Identifies how progress toward meeting the performance goal is reported)

For sample documentation, refer to the Project Performance Plan (Appendix 12).

## Contingency Plan

Based on similar large-scale projects, CapTech recommends performing both Contingency Planning and Readiness Planning which are critical to the successful implementations of changes of this size. The Contingency Plan and Readiness Plan identify potential risks and develop contingency strategies to mitigate them, enabling a smooth and successful implementation.

CapTech will work with DMV early in Stage 1 to develop a Contingency Plan and will review every PI and update as needed. The Contingency Plan will include any accepted risks and a plan of action for reducing disruption if any risks are realized. An effective Contingency Plan:

- Minimizes risk by preparing the team for unforeseen events in advance. By having a plan in place, the team knows how to respond and handle risks that may arise during the project.
- Reveals potential weaknesses in the project. Addressing these weaknesses promptly so potential risks and issues are handled before they escalate.
- Increases efficiency because the team knows what to do when a problem arises. This reduces the time wasted trying to figure out how to address the issue, promoting efficiency throughout the project.
- Enhances team communication and coordination. The team knows how potentially impactful situations will be handled, leading to fewer disagreements and less confusion.

CapTech will work with DMV in Stage 2 to build an effective Readiness Plan that is a vital part of Contingency Planning. The Readiness plan will focus attention on assessing the readiness of the various areas and groups impacted by the project. A structured Readiness Plan:

- Helps identify potential risks and issues that may affect the successful execution of the project. This allows the project team to develop mitigation strategies and contingency plans to address those risks effectively.
- Involves evaluating the readiness of key project components and when conducting this evaluation in advance, any issues or gaps in readiness can be detected early. This enables the project team to take corrective actions and make necessary preparations for smooth project execution.
- Aligns stakeholders' expectations and their active involvement in the project. By communicating the readiness assessment and plans to stakeholders, the project team can manage expectations, clarify roles and responsibilities, and obtain necessary support. This alignment enhances stakeholder engagement and collaboration, increasing the project's chances of success.
- Simulates the Contingency Plans during a mock deployment or dress rehearsal to increase familiarity and validate all contingency and rollback procedures to be identified.

Additionally, it is important to develop and maintain a Backup and Disaster Recovery plan. Its purpose is to outline a set of predetermined actions and procedures that can be implemented in response to unforeseen events or emergencies. By having this plan in place, DMV can minimize disruptions, protect its assets, and enable the continuity of critical processes during times of crisis or uncertainty. For more details, refer to Part 3, Section 5 for additional information on Backup and Disaster Recovery.

For sample documentation, refer to the Project Contingency Plan (Appendix 13).

### **Any Documentation Required by VITA**

Throughout the project, the CapTech Project Manager will work with the DMV Project Manager to provide the necessary information and content for the required VITA project documents.

### **Sample Documentation**

CapTech will work with DMV in an agile manner to identify critical factors to address for every project milestone. Early in a project, critical factors focus on approving requirements and validating technical decisions. Later in the project these critical factors shift to delivering functionality in an agile and iterative manner to demonstrate progress and remain on schedule. The critical factors will be identified and managed along with the rest of the Project Management documentation and deliverables.

Refer to the sample documentation in Appendices 5-13.

## 4.8 - In Response to Section 5 Part G Paragraph 2.B.2

*Establishing (and updating on an on-going basis) detailed project plan documents including, but not limited to an agile-based project work plan, a milestone/deliverable plan, a product backlog, an iterative release cycle plan, and associated project resource and staffing plan (with staffing assignments tied to work plans). DMV must approve all project plans, including product backlog and what will be delivered during each iterative release cycle.*

*The project plan documents must include detail related to all tasks associated with the entire project including all project stages including:*

- Stage 1 – Proof-of-Concept Activities
- Stage 2 – Full Modernized CSS Solution Build and Implementation

*The project plan documents must clearly define the development and implementation approach that provides for project progression through various release cycles from initiation through closeout.*

*The project plan documents must describe the tasks, time frames and required Contractor and DMV resources detailed in each stage and component/release cycle of the project.*

*The project plan documents must clearly identify specific and granular milestones and deliverables with critical project decision points, target completion dates to each decision point, and a clear schedule of events wherein all deliverables crucial to project success will be met and accepted by DMV.*

*The project plan documents must include reasonable time for DMV to review and approve task completion and deliverables without interrupting the continuing progress towards completion of the project.*

*Supplier must submit an initial set of project plan documents including a comprehensive agile-based project work plan, an initial milestone/deliverable plan, an iterative release cycle plan, and an initial resource and staffing plan that addresses and supports the tasks, effort, and schedule required to accomplish the requirements identified in this EPD to implement the Modernized CSS Solution. These initial project plan documents will be used as a starting point and will be finalized during the project initiation stage.*

*The comprehensive project plan documents must be based on the following desired/anticipated timeframes to complete each stage:*

- Stage 1 – Proof-of-Concept Activities – Completed within 6 months of Contract execution.
- Stage 2 – Full Modernized CSS Solution Build and Implementation – Completed within 3 years after Stage 1 and DMV approval to proceed with Stage 2.

CapTech will work with DMV to establish, and update on an on-going basis, a detailed project plan. For details refer to the Project Plan Documentation in Appendix 4.

The project plan includes the Stage 1 – Proof-of-Concept Activities.

- Foundations
  - Set up Activities
  - Project Establishment
- Project Kickoff Presentation
- Stage 1 Agile Based Project Work Plan
- Stage 1 Milestones Deliverable Plan
- Stage 1 Initial Product Backlog
- Stage 1 Iterative Release Cycle Plan
- Stage 1 Staffing Plan
- VITA Initiation Documentation
- Azure DevOps Work Management Structure
- PoC Vision/Scope
- Architectural Enablers
  - Business Processes (Functional arch)
  - Business Rules (Functional arch)
  - System Design Specifications (Data/Technical arch)
  - Established Dev environment (Technical arch)
  - Provisioned Azure Instance and Infrastructure (Technical arch)
  - Repos to Deploy Code (Technical arch)

- Third Party Tools Installed (Technical arch)
- Initial Wireframes (CX arch)
- Design System Foundation (CX arch)
- Security Architecture (Technical arch)

The project plan includes the Stage 2 – Full Modernized CSS Solution Build and Implementation.

- Foundations
  - Established DevOps Runway for 0 and 1
  - Environments Established (Dev, Test, Stage, PROD,)
  - Testing Foundations
  - Data Synchronization Foundations
  - Established Delivery Structure
  - CX Support (re-word)
  - Stage 2 Initial Product Backlog
  - Stage 2 Iterative Release Cycle Plan
  - Stage 2 Staffing Plan
- Build Phase / Vertical Approach Epics / Initiatives
  - Credentialing (Business Licenses)
  - Credentialing (Individual Licenses, ID Cards, Permits)
  - Credentialing (Titles and Registration)
  - Tax Processing
  - Information Provisioning
  - Partnership Functions, Services, & Products
  - Service Delivery / Customer Account
  - Financial Services
  - Inventory Management
  - Stand Alone and Third-Party Vendor Applications
  - Note: Each of the above will have refinement, design, development, and testing components.
    - Initiative: groups of Epics
    - Epic: groups of Features delivered to a prod environment and required testing
    - Feature: groups of User Stories deployed to prod-like env.
- Production Readiness Activities
  - Regression testing
  - End-user training guides (technical staff)
  - Documentation (cutover plan, architecture, migration plan, etc.)

- Mock Data conversions
- Performance and security testing
- Failover testing
- Train the trainer
- Mock-cutover
- Post-prod support plan
- Backup and recovery approach

A detailed cutover plan document will be created and managed, including a list of tasks needed to transition the project from its current state to a new one. It will include a task description, the ownership of the task, the duration of the task, key communication touchpoints, and the task status. A cutover dashboard will be maintained and shared with key stakeholders sharing the status of the cutover activities and remaining work.

Following the cutover will be a period of post-production support to monitor that new functionality is working as intended. Any issues will be captured, prioritized, and maintained in Azure DevOps (ADO) and actioned by the post-go-live support team. There will be ongoing smoke testing, transaction monitoring, and defect triaging during this time enabling a stable environment.

For more details on Stage 1 and 2 Project Plan refer to the Project Plan Documentation in Appendix 4.

The implementation approach is stated in 4.8. For additional details on this documentation refer to the Project Plan Documentation in Appendix 4. All other Project Plan documentation will be created, reviewed, and finalized during the Initiation phase of Stage 1.

Project Plan documentation will be created, reviewed, and finalized during the Initiation phase of Stage 1. For details on milestone deliverable documentation refer to the Project Plan Documentation in Appendix 4.

CapTech will create, review, and finalize Project Plan documentation during the Initiation phase of Stage 1. We will include reasonable time for DMV to review and approve task completion and deliverables. We will work with DMV to establish SLAs that hold all parties accountable.

Please see Appendix 4 for an initial set of Project Plan Documentation including a comprehensive agile-based project workplan, an initial milestone/deliverable plan, an iterative release cycle plan, and an initial resource and staffing plan.

For details on Stage 1 – Proof-of-Concept activities completed within 6 months of contract execution please refer to the Project Plan Documentation in Appendix 4.

For details on Stage 2 – Full Modernized CSS Solution Build and Implementation completed within 3 years after Stage 1 and DMV approval to proceed with Stage 2 refer to the Project Plan Documentation in Appendix 4.

## 4.9 - In Response to Section 5 Part G Paragraph 2.B.3

*Establishing and administering processes and controls to ensure all deliverables are of a quality acceptable to DMV.*

Please refer to the Quality Management Plan in Appendix 11.

## 4.10 - In Response to Section 5 Part G Paragraph 2.B.4

*Establishing and administering processes and controls to ensure that project schedules are met. In addition, the Contractor must prepare and submit project status reports on a weekly and monthly basis identifying status of key deliverables and milestones, tasks in progress, tasks completed, planned upcoming tasks, identified issues, and identified risks.*

The CapTech Project Manager will be responsible for preparing and communicating project status. Key stakeholders will be identified and will be provided with the project status on a weekly basis.

### Project Status Report

STATUS REPORT PERIOD: [Date or Range]

CURRENT STATUS:	Green	PREVIOUS STATUS:	Yellow						
SCOPE:	G	SCHEDULE:	G	BUDGET:	G				
Give a brief summary of the points that this status report updates on, pulling out key discussion points that highlight the report. Include overall path to Green, if applicable.									
<strong>ACTIVITY SUMMARY</strong>									
Accomplishments		Planned Activities							
<ul style="list-style-type: none"> <li>List key achievements from the report period</li> <li>Brief description or title</li> <li>Provide specific completion dates, if applicable</li> </ul>		<ul style="list-style-type: none"> <li>List next steps</li> <li>Include brief description or title</li> <li>Provide target dates, if applicable</li> </ul>							
<strong>KEY RISKS / ISSUES</strong>									
Ref ID	R/I	Description		Risk Mitigation or Issue Resolution					
4	R	List major risks identified in the report period. Use the reference ID from the project risk log.		Note the risk response (i.e., if the risk will be mitigated, accepted, avoided, or transferred)					
8	R	Note if the risk is near-term or mid-term. Include long-term risks if appropriate for audience.		Include the plan to implement the selected risk response					
9	I	List major issues that came up in the report period as well		Include the issue resolution or plan for resolution					
<strong>DECISIONS / DISCUSSIONS</strong>									
<ul style="list-style-type: none"> <li>List important decisions that were made during the report period</li> <li>List key discussions that took place during the report period</li> <li>Include stakeholders who were involved</li> </ul>									

Figure 40 - Sample Status Report

## 4.11 - In Response to Section 5 Part G Paragraph 2.C

### **Project Management Tools**

DMV currently utilizes Microsoft tools for daily activities supporting the project. The Supplier must propose any additional recommended automated project management tools to be utilized during the project.

CapTech will leverage DMV Microsoft Tools for daily activities to support the project. We will use Azure DevOps (ADO) to track and manage all project-related work items, including Epics, Features, User Stories, and Bugs. The approach to how to best utilize these tools may be updated based on feedback discussed between the Contractor and DMV.

- **ADO Boards**

- Epic Kanban Board shows all project Epics in a single Kanban view for easy visualization.
- Feature Kanban Board shows all project Features in a single Kanban view for easy visualization.
- Team Board shows Team backlog and sprint progress of work items.

- **Dashboards**

- Provides visibility into Team progress and Feature/Epic progress against the plan.

- **SharePoint:** The DMV Project will use SharePoint as a document repository to manage all project-related documentation. Using a centralized, structured tool for document management affords greater visibility and alignment to important project documents. The approach to how to best utilize this document repository may be updated based on feedback discussed between the CapTech and DMV.

- Examples of project documentation include:
  - Status Reports
  - Design Documentation
  - Technical Documentation
  - Templates
  - Meeting Recordings

## Part 5 – Project Staffing Proposal

## 5.1 - In Response to Section 5 Part H Paragraph 1

### **PROJECT STAFFING REQUIREMENTS**

*The Contractor shall provide the expertise and manpower necessary to perform the tasks to accomplish the requirements of this EPD. Contractor staff will also train and coach DMV staff during the life of the project.*

With five hundred (500) consultants local to Richmond and the Northern Virginia DC Metro area, CapTech is uniquely prepared to meet DMV's staffing needs and requirements for this transformational modernization project. We will bring best-in-class talent that our national competitors cannot match, and our headquarters is only a short five and a half (5.5) miles from DMV's central office, enabling unrivaled access to our staff and leadership. Not only will our teams bring relevant public services delivery expertise, but we will also bring over twenty (20) years of experience delivering for Commonwealth of Virginia agencies. Our teams have the necessary expertise and experience to perform the tasks and requirements of the EPD, and our connections to this community instills in us a shared purpose to accomplish this modernization for the benefit of all Virginians.

We also understand that it is equally important to deliver a Modernized CSS Solution and to enable long term ownership of the Modernized CSS Solution by the DMV after this project ends. Our goal is to partner closely with DMV on all aspects of this project from leadership to architecture and product / feature delivery, with DMV staff and CapTech consultants allocated to the same teams for daily collaboration. We have found that people learn best by working together, and long-term ownership requires both working knowledge and direct experience working with a solution. We plan to provide right-sized training and documentation, but there is simply no better way for DMV staff to learn, take on support responsibilities, or enable long-term ownership than by being directly involved with the delivery of the solution. Please see Part 3 – Modernized CSS Solution Proposal, Part 4 – Project Management Proposal, and Part 8 – Training Proposal for more information about how we plan to structure and govern teams, deliver the project, meet project management requirements, and collaborate with, coach, and train DMV staff to enable long-term ownership.

Overall, we believe our staffing approach provides several distinct benefits to DMV:

- We plan to allocate a proven leadership team that includes CapTech's Senior Account Executive to the Commonwealth of Virginia since 2019, a supporting Project Management Professional (PMP) certified project manager who has supported the DMV for multiple years, and a cohesive team of functional, technical, and Agile leaders who have all led similarly sized, large state or commercial system modernization projects.
- We will provide streamlined and cost-effective leadership—avoiding redundant management layers by assigning leaders who add more than just oversight and contribute to shaping the solution, estimating work, reviewing code, facilitating testing, validating features and capabilities, and optimizing flow of work to maximize speed of delivery and minimize risks.
- We use 100% W-2 employees to yield better team continuity (lower turnover and higher satisfaction), as well as a higher level of communication with DMV.
- Our team will have experience serving both commercial businesses and government clients—allowing them to produce a Modernized CSS Solution that leverages commercial and government best practices.
- Our approach will integrate CapTech and DMV resources onto collaborative teams throughout requirements definition, development, validation, deployment/release, and transition of the system to DMV internal teams for long-term ownership and sustainment.

- Our headquarters is in Richmond, VA and more than sixty (60) percent of our Principals, Fellows, Managing Directors, and Directors work out of our Richmond or Reston offices, enabling unrivaled access to CapTech's leadership, subject matter experts, and corporate resources.
- We have over 1,000 national consultants, with approximately 300 consultants local to Richmond, VA and 200 associated with our Reston, VA office totaling 500 consultants in Virginia. We predict we will be able to provide more local talent who understands the importance of this project to all Virginians.
- We will bring a balanced staffing approach of approximately 33% staff with up to 5 years of experience, 33% of staff with 5-9 years of experience, and 33% of staff with >10 years of experience to enable DMV to achieve project objectives while realizing the best cost to value and outcomes ratio possible.
- Our consultants hold over 125 Microsoft / Azure certifications, nearly 600 Agile certifications, and hundreds of other certifications that will be relevant to this project, enabling us to onboard qualified practitioners who will implement solutions that align to industry best practices.
- We will allocate 10% of our estimated hours to SWaM subcontractors in alignment with the Commonwealth of Virginia's policy to contribute to the establishment, preservation, and strengthening of small business and micro businesses.

## 5.2 - In Response to Section 5 Part H Paragraph 2 Overview and 2.A

*The Contractor shall provide an appropriate level of Contractor project staffing necessary to complete all tasks and deliverables as defined and required in this EPD. Contractor staffing must include, but is not limited to:*

- A Contractor Project Manager available on-site at DMV on a full-time, 5-days per week basis, throughout the duration of the project until Final Acceptance has been achieved.
- An appropriate level of Contractor technical and support staff necessary to complete all tasks and deliverables on schedule and satisfy the requirements of this project.

DMV requires Contractor staff available and working on-site at DMV on a full-time basis, 5 days per week, throughout the duration of the project for mutually agreed upon resources. While DMV may approve some off-site performed by some Contractor staff, off-shore Contractor staffing and project work will NOT be allowed. The Contractor should provide continuity of staff throughout life of the project to the maximum extent possible.

DMV plans to assign an appropriate level of DMV staff to the overall project team in order to ensure self-sufficiency once the Modernized CSS Solution is fully deployed. DMV anticipates providing 2 SQL Server DBAs with varying skills. In addition, DMV anticipates providing approximately 15 developers and analysts. This staffing is subject to change based on needs to maintain the existing CSS system.

The Supplier must provide proposed project staffing plans and approaches for each stage of the project (and each scenario of stage 2) that clearly defines and describes the following in detail:

- a) The projected staffing requirements and skill set recommendations including how Contractor and DMV staff will be utilized to complete all tasks to meet milestones and deliverables for all project stages.

### Overall Staffing Approach

CapTech welcomes the opportunity to work on-site and in-person with DMV at either DMV's location in Richmond, Virginia or CapTech's location in Richmond, Virginia. Our goal is to provide a staffing plan that enables the best project outcomes, and we commit to implementing an approach that provides full-time, 5 days per week onsite coverage and availability by either mutually agreed upon primary resources or senior/lead resource(s) supporting the primary resource's responsibility areas throughout the duration of the project until DMV provides Final Acceptance. Our preference is to utilize a hybrid work arrangement with two to four (2-4) days onsite by all local resources because we have seen consultant and team performance, satisfaction, and efficiency improvements using this model, but we are open to negotiating this approach with DMV. For those resources local to Richmond, VA we propose that entire teams coordinate and align their onsite / offsite days to maximize opportunities for in-person collaboration and remote productivity.

While many of our staff will be local to Richmond, Virginia, we do plan to utilize some onshore, remote resources. Utilizing a mix of onsite, hybrid, and remote resources will require robust utilization of modern application lifecycle management (ALM) tools such as Azure DevOps, collaboration/communications tools such as Microsoft teams, and secure remote access to all necessary resources and environments to enable work is visible and available to all team members. Ultimately, this is the way that many private sector companies and government agencies are now operating, and utilizing this approach during the project is foundational to DMV preparing to own this solution long term. Many IT workers now desire hybrid and remote work arrangements, and DMV adapting to accommodate this work model can support larger goals around attracting and recruiting some of the industry's top talent to sustain and own this solution long-term.

### High-Level Teams and Staffing Approach

Our overall team and staffing approach aligns to our delivery principles of optimizing flow of work to maximize speed of delivery while minimizing risks and enabling long-term ownership by DMV. Our team topology will include a lean project leadership team, multiple long-standing product / feature teams, three (3) shared services teams, and a small number of temporary teams to support Stage 1 scope and activities. We believe this team topology and staffing approach will not only serve this project well but will also enable long-term ownership of the solution by DMV after the project.

Please see Part 3 – Modernized CSS Solution Proposal and Part 4 – Project Management Proposal for a more detailed overview of our planned agile/iterative project management and delivery approach for each stage of the project (and each scenario of stage 2). Please note, our overall staffing approach will be similar in

either scenario for Stage 2, but ADOT MAX will require a longer duration as we will need to repeat many of the Stage 1 tasks and activities. In addition, we may need to allocate different resources with more experience with the several-years older generation of technologies that the ADOT MAX solution uses.

The following represents our proposed high-level team topology and staffing approach:

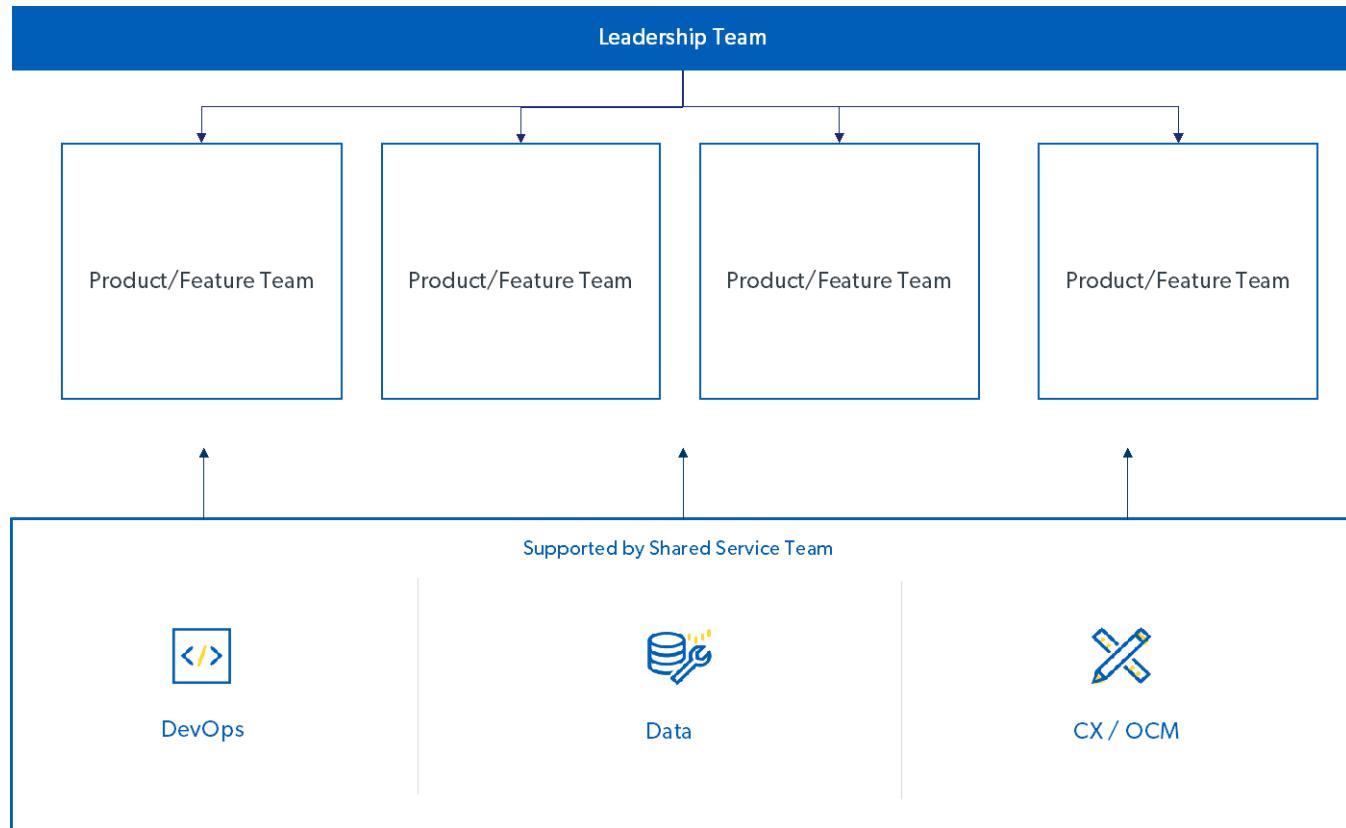


Figure 41 - Example High-Level Team Topology

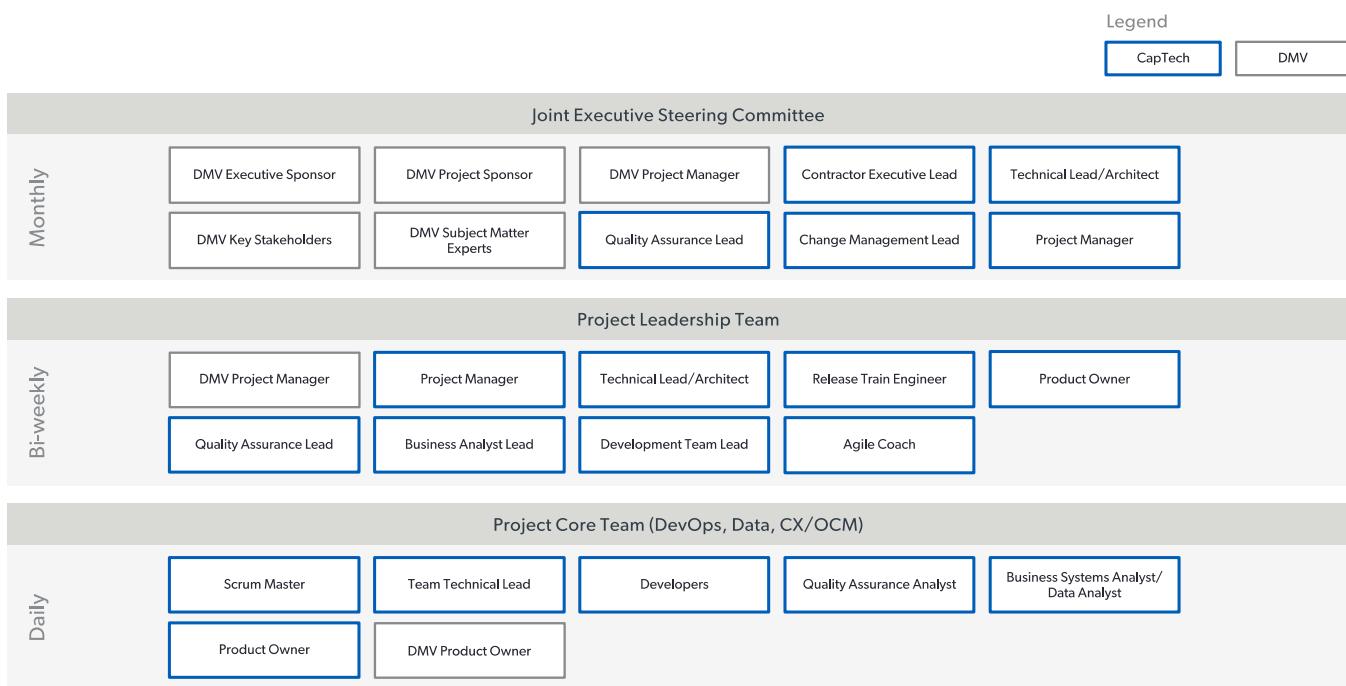


Figure 42 - Example Staffing Approach

## Project Leadership Team

We will begin by standing up a lean project management and architecture leadership team that includes CapTech and DMV Project Managers, technical and architecture leads, Agile leads, Product Owners, Scrum Masters, and other key DMV stakeholders. It is the responsibility of this leadership team to clearly prioritize work, make decisions on a timely basis, coordinate dependencies across teams and with external parties to maximize flow of work and mitigate integration risks, and proactively satisfy all compliance, architecture, and project management requirements that could impede the delivery teams. In addition, this project leadership team will coordinate with the Joint Executive Steering Committee, which also includes DMV and CapTech executives, workstream leads (e.g., quality assurance), relevant subject matter experts, and additional key stakeholders (e.g., information security and risk management).

## Product/Feature Teams

We will establish one to two (1-2) long-standing product/feature teams during Stage 1, then incrementally add two to three (2-3) additional teams during Stage 2 as we evaluate velocity, constraints, and the amount of “work in progress” that DMV and CapTech can realistically support together. Using this approach, we can provide DMV with a much more realistic roadmap for delivery, and we can have professional and open conversations early and throughout the project about project timelines based on our capacity and velocity metrics. For example, if we identify a constraint that is going to prevent us from hitting our velocity targets (e.g., if key project resources need to allocate more capacity to mainframe support than planned), then we can mutually agree to not ramp up an additional team, as adding more resources before or after the constraint will only amplify its affect. Following this example approach would enable us to extend the project to a more realistic date based on our joint capacity, and at a significantly lower (and potentially no additional) cost to DMV than if we had stuck to the plan and onboarded the additional team.

A typical product/feature team will include members from both DMV and CapTech. The Stage 1 teams will primarily focus on the POC scope across modern architecture and user interface requirements. As we move into Stage 2, we will align the product/feature teams to support areas such as credentialing, information provisioning, and tax processing. Each product/feature team will include five to seven (5-7) fully allocated team members and two to three (2-3) partially allocated team members with the necessary cross-functional skills and decision-making authority to deliver features and capabilities on a continuous basis. The DMV contingent will include a DMV Product Owner, developer, and analyst/QA resource. The DMV Product Owner and QA resources will be primarily responsible for assisting with mainframe analysis, approving work as ready for each stage of the development value stream (i.e., define, develop, validate, deploy/release), and supporting testing / validation activities within sprints / iterations. We will assign the DMV developers stories in the same manner as all other developers on the team. The typical CapTech contingent on the team will include an analyst / QA, two to three (2-3) development / data engineers, and at least one QA resource focused on test automation. Finally, we will allocate CapTech Scrum Masters and (Proxy) Product Owners across multiple teams to support ongoing backlog refinement, planning, and facilitation/flow of work.

### **Shared Services Teams**

The staffing plan is to set up three (3) long-standing shared services teams to support and enable the flow of similar work that all the product/feature teams depend on. The goal of most agile teams is to reduce dependencies that prevent completion work, but because so much of this project is concerned with establishing a cohesive, modernized architecture we believe it prudent to start out with shared services to support key architectural and user enablement areas. As the project progresses, we will evaluate whether we can move the members of these teams to the product/feature aligned teams to better enable the flow of work as we look for opportunities to continuously improve our quality and efficiency.

The shared services teams will include a data team focused on mainframe data migration and reporting, a DevSecOps team focused on continuous integration/continuous deployment/delivery (CI/CD) pipelines and testing automation, and a customer experience (CX) and organizational change management (OCM) team focused on user interactions and associated impacts to users embracing, adopting, and using the Modernized CSS Solution. These teams will be the same size as the product/feature teams, except most resources on the team will have skills aligned to their shared services area of expertise. Like the product/feature teams, we anticipate needing DMV Product / Shared Service Owners, DevOps engineers/DBAs, and analysts to each of the shared services teams. Likewise, we will allocate CapTech Scrum Masters and (Proxy) Product Owners across all these teams to support ongoing backlog refinement, planning, and facilitation/flow of work.

### **Stage 1 Temporary Teams**

During Stage 1, we will also need a few temporary teams to support some of the more unique workstreams and aspects of that. Specifically, we will stand up two to three (2-3) teams focused on installing, configuring, and developing enhancements for our innovative AI solution, LegacyLift. The CapTech contingent of the LegacyLift teams will include the architecture, Gen AI, data, engineering, analysis, and QA resources necessary to adapt this solution to DMV's unique needs. In addition, we will establish a temporary analysis team who will perform more traditional analysis and preparation activities to support go-forward planning and Stage 2 readiness. Like other teams, we will allocate CapTech Scrum Masters and (Proxy) Product Owners across these teams to support ongoing backlog refinement, planning, and facilitation/flow of work.

These critical enablement workstreams are crucial to helping us define the overall solution backlog and go-

forward plan for Stage 2. The members of these teams will either disperse into the product / feature or shared services teams after Stage 1, or they will roll off the project. The DMV contingent of these teams will primarily be architects and analysts who can help us gain access to, better understand, and validate source data and validate the features, stories, requirements, and testing scenarios we document.

### 5.3 - In Response to Section 5 Part H Paragraph 2.B

A detailed narrative identifying and describing the tasks that will be performed by DMV staff along with the suggested DMV staffing required to support these tasks. This includes the Supplier identifying and describing the expectations and responsibilities the Supplier would assign to DMV to ensure project success. DMV reserves the right to negotiate final project staff provided by DMV.

While we plan to establish many of the teams and bring the staff to deliver the Modernized CSS Solution, we can emphatically state that the overall success of this initiative is going to depend on DMV making this initiative a top organizational priority, DMV allocating sufficient staff to sustain project activities, and DMV doing everything within its power and authority to enable the creation of a development environment and culture that maximizes flow of work to increase speed of delivery while minimizing risks and rework. The following represent our primary expectations around what this project will need from DMV to be successful.

We need fully allocated DMV Staff who have sufficient authority and can make this project their #1 priority:

- Every sprint/iteration we are going to need DMV Product Owners and analysts to refine, prioritize, and approve work, provide near real-time feedback to developers, and accept/validate work. These resources need to have the delegated authority to make these decisions every sprint/iteration and they need the capacity allocated to support continuous inspection of small batches of work.
- We will need DMV developers and analysts to complete their assigned activities every sprint/iteration. Our teams will look to these resources for insights on how the mainframe operates today, and they need to be involved throughout the project to own the solution long-term. There will be no distinction between the expectations placed on CapTech and DMV developers and analysts during sprints / iterations.
- While we understand DMV requires a 30-day evaluation period for components in a production-like environment before acceptance, our teams need answers and feedback in minutes, hours, or days during sprints to sustain our work and prevent delays. Even a single day's delay will represent 40-60+ hours of potential cumulative lead time across features four to five (4-5) team members are waiting on. Likewise, issues found during the 30-day evaluation period will require four to five (4-5) times as much work to resolve than if we had identified those issues during the development sprints.
- Splitting resources across multiple teams with competing priorities doubles their meetings, reduces efficiency and effectiveness due to cognitive switching, and creates no-win situations, work overload, and burnout. To be successful, we highly recommend that DMV minimize the number of resources that are allocated to multiple teams. For those resources that DMV must assign to multiple teams, we need firm contracts on the amount of capacity they can provide to the modernization project to be able to forecast our delivery roadmap accurately.

We need DMV to make all mainframe work visible to us:

- Rather than assigning DMV team members to multiple teams, we need DMV to bring the mainframe work to them on our teams' boards and backlogs so that we can incorporate the changes into the Modernized CSS Solution, understand what our team's true capacity towards modernization is, and proactively adjust our delivery roadmap if our velocity, capacity, and/or scope change.
- We understand that the mainframe is going to need to change over the next 3.5 years to accommodate legislation and business priorities. DMV must make these changes visible to us and understands that these changes increase our risk, complicate modernization, and may require significant rework with associated costs and schedule impacts to this project.

DMV Support Teams must update their systems that integrate with the Modernized CSS Solution:

- Known DMV support teams include transactions.dmv.virginia.gov, EZ Haul, EZ Fleet, EZ Reg, VAETS, VirginiaMCS, and any other DMV-owned systems that will consume the new microservices.
- DMV will be responsible for integrating new services with existing user interface, performing regression, integration, and user acceptance testing.
- DMV will be responsible for providing a separate development and test environment from any existing environments used for production support.
- DMV must have source control and branching available to maintain an in-progress version of the code that integrates with the Modernized CSS Solution separate from the code that DMV uses in production today for any operations and maintenance activities.
- DMV must promote any production code changes to the integrated DMV-owned systems to the Modernized CSS Solution environments at least monthly.

DMV Training Team will be responsible for training and OCM activities with end users:

- Includes activities to train and prepare the customer support representatives, DMV Direct contact center users, work center users, and any other DMV employees that use the existing mySelect, DMV Select, DMV Direct, DMV Connect, or 3270 screens to perform their job functions today.
- DMV Training Team is responsible for creating and updating training materials, procedures, job aids, and any other materials that previously referenced the legacy mySelect, 3270 screens, or any other user interfaces that change during the project.
- DMV Training Team will be responsible for developing a training plan and executing training ahead of Stage 2 Go-Live.

DMV Communications Team will be responsible for communications to extended stakeholder groups:

- Includes agency-wide communications, communications to partners or third parties, and the public on project status, go-live readiness, and post go-live communications.
- DMV will develop a communication plan for employee awareness and go-live readiness.
- DMV will create any communications for public awareness, such as press releases.
- DMV will create any communications for employee awareness.

DMV Business Owners will be responsible for external party coordination:

- Includes communications with external parties and partners for awareness, testing coordination, go-live readiness, and go-live announcements. For example, Dealer Services will be responsible for coordinating any activities with the Motor Vehicle Dealer Board and approved vendors for the Online Dealer and Temporary Tag Print vendor products.
- Business Owners serve on our project leadership team, coordinate delivery dependencies, clearly

define priorities, and work across the agency to remove impediments that slow the delivery of work or increase risk. The Business Owners represent the first escalation path, and they in turn will escalate any issues they cannot resolve to DMV executive leadership.

DMV Architecture Team will be responsible for acquiring and provisioning the necessary technology:

- By week four (4) of the project, we the DMV Architecture Team to make available and ready all tools, infrastructure, data, technical documentation, accounts, access, software, environments, and components identified in our response to sustain project activities.
- DMV is responsible for securing the necessary approvals to procure, provision, and configure all technologies and services specified in this proposal by the project start date.
- Architects serve on our project leadership team and provide necessary proactive oversight to ensure teams are developing solutions in compliance with all applicable policy and standards.
- Any delays to securing the necessary approvals from outside architecture or security stakeholders (e.g., VITA) or delays to acquiring and/or provisioning the necessary infrastructure, environments, and data to sustain project activities will have the single, largest impact on the project as entire teams will be left idle or unable to complete necessary activities to deploy components to prod-like environments to support acceptance.

## 5.4 - In Response to Section 5 Part H Paragraph 2.C.1

A proposed Contractor staffing matrix in detail which clearly identifies:

- All proposed Contractor staff identifying each individual proposed and their role on the project, their specific skills, expertise, and level of expertise they will bring to the project.
- The time frame for each individual assignment and availability of each project team member.
- Proposed percentage of time each staff person is assigned and available to the project.
- Proposed percentage of time each staff person is working on-site at DMV in Richmond.
- Proposed percentage of time each staff person is working off-site on project activities.

The following tables represent CapTech's proposed staffing that we will utilize during the project, including each resource / role, time engaged, percentage of time allocated to the project, role descriptions, and level descriptions.

We anticipate each team having at least two to three (2-3) resources who will be local to Richmond, and approximately 70% of all resources being local to Richmond or our Reston offices. We commit that all local resources capable of coming on-site will come on site at least two (2) days per week, outside any specific exceptions or mutual agreements between DMV and CapTech.

Team	Resource / Role	Level	Allocation	Start Date (7/1/2024)	End Date (12/31/27)
Leadership Team	Project Manager (Sr. Account Executive)	Expert	100%	7/1/2024	12/31/2027
	Project Manager	Senior 1	100%	7/1/2024	12/31/2027
	Agile Coach	Expert	50%	7/1/2024	12/31/2025
			10%	1/1/2026	12/31/2027
	Azure SI Architect	Expert	100%	7/1/2024	12/31/2025
			50%	1/1/2026	12/31/2027
	Azure Data Architect	Expert	100%	7/1/2024	12/31/2025
			50%	1/1/2026	12/31/2027
	Functional Architect	Expert	100%	7/1/2024	12/31/2025
			50%	1/1/2026	12/31/2027
	Creative Director	Expert	50%	7/1/2024	3/31/2025
			20%	4/1/2025	12/31/2025
			5%	1/1/2026	12/31/2027
	Quality Assurance Lead	Expert	100%	7/1/2024	12/31/2027
	Executive / Principal Oversight	Senior 1	10%	7/1/2024	12/31/2027

Figure 43 - Proposed CapTech Leadership Team Staffing

Product Teams 1 & 2	Role	Level	Allocation	Start Date	End Date
Product Team 1	Agile Scrum Master	Senior 1	100%	7/1/2024	12/31/2027
	Agile Product Owner	Senior 1	100%	7/1/2024	12/31/2027
	BSA / Product Owner Proxy	Mid-Level 2	100%	7/1/2024	6/30/2027
	Software Engineer / Lead	Senior 1	100%	7/1/2024	12/31/2027
	Software Engineer	Mid-Level 1	100%	7/1/2024	6/30/2027
Product Team 2	Software Engineer (SWaM Subcontractor)	Mid-Level 1/2	100%	4/1/2025	6/30/2027
	QA / Test Automation	Associate	100%	4/1/2025	12/31/2027
	BSA / Product Owner Proxy	Mid-Level 1	100%	7/1/2024	12/31/2026
	Software Engineer / Lead	Senior 1	100%	7/1/2024	12/31/2027
	Software Engineer	Mid-Level 1	100%	4/1/2025	12/31/2026
Product Team 3	Software Engineer (SWaM Subcontractor)	Mid-Level 1/2	100%	4/1/2025	6/30/2027
	QA / Test Automation	Associate	100%	7/1/2024	12/31/2027
	BSA / Product Owner Proxy	Mid-Level 1	100%	12/1/2025	6/30/2027
	Software Engineer / Lead	Mid-Level 2	100%	4/1/2025	12/31/2027
	Software Engineer	Mid-Level 1	100%	5/1/2025	6/30/2027
Product Team 4	Software Engineer (SWaM Subcontractor)	Mid-Level 1/2	100%	5/1/2025	6/30/2027
	QA / Test Automation	Associate	100%	5/1/2025	12/31/2027
	BSA / Product Owner Proxy	Mid-Level 1	100%	12/1/2025	6/30/2027
	Software Engineer / Lead	Mid-Level 2	100%	12/1/2025	12/31/2027

Figure 44 - Proposed CapTech Product Teams 1 & 2 Staffing

Product Teams 3 & 4	Role	Level	Allocation	Start Date	End Date
Product Team 3	Agile Scrum Master	Mid-Level 2	100%	4/1/2025	6/30/2026
	Agile Product Owner / Proxy	Mid-Level 2	100%	4/1/2025	6/30/2026
	BSA / Product Owner Proxy	Mid-Level 2	100%	4/1/2025	6/30/2027
	Software Engineer / Lead	Mid-Level 2	100%	4/1/2025	12/31/2027
	Software Engineer	Mid-Level 1	100%	5/1/2025	6/30/2027
Product Team 4	Software Engineer (SWaM Subcontractor)	Mid-Level 1/2	100%	5/1/2025	6/30/2027
	QA / Test Automation	Associate	100%	5/1/2025	12/31/2027
	BSA / Product Owner Proxy	Mid-Level 1	100%	12/1/2025	6/30/2027
	Software Engineer / Lead	Mid-Level 2	100%	12/1/2025	12/31/2027

	Software Engineer	Mid-Level 1	100%	1/1/2026	6/30/2027
	Software Engineer (SWaM Subcontractor)	Mid-Level 1/2	100%	1/1/2026	6/30/2027
	QA / Test Automation	Associate	100%	1/1/2026	12/31/2027

Figure 45 - Proposed CapTech Product Teams 3 & 4 Staffing

<b>Shared Services Teams</b>	Agile Scrum Master	Senior 1	100%	7/1/2024	12/31/2026
	Agile Product Owner	Senior 1	100%	7/1/2024	12/31/2026
Data Team	Data Engineer	Senior 1	100%	7/1/2024	12/31/2027
	Data Engineer / Reporting	Mid-Level 2	100%	7/1/2024	12/31/2027
	Data Engineer / Reporting (SWaM Subcontractor)	Mid-Level 1/2	100%	4/1/2025	6/30/2027
	Data Engineer / Technical Analyst	Mid-Level 1	100%	4/1/2025	6/30/2027
	Data Engineer / Technical Analyst	Associate	100%	4/1/2025	6/30/2027
	DevOps Engineer	Senior 1	100%	7/1/2024	12/31/2027
DevOps and Quality Automation	DevOps Engineer	Mid-Level 1	100%	7/1/2024	12/31/2027
	Testing Analyst / Quality Engineer	Associate	100%	4/1/2025	6/30/2027
	Testing Analyst / Quality Engineer (SWaM Subcontractor)	Mid-Level 1/2	100%	1/1/2027	12/31/2027
	CX Architect / Accessibility Lead	Mid-Level 2	100%	7/1/2024	6/30/2026
CX & OCM			50%	7/1/2027	12/31/2027
	Visual Designer	Mid-Level 1	100%	7/1/2024	3/31/2025
	UX / Accessibility Analyst	Associate	100%	7/1/2024	12/31/2024
	Org. Change Management Lead	Mid-Level 2	100%	1/1/2027	12/31/2027
	Org. Change Management Analyst	Associate	100%	1/1/2027	12/31/2027

Figure 46 - Proposed CapTech Shared Services Team Staffing

<b>Temporary Teams</b>	Agile Scrum Master	Senior 1	100%	7/1/2024	3/31/2025
Analysis Team	BSA / Product Owner	Senior 1	100%	7/1/2024	3/31/2025
	BSA / Product Owner	Mid-Level 2	100%	7/1/2024	3/31/2025
	BSA / Product Owner	Mid-Level 2	100%	7/1/2024	3/31/2025
	BSA / Product Owner	Associate	100%	7/1/2024	3/31/2025
	Data Architect	Senior 1	100%	7/1/2024	12/31/2024
Innovation & Environment Architecture	AI Solution Architect	Senior 1	100%	7/1/2024	12/31/2024
	AI / ML Engineer	Senior 1	100%	7/1/2024	12/31/2024
	DevOps Engineer	Mid-Level 1	100%	7/1/2024	12/31/2024
	Data Engineer	Mid-Level 2	100%	7/1/2024	12/31/2024
	Data Engineer	Mid-Level 1	100%	7/1/2024	11/30/2024
	Technical Analyst / Product Owner	Mid-Level 2	100%	7/1/2024	11/30/2024
Gen. AI Team	Gen AI Engineer	Senior 1	100%	7/1/2024	12/31/2024
	Gen AI Engineer	Mid-Level 2	100%	8/1/2024	11/30/2024
	Gen AI Engineer	Mid-Level 1	100%	8/1/2024	11/30/2024
	QA / Test Automation	Associate	100%	8/1/2024	12/31/2024
	Technical Analyst / Product Owner	Mid-Level 1	100%	7/1/2024	11/30/2024
	Software / DevOps Engineer	Senior 1	100%	7/1/2024	12/31/2024
Innovation Engineering Team	Software Engineer	Mid-Level 2	100%	8/1/2024	11/30/2024
	Software Engineer	Mid-Level 1	100%	8/1/2024	11/30/2024
	QA / Test Automation	Associate	100%	8/1/2024	12/31/2024

Figure 47 - Proposed CapTech Temporary Teams Staffing

The following represents CapTech's standard roles, role descriptions, and common alternative names for each role that DMV may better identify with:

ROLE	DESCRIPTION	ALTERNATIVE ROLE NAME
Industry or Functional SME	Guides and supports client delivery, formulates business strategies leveraging specific industry and/or knowledge.	Business Strategist, Industry Expert, Technical Expert

ROLE	DESCRIPTION	ALTERNATIVE ROLE NAME
<b>Architect</b>	Designs an application, system, platform, or data structure to meet specified business requirements and non-functional (scalable, consistent, partitioned, etc.) requirements. Able to communicate, lead and influence across levels (developers, product owners/manager, business leaders, etc.).	Functional / Technology (Specific Technology or Coding Language), Solution (System Design) or Creative (UI/UX Design), Tech Lead, Tech Team Lead
<b>Project Manager</b>	Keeps track of an information systems project either from inception to deployment or through a single stage. Project managers have varying levels of responsibilities and authority.	Project Manager
<b>Org Change Management (OCM) / Org Design</b>	Formulates organization change management plans and/or organizational designs to help companies successfully implement process and technology changes.	OCM Specialist, OCM Analyst, Trainer, Communications
<b>Business Systems Analyst (BSA)</b>	Elicits functional and technical requirements from end users and stakeholders. Works with architects and technical leads during solution design. Design and modify systems by turning user requirements into a set of functional specifications. They design the database or help design it if data administrators are available. They develop the manual processes, system procedures and detailed processing specifications for each data entry, update, query, and report program in the system.	Business Systems Analyst, Process Engineer, Technical Business Analyst
<b>SaaS Admin / Configuration</b>	Resource who understands how to deliver solutions using specific Software as a Service product. In general, lower experience levels correlate to admins / analysts while more experienced roles are Solution / Configuration Specialists.	Administrator / Solutions / Configuration, Power Platform, Dynamics, SharePoint, Azure DevOps
<b>Testing / Quality Analyst</b>	Formulates and executes system, integration, and load test plans. Develops overall testing strategies and guides usage of testing tools.	Quality Assurance
<b>Agile - Scrum Master / RTE</b>	Specifically skilled and knowledgeable in scrum, Kanban, and scaling practices to assure teams have the proper practices in place to be successful. This role is responsible for the quality of the agile practices being employed to manage work.	Scrum Master, Junior Scrum Master, Senior Scrum Master, Release Train Engineer, Senior Release Train Engineer, Portfolio Manager
<b>Agile - Product Owner / Manager</b>	Specifically skilled at leading teams and teams of teams by defining the importance of work. Product Owners and Managers examine the key stakeholders' and users' needs of a solution, understand the technology employed and the needs of the team to be able to continuously improve. Product Owners and Managers are accountable to make sure the teams are doing the most impactful work possible.	Product Owner, Product Manager, Senior Product Manager, Senior Product Coach, Senior Product Lead, Chief Product Owner, Product Owner Proxy

ROLE	DESCRIPTION	ALTERNATIVE ROLE NAME
<b>Agile - Coach</b>	Experienced leading teams, teams of teams, and governing bodies through a move to agile ways of working. Expertise in Scrum, Kanban and multiple scaling techniques and frameworks. Coaches work with Team Members, Product Owner, Scrum Masters, Release train Engineers, Product Managers, Architects and Tech Leads, as well as organizational leaders looking to find better ways of working. Agile coaches work with all involved to help build self-sustainability in continuous improvement for Product teams, and solution-oriented programs and portfolios of work	Team Coach, Senior Team Coach, Program Coach, Portfolio Coach, SAFe SPC / Specialist, LACE Expert / Coach, Agile Transformation Lead
<b>Data Engineer</b>	Responsible for the physical design, configuration, and management of the database and for the evaluation, selection, and implementation of the DBMS.	Data Engineer, ETL
<b>Technical Analyst</b>	Designs and develops queries, reporting, forecasting, and data mining.	Data Analyst, Tableau / Power BI Developer, Data Visualization
<b>Machine Learning</b>	Develops statistical models to derive business insights. Provides expertise and guidance tools specific to Big Data/Machine Learning.	Data Scientist, SAS / R / Python Developer, Machine Learning, Advanced Analytics, Data Governance, Big Data Engineer, Data Engineer - Distributed Systems
<b>SaaS Engineer / Developer</b>	Technical resource who understands how to deliver solutions using specific Software as a Service product. In general, lower experience levels correlate to engineers / developers while more experienced roles are Technical Leads.	Developer / Engineer / Tech Lead, Power Platform, Dynamics, SharePoint, Azure DevOps
<b>Software Engineer</b>	Designs, writes and unit tests application components applying patterns related to the solution (e.g., .NET).	Web, Cloud, Front-End, Back-End and/or Services Developers, DevOps
<b>Customer Experience - UX, UI, Insights, and Accessibility</b>	Provides targeted design expertise. UI: Responsible for overall UI design, components and visuals, and collaboration with development. UX: Responsible for solution and research activities and producing UX artifacts such as user flows and wireframes. Supports usability testing efforts and design iterations. Insights: Performs a full scope of research and usability testing efforts across engagements or as a standalone service. Accessibility: Works with CX, D&A and SI teams to test conformance to industry (WCAG) standards, as specified in the contract, through the life of the project including design and development.	UX Analyst, Interaction Designer, UX Architect, Visual Designer, Art Director, Accessibility Analyst, Accessibility SME
<b>Copywriting and Content Strategist</b>	Provides copywriting and content oversight for all developed material. Copywriting: Understands client's products/services and assures adherence to brand guidelines and content goals. Works with UX and design team to develop and write content that supports the experience and business goals. Content Strategist: Monitors engagement and performance of digital experiences, measures analytics data, recommends SEO best practices.	Copywriter, Content Strategist

ROLE	DESCRIPTION	ALTERNATIVE ROLE NAME
<b>Creative / UX Director</b>	Aligns customer needs with business vision, goals, and brand; develops strategy to design, manage, and optimize the Client-owned experience; and provides insights to drive ongoing development. Oversees all creative, research, and strategic deliverables, provides direction, and test quality for all design and strategy activities and outputs.	Creative Director, UX Director

Figure 48 - CapTech Roles and Responsibilities

The following represents the typical number of years of experience for each role level, along with the typical CapTech title for each role level. Note, this is representative only and there are many examples where role level, years of experience, and CapTech title may not align for a wide number of reasons:

ROLE LEVEL	TYPICAL # YEARS OF EXPERIENCE	TYPICAL CAPTECH TITLE
<b>Associate</b>	0-2 Years of Experience	Associate
<b>Junior</b>	1-3 Years of Experience	Consultant
<b>Mid-Level 1</b>	2-6 Years of Experience	Senior Consultant
<b>Mid-Level 2</b>	4-10 Years of Experience	Manager
<b>Senior 1</b>	8-12 Years of Experience	Senior Manager
<b>Senior 2</b>	10+ Years of Experience	Director
<b>Expert</b>	15+ Years of Experience	Managing Director / Principal Technical Director / Fellow

Figure 49 - CapTech Experience Levels

## 5.5 - In Response to Section 5 Part H Paragraph 2.C.2

*A narrative describing any sub-contractors that Supplier plans to use during the project, including the scope of work, qualifications, and how quickly the sub-contractor staff can be provided.*

We plan to include at least one (1) subcontractor resource on each product / feature team and shared services team. We will primarily utilize subcontractors to support development, quality assurance, data migration, test automation, and security testing activities. We anticipate the total subcontractor hours to be approximately 10% of the total CapTech project hours. We have partnered with our subcontractor, Astyra, on many occasions, including at the DMV over the past several years. Astyra can typically staff resources with two to four (2-4) weeks advance notice plus any time it takes to complete necessary onboarding processes with DMV. Please see section 10.5 for an overview of our subcontractor, Astyra, and corresponding information related to their qualifications. Please see Appendix 2 for the Small Business Subcontracting Form.

## 5.6 - In Response to Section 5 Part H Paragraph 2.C.3

*The resumes of all key members of the proposed Contractor project team. The resumes of all key Contractor project personnel being proposed to staff the project must include an overview of each person's role and whether they will be assigned part-time or full-time to the project. Resumes must reflect qualifications and recent experience relevant to the scope of work and areas of expertise required for this specific project. DMV reserves the right to interview all project personnel proposed by Supplier and either confirm the recommendations or request alternates.*

### Account Executives



Name  
**Jason Leonard**

Location  
**Columbus, OH**

Position  
**Account Executive**

CapTech Tenure  
**5 years**

## Summary

Jason serves as the Public Services and Healthcare Portfolio lead, overseeing client delivery for existing clients, as well as supporting growth initiatives within these industries. With more than 15 years of experience serving key client relationships, Jason has successfully led teams responsible for executing enterprise modernization strategies across Public Service and Private Sector clients. As a former executive at the largest automotive retailer, he has a deep understanding and appreciation for the lifecycle of processes required by both vendors and customers of the DMV. Alongside portfolio responsibilities, Jason serves as the market lead for CapTech's more than 100 Columbus and Chicago based Consultants while sitting as the Executive Sponsor for CapTech's AAPI at CapTech Employee Resource Group (ERG).

## CapTech Experience

### Public Services and Healthcare

### Partner and Industry Lead

Jason is responsible for CapTech's go-to-market strategy, delivery of IT professional services, and account management practices for more than 25 Public Service agencies and Healthcare clients. Jason works collaboratively to facilitate delivery, relationship building, engagement and retention strategies for CapTech's entire industry portfolio.

### Additional Relevant Experience

#### The Connor Group

#### Vice President

Jason oversaw the analysis of acquisitions and dispositions for multi-family properties with \$2.5 billion in assets under management. He directed restructuring plans through the development of a 10-associate leadership team to ensure department turnaround. He collaborated with executive partners to review, adjust, and manage objectives and goals. He received "Rookie of the Year Award" for top 2019 performance. He implemented strategies to grow volume from \$600 million dollars to over \$1 billion dollars within the first year.

#### CarMax

#### Associate Vice President - Sales

Jason defined and executed B2C sales initiatives through sponsorship of the strategic planning process, ownership of content development, and the execution of change management to support new and existing initiatives for more than 6,000 Sales Consultants across greater than 200 locations. He coordinated with c-level, field regional, and store management teams to evaluate people, processes, and systems to continuously improve individual and overall team performance in key metrics. He selected talent for the sales organization, assisted with team leadership, and completed P&L management as required. He developed training content leading to a 6.3% improvement in sales conversion in fiscal year 2018. He optimized customer transfer route pricing, saving more than \$10 million dollars in annual subsidy spend.

#### CarMax

#### Regional Vice President – Focus Forward

Jason directed large-scale strategy and business modernization initiatives from concept, through development, and finally sustainment. He handled budget forecasting and oversight, request for proposal (RFP) management, and leading communication efforts across 13 remote field regional teams. He led as many as 8 internal and remote Product Teams

that worked on consolidation of the organization's PowerBuilder systems for new enterprise Master Data Management (MDM), Customer Relationship Management (CRM), Dealer Management (DMS) and Transportation Management Solutions (TMS). He led foundational deployment of Master Data Management technology (MDM) to establish a 360° Customer View. He directed the development and deployment of Salesforce Customer Relationship Management Solution (CRM) to more than 6,000 sales consultants across more than 200 locations. He performed capability gap analysis of enterprise productivity solutions, resulting in selection and implementation of Office365 for Business.

#### **CarMax**

#### **Regional Vice President – Merchandising**

Jason led all Merchandising activities within CarMax's Phoenix Region. He collaborated with more than 50 business leaders in the Sales, Service, HR, and Asset Protection Departments monthly to ensure project goals were met. He managed daily operations for 1,500 associates across 16 locations and 10 auctions in Arizona, Texas, Oklahoma, California, Utah, Colorado, New Mexico, and Idaho. He performed recruitment activities and P&L management of processes associated with vehicle acquisitions, inventory, pricing, and margin management totaling \$175 million monthly. He provided requirements to revamp how CarMax Buyers complete appraisals, totals exceeding 2 million annually, resulting in more than \$1.1 billion dollars in annual spend. He achieved Gallup® overall workgroup engagement score of 4.94/5.0 ranking in the 97th percentile of Gallup participants.

#### **CarMax**

#### **Senior Project Manager**

Jason trained more than 300 employees and documented baseline performance vs progress for new vehicle appraisal, sales, and finance processes for CarMax's "NextGen" store format via 13 grand openings in Iowa, Colorado, California, Pennsylvania, Texas, Maryland, Missouri, Tennessee, and Georgia. He leveraged the Prosci® ADKAR® model for change management to ensure the implementation of process and technology changes while being responsible for creating and delivering business performance updates to c-level executives. He exceeded performance to model by 9.0-points for new vehicle appraisal, sales, and finance processes. He achieved a 6.8-point improvement in net promoter scores for vehicle appraisal and shopper customers.

#### **CarMax**

#### **Purchasing Manager & Senior Buyer**

Jason managed all aspects of the purchasing department at 7 assigned in 5 States (OH, SC, GA, KY, TN). Jason led operations, inventory acquisitions, vehicle margin management, and guidance for cross-functional teams of up to 250 associates. He maintained the monthly budget for inventory acquisition, pricing, and margin management at more than \$10 million dollars. He was awarded consecutive "Build a Better CarMax" top company performance awards in 2012 and 2013 for excellence in sales, customer service, and inventory management performance.

#### **Background**

- CapTech 2019 – Present
- The Connor Group 2019 – 2019
- CarMax 2007 – 2019

#### **Certifications**

- Certified Scrum Product Owner (CSPO)

#### **Education**

- Masters, Business Administration/Management, University of Richmond
- Bachelors, Biochemistry, Ohio Dominican University



Name	Location
<b>Adam Hofheimer</b>	<b>Richmond, VA</b>
Position	CapTech Tenure
<b>Account Executive</b>	<b>19 years</b>

## Summary

Adam co-leads CapTech's healthcare and public services portfolios, bringing more than 20 years of transformation management experience. Leveraging his comprehensive technical experience and industry expertise, he focuses on supporting strategy, relationships, and large solution delivery to drive solutions and growth for CapTech's government clients, ultimately improving experience and outcomes while driving efficiency through automation. Among his many contributions, Adam has played a pivotal role in tackling fraud, waste, and abuse as well as developing new operating models that quantifiably improve citizen-to-government interactions. He has led several multimillion-dollar highly complex software modernization efforts that transformed government agency operations and technology landscapes, enabling agencies to run more efficiently and improving citizen and regulated business interactions through transparency, automation, and self-service.

## CapTech Experience

### CapTech Ventures, Inc.

### Principal, National Public Services Leader

Adam was recruited to build CapTech's government consulting practice from the ground up and is responsible for the company's public services solution development, marketing positioning, as well as providing executive oversight and account leadership nationally across CapTech delivery. Adam is responsible for the delivery of hundreds of consulting engagements over the last 20 years, accounting for over \$550MM in project size. Adam specializes in designing solutions that enhance the citizens-to-government experience, including large custom, cloud-based solutions with high user concurrency.

### State Workers' Compensation

### Industry Expertise and Executive Oversight

Adam has led five multi-year workers' compensation modernization engagements, all of which have resulted in successful agency transformations. These transformations include a decrease in manual work through automation, the implementation of citizen/regulated entity self-service, and improvements to both technology and business processes.

### State Pension

### Industry Expertise and Executive Oversight

Adam served as an engagement lead and provided executive oversight for a multi-year pension modernization project. The focus was to transform legacy processes and technology from a mainframe system to a modern .Net platform. Through this initiative, the technology and user experience were improved, enabling the implementation of the first ever fully online state employee retirement planning and retirement execution system. This program reduced complexity for users and significantly decreased annual technology operations associated with the sunset legacy monolithic mainframe, establishing a technical foundation for future improvements.

## Additional Relevant Experience

### AgroShield Specialty Chemicals

### Founder & President

Adam successfully raised venture capital, allowing for the establishment of operational headquarters and research offices. His responsibilities included developing new and profitable product verticals, directing day-to-day operations, ongoing product support, integrated marketing, and the management of technical developments around the globe. As

president, Adam also took on additional responsibilities such as business and market planning, P&L management, raising equity capital, and deal negotiations. Some selected highlights of Adam's achievements include inventing a polymer-based compound to protect plants from frost or freeze damage, raising \$2MM in venture and other equity capital, leading a 13-member product development team at two universities, where he provided focused vision, energy, and strategic planning which resulted in the successful development of a proprietary chemical used for protecting crops, and sourcing and managing OEM chemical manufacturers to produce chemical for market launch.

#### **Allianz Insurance**

#### **Marketing & Business Development Strategy Consultant**

Adam led the development of enhancement products for the world's largest credit card association. He exhibited success in full-lifecycle project planning and management, competitive research, requirements gathering, sales forecasting, risk analysis, and implementation of specialty insurance product portfolio. The success of the enhanced product allowed for a focus on business practice and strategy, leading to an increased client base, higher operating margins, and \$5MM in annual revenue. Some selected highlights of Adam's achievements include developing customized specialty insurance and loyalty products targeted to individuals, resulting in \$5MM in new annual revenues; managing the development of a Concierge Web-Portal, resulting in increased business operating margins; developing a concierge program in response to a client's needs, resulting in multimillion-dollar increases in sales; managing the re-development of the corporate web site, [www.worldaccess.com](http://www.worldaccess.com); performing competitive market research and analysis on emerging trends within the specialty insurance and financial markets industries, leading to more competitive product generation; and creating client proposals in response to Financial Services clients' RFPs.

#### **The Egg Factory - Roanoke, VA**

#### **Manager, Innovation Services**

Adam was relied upon by executive management to provide international program management, oversight, raising of venture capital, marketing, public relations and product development expertise and leadership. Some selected highlights of Adam's achievements include managing the development of company innovations from conception to sale; managing the complete development from concept to working prototype of spectacle lens technology and negotiating the license of this potential multi-billion dollar vision care product to Johnson & Johnson; screening innovations and technical opportunities to evaluate their business and technical merit; raised millions in venture and other equity capital; and conducting multiple series of qualitative and quantitative consumer research to support financial modeling calling for more than \$1 billion per year in top-line revenues.

#### **Background**

- CapTech 2005 – Present
- AgroShield Specialty Chemicals 2003 - 2005
- Allianz Insurance 2003 – 2004
- The Egg Factory 2000 - 2003

#### **Education**

- Master of Science Management of Technology, University of Virginia, McIntire School of Commerce
- Bachelor of Science Political Science, East Carolina University

## Representative Team Leads



Name  
**Jonathan Brown**

Location  
**Richmond, VA**

Position  
**Technical Architect**

CapTech Tenure  
**18 Years**

## Summary

Jonathan has over 25 years of industry experience including design, development, and implementation of enterprise solutions. He has extensive systems architecture and development experience gained through the repeated use of recognized software methodologies and industry best practices. Jonathan has led large project teams, ensuring that quality standards are met and collaborating with clients' technical staff to ensure preparedness for system ownership. With effective communication skills, Jonathan has successfully managed and implemented large-scale modernization efforts in both public and private sectors. He is a Microsoft Certified Professional Developer, and has experience in development technologies including .NET, Azure, AWS, HTML/CSS/JavaScript, Angular and React. He has experience in analysis, design, and development of web, portal, distributed, and enterprise software solutions.

## CapTech Experience

### **Leading Provider of Specialty Logistics Services**

### **Solution Architect**

Jonathan worked with a global logistics company to fully automate order shipments from order creation through to final delivery. As an architect on the project, he designed an event-based solution architecture that decoupled and automated the various stages of the shipment process. Jonathan incorporated a variety of technologies into the final solution, including MuleSoft for systems integration, Power Platform for hyper-automations and RPA, machine learning for historical recommendations, and generative AI for advanced decisioning.

### **State Employment Agency**

### **Solution Architect**

Jonathan led a large-scale effort to modernize a state employment agency's workers' compensation system. He designed and implemented a custom solution that included multiple internal and externally facing SPA applications, a microservices architecture (ASP.NET Core), integration with more than 20 internal and external systems, and multiple transactional and operational databases. Additionally, he designed and implemented one of the state's first portable, container-based cloud architectures on the Microsoft Azure platform.

### **Large Midwestern State**

### **Solution Architect**

Jonathan led a large-scale effort to modernize a state employment agency's workers' compensation system. He designed and implemented a custom system that included multiple Angular 5 web applications, an ASP.NET Web API service tier, operational SQL Server databases, and a data mart with SSRS reporting solution. In addition, he designed and implemented one of the state's first serverless cloud architectures running on the Microsoft Azure platform.

### **State Employment Agency**

### **Solution Architect**

Jonathan led the design and implementation of a program aimed at modernizing a state employment agency's workers' compensation system. The new system introduced a new external-facing portal that allowed stakeholders to access important information, submit forms, and check the status of their claims. In addition, the system replaced and automated numerous paper-based processes.

**State Employment Agency**

**Lead Architect**

Jonathan led an effort to implement a new workers' claims and insurance compliance management system for the state of Nevada. The new system modernizes the agency by replacing several legacy systems that no longer met the needs of the division. Jonathan designed and managed the implementation of a .NET-based system that included multiple web applications, a service tier, an operational SQL Server database, and a data mart with reporting solution.

**State Employment Agency**

**Lead Architect**

Jonathan was the lead architect on a large-scale project that involved multiple work streams collaborating to upgrade existing systems as well as build a new litigation management system that would become the system of record for workers' compensation claims in the state of Kentucky. Jonathan designed and managed the implementation of a multi-tier system that consisted of a new organizational API and several new ASP.NET web applications. He also designed and managed multiple parallel work streams, including the migration of millions of documents from FileNet to SharePoint, the implementation of a data mart for real-time reporting and analytics, and the migration and cleansing of data from legacy systems to the Litigation Management System.

**State Department of Environmental Quality**

**Architect and Technical Lead**

Jonathan led an effort to modernize the State Department of Environmental Quality's primary line of business system. The project involved replacing an existing Oracle Forms application with a new platform that used innovative web design principles. He led a team of developers that built a framework to support all the operations of the existing system. The framework consisted of an ASP.NET Web API that could be consumed by various modules representing organizational units within DEQ. Each module was a single-page application built using BackboneJS and Marionette. The framework that Jonathan and his team designed enabled multiple teams to begin simultaneously building all the modules to support DEQ's critical business processes.

**State Corporation Commission**

**Architect and Technical Lead**

Jonathan led an effort to modernize and enhance the State Corporation Commission's public-facing ecommerce application, eFile. He led a team of developers responsible for the implementation of large-scale system improvements to the existing ASP.NET MVC web application. He also designed and implemented a public-facing API built with ASP.NET Web API, which allows the SCC's high-volume customers to submit filings programmatically, greatly reducing the amount of manual paper processing required by the Commission's staff. As the technical lead, Jonathan led a year-long training effort to enable the SCC's technical staff to modernize their development skills and support the production system. He designed a curriculum, led presentations, created assignments, and provided guidance to the SCC's development team. At the conclusion of this training, the team was better equipped to not only support the existing system but begin working on other internal initiatives using similar technology.

**Fortune 500 U.S. Vehicle Retailer**

**Architect**

Jonathan served as an architect and lead developer on a team responsible for delivering a system that guides Fortune 500 U.S. Vehicle Retailer buyers in the acquisition of vehicles. He participated in the solicitation of requirements through frequent JAD sessions with business stakeholders. He led the design of the system and managed the implementation of the web application, which is currently used by hundreds of Fortune 500 U.S. Vehicle Retailer buyers every day. As the team-lead on one of the first Fortune 500 U.S. Vehicle Retailer projects that utilized ASP.NET MVC, Jonathan helped introduce the development staff to recognized patterns and best practices for implementation of the framework in other areas of the organization. He also made heavy use of JavaScript, AJAX, and single-page application (SPA) design to create a unique and rich user experience.

**Fine Wine Distributor**

**Architect**

Jonathan led an effort to design large-scale changes to an existing order management system, for the purpose of accommodating future business growth. He worked closely with business executives and systems users to document existing procedures, gather requirements, and, in many cases, assist with re-engineering existing business processes.

Jonathan was also responsible for generating a system design and creating a development plan based on the requirements. Finally, he helped oversee the development efforts and successful implementation of his design.

#### **Fortune 500 Holding Company**

#### **Integration Architect**

Jonathan was responsible for the design and implementation of a large-scale middleware solution that integrated a variety of disparate line-of-business systems. He worked closely with technical teams and business stakeholders to refine requirements and design solutions for the organization. By utilizing a technology stack that includes BizTalk Server 2009, SQL Server 2008, WCF, and .NET 3.5, he was able to successfully implement a catalog of reusable services that integrated legacy and future-state systems. In addition, Jonathan assisted with refining the Architecture and Integration Team's internal design and development process, as well as the team's realization of industry standards and best practices for service-oriented architecture. He also helped lead the process of establishing and documenting architectural and development standards, which helped streamline the build and deployment process.

#### **Virginia Department of Motor Vehicles (DMV)**

#### **Architect and Business Rules Management SME**

Jonathan participated in the detailed design phase of the DMV's enterprise system redesign initiative. He was responsible for the evaluation of architectural decisions and proposed system components to be included in the DMV's future state architecture. By providing valuable expertise in business rules management, Jonathan was able to effect organizational change in the way legislative changes are handled by the enterprise. By consolidating a collection of complex business rules into a single repository, rather than dozens of disparate systems, the DMV will be able to save time and resources that would otherwise be dedicated to reacting to changes.

#### **Medical Record Retrieval Company**

#### **Architect and Lead Developer**

Jonathan was responsible for the design and development of an HL7 message integration broker used to mediate, track, and administer the exchange of HL7 messages between medical practices and medical record keeping organizations. By utilizing a combination of BizTalk Server 2006 R2, BizTalk's Accelerator for HL7, WCF services, and ASP.NET web applications, he was able to develop the integration engine and supporting administrative solution. Jonathan participated in the full development lifecycle from requirements gathering through development, testing, and implementation. Jonathan's efforts led to the successful deployment of the first iteration of the HL7 integration broker, which is currently exchanging medical records for over fifty medical practices.

#### **Additional Relevant Experience**

##### **Circuit City**

##### **Lead Developer**

Jonathan assisted in the design and development of a tablet PC, smart client application, based on the Microsoft .NET 3.5 framework, and used by associates as an assisted selling tool in Circuit City retail stores around the country. By employing formal architectural standards, he was able to create a suite of supporting applications including SOAP and WCF web services, ASP.NET web applications, and WinForms administration tools. In addition, Jonathan helped lead an effort to design, build, and implement a scaled-down version of the application, which is hosted on handheld scanning devices running Windows Mobile. Jonathan also utilized Agile development methodologies, while leading the tablet PC development team and maintaining client communication. Jonathan's efforts have allowed Circuit City to deploy the tablet PC application to hundreds of tablets in over 60 stores around the country.

##### **Tele-Works, Inc.**

##### **Software Engineer**

Jonathan has over 20 years of industry experience encompassing analysis, design, development, and implementation of enterprise solutions. He has extensive systems design and development experience gained by utilizing recognized software methodologies and best practices. Jonathan has experience leading teams of developers, mentoring junior staff, and being the technical point of contact for project status and issue resolution. Through effective communication to both clients and technical teams, Jonathan has managed successful implementation of complex solutions. Jonathan is a Microsoft Certified Professional Developer, and has experience in development technologies including .NET, Azure,

AWS, HTML/CSS/JavaScript, Angular and React. He has experience in analysis, design, and development of web, portal, distributed, and enterprise software solutions.

#### **Fidelity Investments, Inc.**

#### **Senior Database Technician**

Jonathan has over 20 years of industry experience encompassing analysis, design, development and implementation of enterprise solutions. He has extensive systems design and development experience gained by utilizing recognized software methodologies and best practices. Jonathan has experience leading teams of developers, mentoring junior staff, and being the technical point of contact for project status and issue resolution. Through effective communication to both clients and technical teams, Jonathan has managed successful implementation of complex solutions. Jonathan is a Microsoft Certified Professional Developer, and has experience in development technologies including .NET, Azure, AWS, HTML/CSS/JavaScript, Angular and React. He has experience in analysis, design, and development of web, portal, distributed, and enterprise software solutions.

#### **Background**

- CapTech 2006 – Present
- Circuit City 2006 – 2008
- Tele-Works, Inc. 2005 – 2006
- Fidelity Investments, Inc. 2004 – 2005

#### **Certifications**

- Microsoft Certified Application Developer (MCAD)
- Microsoft Certified Professional Developer (MCPD): Enterprise Applications Developer
- Microsoft Certified Professional Developer (MCPD): Web Developer 4
- Microsoft Certified Solution Developer (MCSD)
- Microsoft Certified Technology Specialist (MCTS)

#### **Education**

- Bachelors, Information Technology, University of Richmond



Name	Michael Diiorio	Location	Richmond, VA
Position	Cloud Architect/ DMV SME	CapTech Tenure	7 Years

## Summary

Michael has extensive consulting and software engineering experience, serving clients in a variety of roles and responsibilities. His primary area of expertise is designing and building solutions on Microsoft Azure, as well as helping organizations develop strategies to adopt cloud computing. He has experience supporting state government agencies in implementing modernization programs that include migrating from a legacy mainframe to a modern services-based solution. As a Microsoft Certified Cloud Architect, he excels in effectively communicating with both business leaders and technical development teams. With a deep understanding of the software development process, Michael collaborates with clients to envision and deliver solutions that provide business value.

## CapTech Experience

### Fortune 500 Leading Provider of Investment and Business Solutions

### Senior .NET Developer

As a Senior .NET Developer, Michael led a team of 3 developers in the successful implementation of .NET Core Web APIs and microservices, which were deployed to replace a legacy TIBCO business process tier. Michael's responsibilities included reverse engineering process flows and source code, developing new C# code, establishing and maintaining CI/CD pipelines. He also ensured the accurate replication of business functionality through comprehensive regression testing.

### Industrial Equipment Supplier

### Cloud Architect

Michael partnered with a data engineering team to assist with the implementation of a new data analytics platform built on Microsoft Azure. He documented the high-level logical architecture including networking, security, Platform-as-a-Service components, and on-premises systems. After presenting the design to IT leadership, he developed a Bicep template to deploy the entire physical implementation in an Azure public cloud tenant with a single deployment command. During this short-term engagement, Michael also conducted an abbreviated cloud assessment which resulted in a prioritized list of recommendations to consider for future enhancements, process improvements and staff readiness training. He also helped the data engineering team establish Azure DevOps repositories and pipelines required to automate the deployment of data analytics code artifacts into the new Azure infrastructure.

### Virginia Department of Motor Vehicles (DMV)

### Cloud Architect

Michael served as the primary cloud architect and Azure subject matter expert for a Virginia state agency as they underwent a multi-year mainframe modernization effort. Using a proven Cloud Adoption Framework, Michael methodically guided the agency through the cloud adoption journey by completing multiple assessments focused on the current state, the desired future state and the adoption plan needed to bridge the gap. The adoption plan included establishing training paths to prepare staff, generating detailed technical design and implementation plans and estimating the total cost of ownership of the proposed implementation. Michael was also instrumental in helping the agency standardize software development and delivery into the new cloud environment using Azure DevOps and the adoption of industry standard DevSecOps practices.

### **Virginia Department of Motor Vehicles (DMV)**

**Solution Architect**

Michael was engaged by a Virginia state agency to review multiple points of integration with a legacy mainframe application. Prior to the agency executing a multi-year modernization effort, they required an assessment and recommendations around development, security, testing and the application frameworks required to implement a common web application platform interface layer. As a result of the assessment, Michael was asked to design and implement several .NET Web APIs to serve as the primary points of system integration with the agency's external partner organizations. The new Web APIs made use of token-based authentication and authorization by way of a 3rd party identity provider, Okta, to centralize and standardize all web application security. In addition to the application development tasks, Michael provided subject matter expertise in implementing Azure DevOps to standardize the software development lifecycle including project tracking, source code control, and build and release pipelines.

### **State Department of Environmental Quality**

**Solution Architect**

Michael established a framework for delivering publicly facing web applications for a state agency. The engagement included an analysis of the existing software development stack, development team skillsets, current production applications, future roadmap and ongoing support issues. The byproduct of the analysis resulted in an External Portal Framework that defined the software stack and development standards to be used across the Information Systems group to standardize the delivery of web applications across multiple internal and subcontractor development teams. One of the key deliverables was a new application topology and a corresponding security framework built on token-based authentication to secure the user interface components and the internally facing web API. To deliver the final result, Michael refined the CI/CD process which included the development of GitLab pipelines, development of NuGet packages and the creation of custom YAML definitions for multiple stages of the SDLC.

### **State Retirement System**

**Senior Developer**

Michael was a member of a 15-person team responsible for developing a web application to modernize a state agency. As a full stack .NET Developer, Michael developed portions of the single page application and corresponding web APIs related to processing member requests for retirement, processing adjustment requests for existing retirements, calculating projected and actual contributions to member benefit accounts, and submitting payment line items to the general ledger services for disbursement.

### **Premier Healthcare Consulting Firm**

**Architect**

Michael designed and developed a collection of Web API operations to handle the transmission of member health assessment data and the integration with existing care management systems. The Web API was consumed by a web client and a remote, native application running on iOS. Michael also improved the performance of the entire application by refactoring poorly performing legacy API operations and creating a unit test framework for streamlined debugging.

### **Fortune 500 U.S. Vehicle Retailer**

**Architect**

Michael performed a detailed assessment to identify and document recommendations for a web-based application used by a FORTUNE 500 retail organization. The assessment covered many aspects including application architecture, database design, hardware utilization, error detection and alerting, performance and stability and future resource management. After the engagement, the client received a detailed report of the assessment conclusions, an executive overview presentation and a remediation matrix containing a prioritized list of recommended improvements including a level of effort and the impact of performing each item.

### **Additional Relevant Experience**

#### **Envera Health**

**Senior Architect**

Michael provided architectural oversight and resource management on all project implementations and custom application development. He worked with executive levels to determine strategy and plan for the impact of new and emerging technologies such as the use of cloud computing. He served as primary subject matter expert and technical

developer, performing all tasks within the software development lifecycle in support of the IT department and electronic exchange of clinical information. Michael designed and developed a Health Information Exchange (HIE) to facilitate the exchange of clinical data between eHealth Exchange member organizations and regional hospital systems across the country which resulted in more than \$4 million cost savings in operational overhead per year. Michael developed an ASP.NET MVC RESTful Web API to receive and route public health data to the Virginia Department of Health on behalf of hospital systems across the state. This service allowed member hospitals to fulfill Meaningful Use requirements and to participate in the Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs.

#### **Neudesic**

#### **Regional Practice Director**

Michael designed and developed multiple web services, APIs, and enterprise integration solutions for clients in the financial, education, and retail industries. Michaels's custom integration solutions were used in intranets, public web sites, and mobile applications and established a solid reference architecture to kick-off service-oriented initiatives for future application development in all the organizations. Michael was responsible for thought leadership, proposal writing, team building, training and technical evangelism of BizTalk Server and related technologies such as Windows Communication Foundation, Windows Workflow Foundation, and Microsoft Azure.

#### **CarMax**

#### **Architect**

Michael designed and developed the web service layer for a public facing website for a FORTUNE 500 retail organization. The completed site improved data accuracy, increased the speed and the amount of information captured, eliminated manual calculations, improved the security of the collected data, reduced or eliminated data duplication and supported the use of mobile devices in subsequent releases.

#### **CarMax**

#### **Architect**

Michael served as the primary solution architect and BizTalk technical resource for all phases of a system redesign project for a FORTUNE 500 retail organization. He created a new system design while retaining the existing functionality of the current credit system and achieved several design goals and objectives, including creating a maintainable and flexible code base, enabling faster integration of new business partners, facilitating quicker and easier business rule changes, and establishing a set of regression test scenarios that can be executed to validate new system changes. He defined guidelines and best practices regarding BizTalk development, exception handling, business rule engine usage, tracking, debugging and administration. Additionally, Michael developed multiple BizTalk artifacts and mentored full-time development staff members during the development and integration testing phases to ensure compliance with development standards and architecture best practices.

#### **Land America**

#### **Architect**

Michael served as the primary solution architect and BizTalk technical resource for all phases of a system redesign project for a FORTUNE 500 retail organization. He created a new system design while retaining the existing functionality of the current credit system and achieved several design goals and objectives, including creating a maintainable and flexible code base, enabling faster integration of new business partners, facilitating quicker and easier business rule changes, and establishing a set of regression test scenarios that can be executed to validate new system changes. He defined guidelines and best practices regarding BizTalk development, exception handling, business rule engine usage, tracking, debugging and administration. Additionally, Michael developed multiple BizTalk artifacts and mentored full-time development staff members during the development and integration testing phases to ensure compliance with development standards and architecture best practices.

#### **Circuit City**

#### **Developer**

Michael designed and built an application targeting a Pocket PC device. He enabled data entry via the built-in bar code scanner by integrating the hardware device SDK. He integrated the application with a back-end web service layer to retrieve and display additional information about products as customers scanned bar codes throughout the store including an expanded list of product features, accessories, customer reviews, and current inventory levels.

## Background

- CapTech 2016 – Present
- Envera Health 2013 – 2016
- Neudesic 2012 – 2013
- CarMax 2009 – 2011
- Land America 2007 – 2009
- Circuit City 2007 – 2007

## Certifications

- Microsoft Certified Professional
- Microsoft Certified Solutions Associate: Cloud Platform
- Microsoft Certified: Azure AI Fundamentals
- Microsoft Certified: Azure Developer Associate
- Microsoft Certified: Azure DevOps Engineer Expert
- Microsoft Certified: Azure Solutions Architect Expert
- Microsoft Power Platform Fundamentals
- Microsoft Specialist: Architecting Microsoft Azure Solutions

## Education

- Bachelors, Computer Information Systems, James Madison University
- Bachelors, Music, James Madison University



Name  
**Susan Bullock**

Location  
**Richmond, VA**

Position  
**Agile Transformation Lead**

CapTech Tenure  
**13 Years**

## Summary

Susan is an Agile and Lean enthusiast with 20 years of experience in helping teams deliver maximum value across various sectors, including public, banking, insurance, hospitality, and health care. She excels in coaching, teaching, and leading organizations at the team, program, and executive levels on their transformation journeys. Throughout her career, Susan has focused on agile transformations, coaching, training, project management and data management, enabling organizations and teams to successfully deliver high quality software and maximize business value. Her knowledge and experience are anchored in large complex system implementation and software development. She has specialized expertise in training and implementing agile at scale through the Scaled Agile Framework (SAFe). As a leader in CapTech's Agile Service Offering, Susan is a founder of the Agile community of practice and training program, where she serves as a thought leader for the agile practitioner community.

## CapTech Experience

### Leading Food Distributor

As a Product Coach, Susan assisted an IT organization facing challenges in transitioning from a Project to a Product Model. She designed and led workshops aimed at introducing product managers to the product model, value streams, customer centricity and their respective roles and responsibilities. Despite organizational headwinds, Susan and her team of coaches earned the respect of IT leaders and made significant progress in areas such as e-commerce and supply chain management. To further support the transition, Susan developed and delivered essential resources including a product team launch playbook, a product team model, a product transformation roadmap, a stakeholder engagement plan, and a quarterly planning playbook. In order to reinforce the adoption of the product model, Susan also guided the creation of the Product Academy learning portal and led the development of learning content for the Innovation Leadership Council.

### Product Transformation Lead

### Fortune 500 Consumer Packaged Goods Company

### Agile Transformation Lead

Susan partnered with business and IT leads to support a modern delivery transformation for more than 300 employees in the digital and technology organization. This organization was responsible for developing innovative digital solutions across various areas such as supply chain, buyers, and consumer. Susan designed a collaborative Agile Center of Excellence (ACOE) with the objective of advancing the agile mindset and frameworks as operational solutions within the organization. The ACOE team, consisting of coaches, tools experts, and the client lead, focused on ensuring consistency, standards, and education throughout the transformation process. They provided support to key areas and the PMO in establishing delivery teams within their respective organizations. Susan coached the leaders and guided the development of meaningful metrics to track continuous improvement and quality management. Leveraging leading agile and lean frameworks, the ACOE created simple standards, coaching plans, a training curriculum, and a community of practice for scrum masters. Additionally, they provided Azure DevOps design support and portfolio level reporting in Power BI. Susan also delivered more than 20 SAFe certification courses to support teams, Scrum Masters, Product Owners, and leaders in their roles. As a result of these efforts, Susan observed a tipping point in teams adopting agile and lean practices, as the ACOE became a sought-after group for coaching help across the organization.

**Virginia Commonwealth University**

**Agile Transformation Lead**

Susan re-organized and launched marketing teams for lean, modern delivery, enabling them to deliver marketing products faster and at a lower cost. Through interactive training, workshops, and collaboration with the teams, she fostered a better understanding and alignment between copy writers, developers, and managers. She helped create disciplined cross-functional teams capable of delivering market products with higher quality and lower cost. By increasing the frequency of customer reviews and fostering a stronger relationship between technical and non-technical team members, the teams created products more efficiently that resonated better with customers.

**Fortune 500 Insurance Holding Company**

**Agile Coach**

As an Agile Coach, Susan delivered a comprehensive enterprise agile assessment, which involved conducting extensive interviews with individuals at all levels of the organization, from team members to C-level executives. This assessment served as a justification for the need to undergo an agile transformation. Based on the findings, Susan provided recommendations for a realistic short, medium, and longer-term transformation roadmap and presented the recommendations to the executive steering committee.

**Fortune 500 Financial Services Company**

**Agile Transformation Lead**

As the Agile lead of teams working to improve current DevOps processes to include more automated and proactive cyber security enablement, Susan facilitated hothouse sessions and provided coaching support. The teams examined the middleware component of self-service infrastructure focusing on patch management, manual and automated rehydration, and any organizational change management required for training and process change.

**Fortune 500 Financial Services Company**

**Agile Discipline Lead, Release Train Engineer (RTE) and SAFe Coach**

As the Agile Discipline lead for a new learning facility within the financial institution, Susan constructed and curated learning resources for Lean and Agile methodologies throughout the corporation. She partnered and fostered relationships with Agile subject matter experts across all lines of business to establish a more cohesive hub for hands-on, instructor led, and online learning initiatives. Additionally, she converted the Tech College to a SAFe framework, and within two months, she trained and coached a team of over 70 technology and learning specialists to plan and deliver Program Increments (PI) of 8 weeks.

**Fortune 500 Global Hotel Chain Enterprise**

**Agile Coach**

Susan helped launch an Agile transformation within Digital Systems, which involved implementing a cross platform delivery of features across mobile, web, and voice channels. As an Enterprise coach, she established, trained, and coached a group of Lean Agile Leader, consisting of executives who would guide the transformation process. Additionally, Susan helped launch the first agile train and established portfolio-level governance to facilitate coordination among team members. She actively contributed to setting up processes, loading the backlog, and developing the organizational structure into the corporate tool, JIRA. She helped launch a second train focused on re-platforming and service teams. She provided overall coaching for Release Train Engineers (RTEs), Lean Agile leaders and internal agile coaches, ensuring the smooth implementation of Agile practices throughout the organization.

**Fortune 500 U.S. Vehicle Retailer**

**Agile Coach**

As an Agile coach and trainer, Susan launched and provided support for two PI planning sessions. She played a pivotal role in coaching scrum masters and product owners within the Agile Continuous Improvement Program (ACIP). Additionally, Susan assisted the client in their business-critical Store Sales application team, which included all enterprise CRM processes and points of sale systems. The Store Sales transformation was one of the first steps in a larger enterprise-wide transformation initiative. Susan partnered with the team to assess their strengths and identify areas for opportunities. Based on the assessment, Susan crafted a tailored implementation plan. Subsequently, she partnered with the team on a sprint-by-sprint basis to define and execute team-defined and team-owned goals. This collaboration approach ensured that the transformation was aligned with the team's needs and objectives, fostering a sense of ownership and accountability throughout the process.

### **Fortune 500 Financial Services Company**

### **Coach and Project Manager**

Susan provided leadership to the Operational Risk Management (ORM) teams for a Fortune 500 Financial Services Company. Her primary focus was on capital modeling and governance to ensure compliance with new Basel regulations. Given the complex nature of the transformation, Susan navigated multiple projects within a highly matrixed management environment. In addition, Susan provided thought leadership in the realm of data governance, specifically to the operational loss data team. She contributed to the establishment of a new repository aimed at supporting capital modeling efforts. To improve the quality of the operational loss data, she initiated a successful communication and issue process. She collaborated with the Basel Project Management Office to ensure the operational risk team remained compliant with both government and company regulations. Additionally, she worked with senior leadership in ORM to prepare for regulator visits and audits, ensuring a smooth and organized process. Susan also coordinated dependencies across relevant projects within the Basel program, particularly within Risk Management.

### **Fortune 500 Holding Company**

### **Agile Coach**

As a scrum coach, Susan established two new teams in the Information Management Business division. The teams were responsible for delivering critical decision support reporting to the marketing, underwriting and actuarial populations. Leveraging QlikView, the teams delivered sought-after reports on data quality, managerial insights, and operational performance using a variety of data sources within a span of two months. Susan trained both coaches and project managers as well as the teams in the Agile methodology. She assumed the role of Scrum Coach for one of the teams, providing guidance and support throughout the Agile process. This involved coaching daily stand-up meetings, facilitating tasking, assisting with story writing, overseeing demos, and conducting retrospectives.

### **Military Healthcare Services**

### **Project Manager**

Susan led simultaneous efforts to implement improvements and mandates to multiple data marts that supported the Senior area of Information Management. Utilizing WellPoint's Lean IT methodology, she planned and managed a project to implement government-mandated Medicare changes for 2012. These updates encompassed various functions including enrollment and billing, claims, and provider management across four business intelligence systems. The project involved coordination with multiple contractors, data modelers, and database administrators. She also successfully implemented the final release of a Senior risk database to improve Senior risk score submissions and corrections.

### **Additional Relevant Experience**

#### **PricewaterhouseCoopers (PwC)**

#### **Manager, SAP Consultant**

Susan was a Data Conversion lead for large SAP implementations at Lucent Technologies in New Jersey from 1995 to 1997. Prior to that she was the lead for the IRS team where she reengineered customer service processes in Washington DC from 1993 to 1995. Additionally, Susan contributed as a trainer and analyst on team responsible for building and training a custom enterprise resource planning system (ERP) system for budgeting, HR, and procurement at the United Nations, located in Manhattan from 1991 to 1993. Earlier in her career, she worked as an analyst on a State Department project focused on the Chart of Accounts for the international implementation of the Financial Management System (FMS) from 1990 to 1991.

### **Background**

- CapTech 2011 – Present
- Northrop Grumman 2010 – 2011
- Self-employed 1997 – 2004
- PricewaterhouseCoopers (PwC) 1990 – 1997

### **Certifications**

- Certified Project Management Professional (PMP)

- Certified SAFe Program Consultant (SPC)
- Certified Scrum Master (CSM)

## **Education**

- Masters, Finance, Vanderbilt University
- Bachelors, Mathematics, Vanderbilt University



Name	Location
John Baxter	Richmond, VA
Position	CapTech Tenure
Scrum Master	16 Years

## Summary

John has over 25 years of experience in financial services operations and information technology functions. He has played key roles on many internal and regulatory compliance programs for large financial institutions. John is versed in many facets of business development and implementation including industry and business analysis, strategy formulation, portfolio, program and project management, technology operations, risk management, customer relationship management, and e-commerce. He has experience as a Program Manager for a state modernization program that included migrating from a legacy mainframe to a modern services-based solution. John holds an MBA from The Wharton School of the University of Pennsylvania and MS and BS degrees in Computer Science from Drexel University.

## CapTech Experience

### **Virginia Department of Motor Vehicles (DMV)**

### **Program Manager**

John served as the Program Manager for the Virginia DMV's mainframe re-platforming effort. This on-going multi-year engagement includes the conversion of all mainframe code, driver, and vehicle data, as well as rearchitecting of key supporting technical and operating environments critical to the agency's mission. Working closely with Senior Executive IT and Agency leadership, John led the agency through this challenging effort and managed progress across the entire program, which included over two dozen workstreams and budget of \$50 million.

### **Fortune 500 Consumer Packaged Goods Company**

### **Project Manager**

John engaged with a CPG Brand Management team to resolve process challenges related to adapting to a new marketing order. The order required all marketing assets to undergo a 30-day review period by the FDA before being released to the general public. In addition to dealing with the added 30-day delay, the Brand team had to navigate an evolving legal and regulatory environment, resulting in very large submissions to the FDA that required significant re-work and coordination across marketing channel teams. John conducted a thorough assessment of the processes and identified significant opportunities for improvement. This included enhancing the effectiveness of the creative development process, reducing complexity, improving stakeholder coordination, and minimizing schedule variability. He evaluated several campaign marketing platforms that could address the team's challenges and provide the desired benefits. These platforms could also be customized to meet the requirements for the 30-Day notification process. Working closely with the vendor and the Brand team, John configured and rolled out the new solution in Q2 2020.

### **Fortune 500 Financial Services Company**

### **Program Management Office**

John played a key role in driving the Program Management Office to support the migration of over 750 platforms and applications from existing on-premises data centers to the Cloud. He collaborated with a team of CapTech consultants to ensure smooth progress and overcome any obstacles across approximately 18 business area domains. John communicated regular updates on the project's status and challenges to the US Card and Senior Executive leadership.

### **Fortune 500 Financial Services Company**

### **Program Manager**

John established the creation of program management capabilities to support Customer Service support and technology

functions for the integration of a major, new consumer retail partner. His responsibilities included development of schedules, issue/risk management, budgeting, and resource management functions.

**Fortune 500 Financial Services Company**

**Product Owner**

John led a team responsible for driving the depreciation of approximately 40,000 DevOps assets and transitioning them to next-generation cloud-based tools. This year-long effort impacted an organization of approximately 10,000 people. It required the development of new strategic frameworks to communicate the initiative and coordinate progress. This project was a critical component of the Shared IT cloud-migration program and was completed on schedule with minimal production impacts.

**Fortune 500 Financial Services Company**

**Program and Project Manager**

As the Program lead for the IT workstream, John utilized a matrix management approach and provided strong leadership across multiple workstreams to successfully integrate a \$10B Health Care portfolio from another financial services institution. He was responsible for creating and building a workstream program office to manage a \$40MM budget with approximately 125 full-time equivalents (FTEs). Additionally, John led leadership meetings with client executives and senior executives, ensuring seamless communication and alignment. Under John's leadership, the program integration was completed very smoothly and successfully.

**Fortune 500 Consumer Packaged Goods Company**

**Program and Project Manager**

After the initial launch of its e-cigarette web site, the client wanted to enhance the site's appearance, functionality, and overall customer experience. John served as the lead program/project manager, bringing together multiple vendors and client organizations to deliver a series of releases. These releases facilitated a nationwide on-line sales roll-out including new product lines, innovative go-to market functionality, enhanced customer service, and supporting email and direct mail marketing campaigns. In this role, John helped lead program planning and direction setting. He also oversaw program scheduling, task/issue management, integration and UAT testing, as well as coordination of customer service and other back-office functions.

**Fortune 500 Financial Services Company**

**Scrum Coach and Scrum Master**

As part of its enterprise-wide transition to Agile methods at a Fortune 500 Financial Services Company, John took on the role of a Scrum Coach for 7 agile teams responsible for data management services in the company's Retail Bank. In this capacity, John measured and guided these Agile teams to achieve greater efficiency and maturity. At times, John stepped in as a Scrum Master for many of these teams to provide support during the transition of members within the client organization to other roles. In addition, John played a key role in helping the client reorganize and align these agile teams to effectively support the rapidly evolving business demands. This primarily involved focusing on aspects such as organizational structure, team composition, budgeting, and project roadmaps. Through his expertise and guidance, the client was able to adapt to the changing landscape and optimize their agile operations in response to the evolving business needs.

**Fortune 500 Financial Services Company**

**Program Management Office and Program Manager**

John led the design, implementation, and management of the Basel II Program Management Office (PMO) at a Fortune 500 Financial Services Company. Key activities included defining and designing core PMO functions such as schedule, resource, budget, and procurement management, as well as project tollgates. John also implemented detailed integrated schedule and dependency management functions, established a requirements management capability, and led a team of Business System Analysts in mapping and tracking Basel II compliance rules to specific business, system, data, and non-functional requirements across over 125 projects. Additionally, he conducted executive and tactical milestone compliance validation and analysis. In addition to his PMO role, John served as the Lead Delivery Project Manager for the Traded Products workstream, overseeing the implementation of new trading transparency requirements for multiple stakeholder groups across Basel II functional areas and the company's business lines.

**Fortune 500 Financial Services Company**

**Portfolio Analyst and Data Strategist**

To help develop an enterprise-wide Portfolio Management capability, John created an IT resource prioritization and capacity planning function that spanned across multiple IT organizations. This initiative involved designing the approach, establishing processes, and implementing tools to effectively collect and report current and planned resource commitments. The results of this effort helped identify and analyze resource impacts of a 5-year strategic plan for the Information Technology organization.

**Fortune 500 Financial Services Company**

**Process Engineer**

As a result of recent bank acquisitions, a Fortune 500 Financial Services Company experienced significant challenges accurately managing and forecasting IT supply to support the investment demands across its business units. The Fortune 500 Financial Services Company needed to improve resource tracking processes to support their IT investment decision-making activities. To support this objective, John led the effort to analyze and report on IT delivery capacity for organization and servicing platforms across the entire Retail Bank. This involved the development of a resource data management protocol that provided a rolling 6-month ‘window’ view into current and planned resource commitments. The results of this effort provided the client with the necessary reporting and analysis required by Bank Leadership as a primary input for project prioritization and resourcing assignments.

**Fortune 500 Financial Services Company**

**Project Manager**

John played a pivotal role in driving an initiative to develop a long-term IT and Operations infrastructure strategy for a Fortune 500 Financial Services Company. This effort involved collaborating with senior leaders from the company and engaging with a national strategy consulting firm. Working closely with the team, John developed a comprehensive and integrated capabilities-based strategy, as well as an implementation roadmap to guide the development of the Bank’s infrastructure over the next 3 to 5 years. The results of this effort were presented to and approved by the Chairman and Executive Committee of the Fortune 500 Financial Services Company.

**Fortune 500 Financial Services Company**

**Program Manager**

John played a key leadership role in defining and implementing a program management office (PMO) for the IT integration initiative for a Fortune 500 Financial Services Company. The primary objective of the PMO was to scope and coordinate post-merger IT activities across the company’s IT organizations and the acquired bank. With John’s leadership, the PMO successfully organized over 200 projects throughout the integration process. This included activities such as scoping, developing business cases, prioritization initiatives, and creating schedules to ensure timely and successful implementation of the integration efforts.

**Fortune 500 Financial Services Company**

**Project Manager**

John led a team tasked with designing and implementing a new centralized service aimed at enhancing the quality of IT communications while ensuring compliance with federal regulations. The goal was to improve the organization’s responsiveness to IT events in a more efficient and coordinated way. The team designed and implemented a highly customized SharePoint portal site to distribute this IT information in a concise, intrusive manner. The result was a more flexible and intuitive communication system that effectively provided a single source of up-to-date IT related information for a wide variety of IT stakeholders.

**Additional Relevant Experience**

**Capital One**

**Project Manager, Third Party Management**

John led an effort to bring Capital One’s third-party management practices and data into compliance with regulatory standards. This involved reviewing and standardizing third-party data, implementing new processes to comply with regulatory standards, and helping to design and staff the new organization to support these activities. This effort resulted in the client successfully passing multiple regulatory reviews and creating a sustainable third-party management organization.

**Capital One**

**Sr. Director, Corporate Technology**

As a Sr. Director for Corporate Technology, John was responsible for delivering enterprise infrastructure and critical risk management projects. He led key initiatives that obtained regulatory clearance for Capital One to proceed with future business acquisitions. Under his leadership, his team delivered a \$40MM portfolio of projects that successfully addressed over 30 internal audit and regulatory commitments. John oversaw program and project management activities, ensuring the successful delivery of various significant corporate initiatives. These initiatives included the establishment of a new enterprise data center, the implementation of an automated business continuity management system, enterprise rollouts of MS Office, laptop encryption tools, and an enterprise asset management system. His project teams were recognized for several internal awards including process excellence and the successful adoption of Agile project management methodology. Furthermore, John's leadership in implementing the new business continuity management program system earned him a personal nomination for Capital One's "Circle of Excellence" award.

**Capital One**

**Sr. Director, Direct Marketing Center - IT**

John led Capital One's Internet organization and was a member of Capital One's Direct Marketing Senior IT Leadership team. He drove the development of [www.CapitalOne.com](http://www.CapitalOne.com), as well as the cardholder servicing and inbound/outbound email functions that served over 3 million customers. In this role, John aligned Capital One's Internet organization with 'non-Internet' marketing functions. He achieved a \$18MM cost reduction in year-over-year technology infrastructure costs, representing a 40% reduction. This was accomplished through re-platforming technology components, enhancing infrastructure flexibility, utilization, and cost transparency. John was responsible for implementing an online customer analysis platform that led to improved cardholder segmentation, content development, and solicitation response rates. In addition, John established and managed an IT portfolio management office, which encompassed prioritization, budgeting, and reporting. This initiative significantly enhanced portfolio transparency, enabling more informed decision-making.

**Capital One**

**Sr. Director, Internet Relationship Management**

John was responsible for introducing new technology applications for Capital One's on-line environment to drive down costs, improve profitability, and increase knowledge of credit card customers. He introduced a new outbound, interactive telephone capability that would generate an estimated \$10MM benefit through improved fraud response and increased automation. In addition, John led cross-functional activities including human factors analysis to construct a new online navigation metaphor, as well as a CRM technology screening and incubation capability.

**Capital One**

**Sr. Director, Contact Center Technology and Operations**

John was responsible for desktop and telephony applications that supported over 3500 call-center associates in three locations. He contributed to reducing call center occupancy rates and operating cost structure by rationalizing the number of call center phone queues by more than 25%, decreasing phone call handling time, and increasing automated voice response mitigation. In addition, John helped develop a new Marketing Test Call Center to improve speed and accuracy of marketing tests while reducing call center complexity with an estimated annual benefit of \$2MM to \$5MM.

**Booz Allen Hamilton**

**Associate, Financial Services/Information Technology Group – Commercial Group**

John's addressed general management and IT strategy issues for companies in the financial services, health care, and insurance industries. His engagements included IT/business strategy, organizational diagnostic studies, organization re-design and transformation, and Internet development. John conducted a short-term diagnostic study to address challenges faced by a distressed IT organization. He performed a formal assessment and provided in-depth recommendations to resolve a critical \$1.5BB project backlog. Additionally, he drove the definition and design of the revised Program Management Office (PMO). John also evaluated the potential for implementing enterprise-wide imaging and workflow capabilities for a major nationwide insurance carrier. This involved integrating the mailroom with the sales office, underwriting and back-office operations. Furthermore, John led a strategic transformation of the health-care insurance IT unit for a major multi-line insurance carrier. This long-term engagement encompassed the comprehensive development of business strategy, organizational re-design, development methodology, and skill set

re-evaluation and implementation. The result was an ongoing cost reduction of \$35MM annually. He was deeply involved in the evaluation and selection of project management methodologies and standards. John developed an OLAP-based website to showcase the firm's supply-chain management service offering and Internet expertise. The website received recognition at the InfoWorld Internet Conference in Anaheim, CA, where it was awarded first prize for "Best-in-Class Internet Application," in 1997. Additionally, John was responsible for ensuring successful delivery of Booz-Allen's worldwide corporate Internet Knowledge Management capability. He played a vital role in conducting in-depth project diagnostics, implementing risk mitigation strategies, overseeing testing, and deploying key system components. The final functionality of the system included innovative security and usability features, earning multiple awards such as the "CIO Magazine award for top 50 corporate intranet applications" in 1998 and the "Booz-Allen and Hamilton Intellectual Capital Award" in 1996.

### **Unisys**

### **Sr. Software Engineer**

John was a member of a 20-person team selected for integration and development of large-scale Unisys A19 and A16 mainframes. John integrated new processors and related computing hardware into the existing operating system and system software environment. His project work included system fault capture and reporting, integrated resource consumption tracking and billing capability, and improved memory management algorithms. John received consecutive Unisys "Short Term Achievement" Awards in 1990 and 1991 for this effort. John was also a member of the core team responsible for integration and development of the mid-range A16 mainframe system. He received the Unisys "Award for Technical Excellence" in 1992 and 1993.

### **Background**

- CapTech 2008 – Present
- Capital One 1999 – 2008
- Booz Allen Hamilton 1995 – 1998
- Unisys 1986 – 1993

### **Certifications**

- CapTech Workday Fundamentals
- Certified SAFe Agilist (SA)
- Certified Scrum Master (CSM)

### **Education**

- Masters, Business Administration/Management, University of Pennsylvania
- Masters, Computer Science, Drexel University
- Bachelors, Computer Science, Drexel University



Name	Kevin Pious	Location	Richmond, VA
Position	Functional Architect	CapTech Tenure	19 Years

## Summary

Kevin is a Functional Architect with over eighteen years of experience in Information Technology. In his role as the Functional Architect for transformation projects across multiple industries, Kevin is responsible for leading the functional design of the system. This includes collaborating with leadership to define the guiding principles for the system design and translating that into actionable business requirements. He has experience as a Functional Architect with state government modernization programs that included migrating from a legacy mainframe to a modern services-based solution. Kevin possesses strengths in problem diagnosis and resolution, allowing him to effectively solve problems in a timely matter. He can see the big picture while delving into the details to solve problems. Kevin excels in leading teams through lengthy projects and consistently delivering successful results. With a strong technical background, he effectively communicates with both business and technical resources. Kevin holds certifications as a Certified SAFe Agilist, Six Sigma Green Belt and OCUP UML 2.0 Fundamental Certification. Additionally, he has an MBA and a Bachelor of Science in Computer Science with a minor in Mathematics.

## CapTech Experience

### Moving and Storage Company

### Functional Architect

Kevin is currently serving as the Functional Architect for a Salesforce CPQ implementation at a national moving and storage company. In his role he works closely with business leaders to identify the objectives for the implementation and ensure they are reflected in the overall system design. Kevin is working within the PMO to evaluate proposed customizations to the Salesforce CPQ implementation to determine how they impact the total cost of ownership (TCO) of the system as well as the value those customizations will bring to the organization.

### Leading Aluminum Packaging Company

### Functional Architect

Kevin served as the Functional Architect for multiple phases of a B2B customer portal implementation for a Fortune 500 consumer good manufacturing company. He was responsible for working with client leadership to develop the overall design of the customer portal functionality for the client's largest customers. This included understanding the new business processes and objectives and determining how the updated processes could be implemented within the portal. Kevin oversaw the analysis efforts of other BSAs within the project team and collaborated with QA resources to develop test plans and conduct integration testing with other systems that interfaced with the customer portal. In addition, Kevin collaborated with the change management team to develop the rollout plan and training strategy for the updated customer portal. This included identifying the transition requirements as customers moved to the updated ordering portal. In response to shifts in the global economy, the manufacturing company had to adjust their business and manufacturing processes. Kevin engaged with business stakeholders to assess the impacts of these changes on the customer portal and played a key role in designing a solution. This solution not only addressed the immediate needs but also allowed for future changes that may require extensive development, ensuring long-term scalability and adaptability of the system.

### Leading Aluminum Packaging Company

### Lead Systems Analyst

Kevin served as the lead systems analyst for the creation of a new ordering portal for customers of a consumer goods

manufacturing company. He created functional design documents and user stories to support the creation of the ordering portal. Kevin was responsible for the systems and data analysis aspects of the project, including mapping the legacy ERP system to the new ordering portal. He wrote the requirements and conducted data analysis for the ETL process, ensuring seamless transfer of orders and order data from the ERP system. Additionally, Kevin served as the integration test lead, effectively coordinating testing activities among project team members and facilitating integration testing with legacy ERP and ordering systems.

#### **International Memorabilia Company**

#### **Functional Architect**

Kevin was the Functional Architect for the Digital Transformation Program, a role that entailed overseeing system and process functionality across multiple workstreams. One significant aspect of the program involved updating the client's E-Commerce platform to Salesforce Commerce Cloud. Kevin collaborated with the client to create a product roadmap, which included an initial MVP release, enabling the client to quickly enter the market with additional functionality. Subsequently, a roadmap was established to balance the natural flow of the client's business year with increasing value for both the customer and the organization as soon as possible. As part of these efforts, Kevin analyzed how changes to the E-Commerce platform would impact customer support and field sales representatives. He ensured the appropriate updates were made to downstream systems and processes to support the change. In addition to his role as the Functional Architect, Kevin contributed to raising the quality of the teams' analysis and quality assurance efforts, aligning them with industry best practices for large programs.

#### **State Retirement System**

#### **Functional Architect**

Kevin was responsible for leading the functional design of the retirement system modernization which entailed replacing the existing retirement processing and payroll system. He interfaced with business leaders and executives to translate high-level program objectives into actionable functional requirements. Kevin also led efforts to prioritize testing and defect remediation, encompassing both technical changes and improvements to the retirement processing system, as well as business process enhancements. A notable component of the design was the inclusion of an online retirement application, which allowed members to submit their retirements online and receive personalized counseling on the best available options. As the key Subject Matter Expert (SME) for the modernized system, Kevin played a crucial role in triaging issues and assessing the impacts of changes to the entire system. As the system implementation date approached, he collaborated with the training, internal, and external communication teams to communicate the impact of the upcoming changes and deliver training to both internal and external end users. Kevin also collaborated with key stakeholders to identify critical functionality for go-live and determined what could be implemented in subsequent releases. He worked with both business and technology teams to establish a release road map for issue resolution and enhancements. Following the system was implementation, Kevin was responsible for prioritizing defects and system improvements, while also triaging production issues. Additionally, Kevin led a team of business analysts responsible for conducting detailed analysis of components across the system.

#### **State Retirement System**

#### **Scrum Master and Business Analyst**

Kevin served the dual role of Lead Business Systems Analyst (BSA) and Scrum Master for multiple projects. As the BSA he worked with the Product Owner to define the product objectives and refine the backlog, ensuring that user stories were ready for development and testing. Additionally, he served as a liaison for the Product Owner in their absence and supported the development team in completing user stories in accordance with the acceptance criteria. He was responsible for performing integration testing and worked with business stakeholders to coordinate User Acceptance Testing. In his role as a Scrum Master, Kevin was responsible for facilitating various Agile ceremonies and coordinating with other teams and management to remove impediments. He contributed to implementing improvements within the team, sprint after sprint. In addition to his roles on the individual team, Kevin had a leadership role in the Agile transformation effort. He assisted the client with updating their program level reporting, resource planning, and product management to align with the Agile framework. Kevin also played a key role in implementing Scaled Agile Framework (SAFe) practices, such as Scrum of Scrums and Program Increments.

**Leading Healthcare Data Services Company**

**Scrum Master and Project Manager**

As the Scrum Master, Kevin was responsible for coordinating the analysis, development, and testing tasks for a development team within the Leading Healthcare Data Services Company's product group. His tasks included leading daily stand-ups, backlog refinement and sprint planning sessions. He collaborated with the Product Manager to prioritize work for each sprint and ensured smooth coordination with other development teams in cases of dependencies. Kevin also played a key role in setting up the development team, which involved coordinating team training and establishing standard operation procedures. In addition to his role as the Scrum Master for the development team, Kevin served as a Project Manager for various cross-team efforts. During this time as Scrum Master/Project Manager, Kevin led the integration of two development teams, merging them into a cohesive unit while actively working to enhance the new team's performance.

**Leading Healthcare Data Services Company**

**Implementation Analyst**

As the Implementation Analyst, Kevin was the main point of contact between the client and product team for the implementation of an Encounter Data Submission (EDS) product for the Medicare/Medicaid Duals program. His tasks included leading weekly meetings with the client, documenting requirements from the client and educating the client on the features of the product. He also collaborated with the product team to prioritize work and ensured client deadlines were met. In addition, Kevin was responsible for researching client data issues to make sure they were submitting data that could be processed correctly within the EDS product.

**Leading U.S. Credit Union**

**Systems Analyst**

Kevin worked with the Enterprise Architecture group on a current state BPMN documentation effort. In his role as a Systems Analyst, he documented the flow of money entering the credit union through its various channels and the validation processes prior to being posted to the general ledger. His tasks included conducting interviews with technical and functional experts, reviewing technical documentation, and reverse engineering existing mainframe code to determine what systematic validations occur in the process. Kevin played a pivotal role in producing BPMN process flows and detailed metadata documents for forty of the credit union's subsystems, all of which fed into the main posting systems.

**Fortune 500 Consumer Packaged Goods Company**

**Technical Analyst**

Kevin worked with the Technology Architecture team to update their principles, standards, and processes. This included evaluating the current IT architecture project review process. Kevin enhanced the current review process, aiming to deliver increased value to both the project and architecture teams. He implemented improvements to ensure that architects were informed early on about a project's impact on the overall technology infrastructure. This allowed the architects to provide feedback before the project entered the development phase, ensuring adherence to architecture standards and alignment with project objectives.

**Fortune 500 Financial Services Company**

**Lead Business Systems Analyst**

Kevin worked as the lead business systems analyst within the Retail Credit Workstream for the Basel II program. In this role, he managed all analyst work for over a dozen concurrent projects. He led a team of other analysts through the requirements elicitation and documentation portions of the projects, supported the project manager in determining project scope and schedule as well as assisted the technical team in determining solutions to the problems presented. Given the projects within the Basel II program were predominantly data related, Kevin was responsible for managing thousands of data requirements from multiple systems of record. As issues arose with the data, his role was to determine the real problem and propose potential solutions. Subsequently, he presented his findings to both the business and technical project stakeholders.

**Fortune 500 Financial Services Company**

**Business Systems Analyst**

Kevin worked as a business analyst on a project for the Wells Fargo Advisors Test Data Services team. He was tasked with improving the test data creation process for brokerage accounts. The current process was failing and causing many

crucial merger related projects to be delayed. The process needed to be improved or the merger between Wells Fargo Advisors and Wachovia Securities was in danger of being delayed. Kevin helped to create new processes that made test data creation more efficient. He created current state models, pinpointed inefficiencies in the process, and worked to eliminate these problems. He also gathered system requirements for a new application that would automate test data creation. In addition, he trained dozens of users on how to use the account creation system. Other tasks Kevin performed included managing a project within the larger effort that created a system to automatically validate that the test data created met the requestor's needs. In the end the process was improved, and all projects related to the merger were not delayed further due to missing test data.

#### **Fortune 500 Financial Services Company**

#### **Functional Lead**

Kevin was the Functional Lead of a project that involved updating the account management system for the merger of Wells Fargo Advisors and another brokerage firm. During the project he was the subject matter expert on the functionality of the system as well as managed four Business Analysts to gather and document business requirements, create functional designs, and track changes to requirements throughout the project. Kevin was responsible for communicating with the business leaders across many divisions to make sure that all appropriate stakeholders had input to the requirements. He was also required to manage the scope of the requirements across three separate releases and to ensure all requirements had been met before the official conversion occurred. During development and testing, Kevin was the point of contact to troubleshoot any defects that arose as well as provide the business impact of those defects. He created training materials that assisted the end users during User Acceptance Training and beyond.

#### **Fortune 500 Financial Services Company**

#### **Architect**

Kevin worked as a modeler for the architecture team focusing on the consumer banking area. Using the Casewise modeling tool he was responsible for modeling the current state of the consumer banking systems. During the integration with another existing bank, Kevin gathered information on the systems from the acquired bank and modeled that information as well as the future state plan for when the two banks were integrated. He also was the author of an architecture overview document for a banking system that was lacking the appropriate documentation as well as serving as an architecture consultant for projects in the bank and credit card areas. Kevin was also tasked with providing architectural oversight on some projects within the bank to make sure they were meeting standards. While his primary focus was in the consumer banking area, he performed tasks within the commercial, small business, and operations area.

#### **Fortune 500 Financial Services Company**

#### **Test Lead**

Kevin worked as a Business Analyst for the document services scope of the project. He helped gather system requirements and prepare the system requirements documentation. Kevin also worked on functional design preparation. Most of his time was spent as the Test Lead for the entire project. He helped build high level test scripts and with the help of other tester analysts, developed detailed test scripts. As the lead, Kevin had to develop a resource and execution plan as well as manage a testing team of ten resources to ensure timely execution.

#### **Electronics Retail Company**

#### **Business Systems Analyst**

Kevin analyzed the incumbent data warehouse and helped to model the new warehouse to meet the growing needs of the client. He gathered requirements in the form of metrics that needed to be calculated daily using data stored in the warehouse. Kevin mapped the source data arriving from a 3rd party product to the new data warehouse. Kevin was responsible for writing business definitions for each attribute and making sure that the new warehouse met the requirements put in place by the business.

#### **Fortune 500 Financial Services Company**

#### **Solution Integration Analyst**

Kevin collected interface, platform, and project information from key Helix Platforms. Kevin then presented that information in a Microsoft Access database that allowed users to easily acquire the information they needed. Kevin modeled the interface and system dependencies using ARIS Web Designer. The interface repository is the system of record for interfaces across all Helix platforms. The repository was the most complete source of interface data in the

project and allowed users to see the connections between different aspects of the project and the impacts that change would have on other entities.

## Additional Relevant Experience

### CGI (formerly American Management Systems)

### Technical Consultant

Kevin developed solutions to enhancement requests by multiple federal agencies. He created technical designs using given use cases and requirements. He solved any UNIX related software issues within the team, monitored the nightly software builds, and worked with developers to provide fixes for defects. Kevin worked on the Service Release Team as a C++ developer to fix problems for minor software releases. He coordinated with other developers to make sure minor releases increased the stability of the system while providing the user more functionality.

## Background

- CapTech 2005 - Present
- CGI (formerly American Management Systems) 2004 - 2005

## Certifications

- Certified Project Management Professional (PMP)
- Certified SAFe Agilist (SA)
- Six Sigma - Green Belt

## Education

- Masters, Business Administration/Management, Virginia Commonwealth University
- Bachelors, Computer Science, Virginia Tech



Name	Nicole Oliver	Location	Richmond, VA
Position	Data Architect	CapTech Tenure	9 Years

## Summary

Nicole is an experienced leader with over 19 years of IT management consulting experience in both the public and private sectors. She specializes in leading data migration and conversion efforts for large-scale state modernization projects. Nicole successfully worked with various source systems including MAPPER, Oracle, Sybase, and MS SQL Server, which required migration and conversion into Oracle or MS SQL Server targets. Furthermore, she holds three Profession Cloud Certifications, demonstrating her extensive knowledge of cloud technologies. This expertise further enhances her ability to deliver efficient and scalable solutions to clients.

## CapTech Experience

### State Government

In her role as the data migration and conversion lead, Nicole is leading a team that will define the migration and conversion requirements for a state agency. The agency is undergoing a project to replace three legacy systems with a single target solution for licensing and enforcement. Nicole's responsibilities include creating a source to target mapping, writing extracts scripts from legacy systems, implementing transformation logic, and ensuring the data is deduplicated and clean for loading into the target system. Additionally, Nicole is architecting the interim state solution. This solution will enable data synchronization between systems during the phased implementation. It will support batch jobs, reporting, and external applications, ensuring seamless data flow and optimal functionality throughout the transition.

### Data Migration and Conversion Lead Architect

### State Employment Agency

Nicole served as lead data solution architect for a State Workers Compensation System modernization project. She managed a CapTech team of over 20 consultants, overseeing the design of a modern data architecture solution with a focus on complex data movements and a robust analytical environment. The data solution encompassed several key components, including the development of the operational database, conversion and migration of data from more than five legacy systems slated for retirement and replacement by the modernized system, the implementation of a master data management solution to handle critical data for the Board, operational reporting capabilities, integration with multiple legacy systems and external entities, and integration of the new system into an existing data warehouse.

### Lead Data Solution Architect

### Fortune 500 Financial Services Company

Nicole led the design, development, and implementation of a modernized data mart to support existing valuation models with a modernized source. The solution included Databricks, Spark, and Snowflake. To support the models, the team defined source-to-target mappings and implemented complex transformations. The project team consisted of three data engineers and two data analysts, who collaborated under Nicole's guidance. The solution was implemented in a CI/CD pipeline, ensuring efficient and streamlined processes throughout the development and deployment phases.

### Lead Data Architect

### Fortune 500 Financial Services Company

Nicole led the initiative to identify, track, and report the status of model migration from on-premises to the Cloud for the Card Data Science team. This effort involved validating the inventory of models, capturing on-premises data sources

### Project Manager and Data Analyst

utilized by the models, and assigning an owner to each model. Nicole collaborated with each team to determine the migration approach: whether it involved migrating to cloud, re-building on a new cloud platform, or retirement. To streamline communication and provide a centralized source of information, Nicole developed and integrated a roadmap and status into the enterprise cloud migration tracking platforms. Throughout the process, Nicole tracked, reported, and resolved impediments to model migration, including issues related to source data migration. This comprehensive reporting and tracking efforts ensured that the Card Data Science model migration remained on-track. By serving as a single point of contact for impediments and issue resolution, this tracking and reporting effort facilitated the overall cloud migration efforts of the Card Data Science team. It enabled them to stay on track and ensure a smooth transition to the cloud environment.

#### **Fortune 500 Financial Services Company**

#### **Data Analyst - Anti Money Laundering**

As a Controls Developer, Nicole developed data quality checks and controls for the Know Your Customer system. This involved identifying issues in both the ETL process and historical data loading. Additionally, Nicole developed Tableau reporting for Line of Business (LOB) remediation and successfully remediated over 50,000 records. As a Customer Risk Rating (CRR) model developer, Nicole designed and developed the CRR model for two lines of business within the bank. She ensured alignment with the updated customer risk rating standard and collaborated directly with investigators to understand potentially risky behavior within the portfolio. Through data analysis and research, Nicole identified a population of customers with potential Anti-Money Laundering (AML) risk that had not previously been identified. As a Reference table solution developer, Nicole led the design development of an enterprise reference table solution for use with AML models. This involved creating source-to-target mappings from more than 10 systems spanning more than 20 departments. She designed and developed over 15 reference tables and developed BTEQ scripts to load the data. Additionally, Nicole established a governance process for maintaining the reference tables, designed a workflow for routing updated codes to the team for scoring and approval, and created a data dictionary for reference data.

#### **Fortune 500 Financial Services Company**

#### **Technical Lead - Enterprise Data Management**

Nicole led the design, development, and implementation of an enterprise metadata solution for a Fortune 500 Financial Service Company's Cloudera Hadoop Big Data environment. This involved analyzing current data policies and standards to design preventative controls, detective controls, and naming standards for metadata fields. Additionally, Nicole created an enterprise risk validation and compliance reporting system. The implementation of preventive controls and issue reporting resulted in significant improvements in policy compliance for data quality. The client observed an increase in compliance from 79.8% to 93.4% for quality and from 62.1% to 91.1% for completeness in a 7-month period. Furthermore, Nicole designed and customized a Collibra data governance ETL solution using Bash scripting, REST APIs, and Python to integrate the tool with two other critical data management systems. Additionally, she re-architected a manual import and export process of data from multiple data governance systems using Bash, Python, Collibra, Ab Initio, Control-M. Furthermore, she led the design and development of automated ETL processes using the REST APIs exposed by the data governance system. As a result, the manual process was eliminated, freeing up 2 full-time equivalent (FTE) man hours per day for other valuable tasks.

#### **Additional Relevant Experience**

##### **Accenture**

##### **Sr. Solution Architect and Delivery Lead**

As the lead solution architect, Nicole developed a solution architecture for an enterprise event streaming platform proof of architecture (POA) for a retail client on the Google Cloud Platform (GCP). The client was undergoing an enterprise architecture modernization initiative and identified the need for an event streaming platform to support multiple use cases. This included customer 360 view, loyalty programs, a modernized warehouse management system, and future use cases as the modernization and cloud journey progressed. Nicole led the delivery of the event streaming platform POA, which utilized a Command Query Responsibility Segregation (CQRS) pattern. The Accenture team worked under her guidance to implement the POA, starting with an initial customer use case to validate its effectiveness and demonstrate its business value. The technologies employed in this solution included GCP Pub/Sub, GCP Dataflow, GCP

Big Query, Kafka, MongoDB Atlas, Apigee X, node.js. Nicole's expertise and leadership were instrumental in designing and delivering the event streaming platform POA, providing the retail client with a scalable and efficient solution to meet their evolving business needs.

#### **Accenture**

#### **GCP Solution Architect Database Modernization and Migration Lead**

As the lead solution architect for database modernization and migration in the Accenture Google Business Group, Nicole developed proof of concepts utilizing GCP products. These included AlloyDB, GCP database migration service, GCP Dataplex, and GCP Big Query. Nicole also developed GCP data management solutions to solve a range of business challenges including licensing costs, latency issues, scaling challenges, and modernization efforts across diverse industries including insurance, retail, telecommunications, consumer packaged goods, and state and local government.

#### **Deloitte Consulting**

#### **Senior Consultant**

As the technical lead on the Virginia Department of Social Services Benefits Modernization (VaCMS) Conversion Module, Nicole co-managed a team of 6 developers, consisting of 2 mainframe extract developers and 4 Informatica developers, for a system modernization project. This involved the detailed design and development of data conversion from three legacy systems into a single target system. Nicole's key responsibilities included defining source-to-target mapping for the conversion process, designing transformations and validations, and creating exception reports. She also implemented automated unit testing for both extraction files and the final data loaded into the target system. She defined precedence rules for record conversion to ensure accurate and seamless data migration. In her role as Lead BI Developer at the Virginia Information Technologies Agency, she successfully implemented Logi Info and Logi Ad Hoc custom reporting applications for multiple agencies. Specifically, she customized Logi Ad Hoc as a component to the Virginia Longitudinal Data System (VLDS). Furthermore, she integrated Microsoft Dynamics CRM 2011 with Logi Info reporting applications and handled the installation and configuration of Logi Info and Logi Ad Hoc on both Windows 2003 Server and Windows 2008 Server. Nicole served as a Project Scheduler and provided PeopleSoft support for the Virginia Community College System initiative. In this role, she tested web service interfaces between PeopleSoft and the Commonwealth of Virginia's HR system (PMIS). Additionally, she created lookup tables in PeopleSoft v8.9 for the HR system and developed test scripts for Absence Management and Payroll processes.

#### **Background**

- CapTech 2014 – 2022; 2023 – Present
- Accenture 2022 – 2023
- Deloitte Consulting 2009 – 2014
- BearingPoint Inc 2004 – 2009

#### **Certifications**

- Azure Fundamentals
- Google Cloud Certified - Professional Cloud Database Engineer
- Google Cloud Certified Cloud Digital Leader
- Google Cloud Certified Professional Data Engineer
- Google Cloud Professional Cloud Architect
- Project Management Professional Certification

#### **Education**

- Masters, Information Technology, Virginia Tech
- Bachelors, Virginia Tech



Name	Location
Peyton Green	Charlotte, NC
Position	CapTech Tenure
Customer Experience Lead	4 Years

## Summary

Peyton has over 18 years devoted to creating meaningful designs and customer experiences that help to drive businesses forward. Specializing in user research, strategy, experience design, and brand storytelling, Peyton endeavors to spark curiosity, foster innovation, and promote collaboration within his teams and clients. His focus and experience have proven results in the form of human-centered digital solutions and systems tailored to the unique demands of the public sector, financial services, retail, and manufacturing industries. As a passionate leader, Peyton is driven to raising the performance of his teams and uncovering what's next for his clients.

## CapTech Experience

### State Government

### Creative Director

Peyton co-led a team to redesign and modernize the state's Medicaid Management Information System through its latest transformation program aimed at increased flexibility, efficiency, and adaptability. He and the team focused on a detailed assessment, validation of requirements, conceptual design, and a strategic roadmap for a new Salesforce portal experience that serves healthcare providers, state employees, and Medicaid members in various ways.

### Textile Manufacturing Company

### Creative Director

As a brand strategist, Peyton was part of a team of UX researchers, product designers, and content strategists that focused on refining the client's brand and creating the vision and design for a new web-based app. Through user research Peyton and the team created personas, prioritized a list of product features, even a backlog and product architecture to serve future product launches. With a vision in place, the team created user flows, wireframes, and visual designs for the screens that would serve the initial MVP launch.

### State Government

### Creative Director

Peyton provided strategic design leadership for a user experience team that focused on the redesign and development of the state's permit tracking system. The effort included stakeholder, agency, and user research to inform wireframes, update navigation, and designs of a new public facing accessible website where citizens could more easily find and track active permit applications across the state. Peyton also led the design of a new internal application that allowed state employees to manage content on the public site.

### Fortune 50 Financial Services Company

### Creative Director

Peyton and the team worked with the bank's product and technology owners to assess and prioritize existing data and analytics around usage of one of the bank's primary digital marketing tools. Business owners who were driving content for the app were originally compiling usage analytics in spreadsheet format. Peyton and team housed the new prioritized data in Informatica and visualized it through a more user-friendly dashboard on the Tableau platform.

### Financial Services Industry

### Creative Director

Peyton was part of a team that strategized an approach to efficiently storyboard and produced a series of ten videos that would engage prospective advisors and enrich the onboarding process for new advisors. Working with lead product

owners of this top investment management firm, Peyton and the team were able to successfully highlight key features and functionality that makes the firm's proprietary advisory platform so enticing.

**Leading Provider of Specialty Logistic Services**

**Creative Director**

Peyton and the team joined an existing product team to provide guidance and support for promoting the client's newly launched tracking software by elevating the company's use of AI, automation, and machine learning. Through executive interviews and an iterative storyboard approach, Peyton and team were able to quickly produce and launch three brand and product videos for the organization, promoting the unique value proposition they bring to customers, and socializing this with potential investors.

**State Government**

**Creative Director**

Peyton provided creative direction for a team of UX researchers, designers and content strategists that created a fresh branded digital front door experience for the state's DMV website. Peyton and the team focused on an updated information architecture, content strategy, and complex design system that aimed to reduce call center volume and empower users to complete more tasks online. Accessibility annotations, a component library, and interaction style guide gave the DMV what they needed to successfully carry the design through implementation. As a fast follow, additional marketing collateral was created to support a rollout strategy when the site went live.

**American Food Company**

**Creative Director**

Peyton led a team through a strategic redesign of the company's website, prioritizing the release of certain sections of the website to align to annual corporate communications at the time. The effort focused on a brand refresh that would inform the visual designs of the new site, while the content strategy aligned to a new recruiting strategy that the company was interested in deploying across the site.

**Fortune 50 Financial Services Company**

**Creative Director**

Peyton serves as the customer experience lead for various projects aligned to the field marketing department within the bank. He leads various teams towards the strategic design and development of various digital tools and calculators that serve to inform the bank's consumer and small business customers directly or as marketing tools during various interactions with banking associates within financial centers across the country. Peyton is deeply embedded on the client side, enabling him to provide strategic recommendations that align to digital strategies across various areas of the bank.

**State University**

**Creative Director**

Peyton led a UX and visual design team through a complete website redesign for a prominent undergraduate academic institution in Virginia. The team used interviews and workshops to understand the current information architecture and provide direction on improvements for optimization. Peyton also helped facilitate a brand immersion discovery session with key constituents to understand brand strategy, perform a competitive analysis, and align on key goals for the website. The result was a component design strategy that was WCAG 2.1 (508) compliant and scaled across a 2000+ page website.

**Information Technology Company**

**Creative Director**

Peyton led a motion design team in developing a communications strategy to inform existing and potential patients of the benefits of joining clinical trials. He guided the team and client through visionary working sessions to align on a theme and approach for the video, then assisted the team in recruiting, interviewing, and scouting to ensure the right people and visuals aligned into a comprehensive and emotional story. Peyton provided on-site direction during filming and creative direction during post-production.

**One of the World's Largest Sports Organization**

**Creative Director**

Peyton provided creative direction through a comprehensive redesign of an internal web experience for members and agents. Workshops and a card sort were used to understand and update the existing information architecture, prioritize

content, and create a user experience strategy to support business objectives through the redesign. A visual design prototype was used in usability testing to validate the strategy.

#### **International Custom Packaging Provider**

#### **Creative Director**

Peyton provided strategic brand and user experience oversight for a technical design team that built an online interface for customers to design their own box packaging and print on-demand. The online box builder was built on the Unity platform, and allowed for users select their style of box and apply color, fonts, graphics, logos, and various other unique elements all within a branded web experience that directly integrated into the client's website and production platform.

#### **Additional Relevant Experience**

##### **BOLTGROUP**

##### **Creative Director**

Peyton built and led a highly skilled, multi-disciplined team of researchers, strategists, designers, engineers, writers, photographers and videographers, project managers, and production experts. He created purpose-driven brand, product, and service experiences for people and worked with researchers and brand strategists to align solutions with clients' business strategy. Highly skilled at filtering research and strategy into visual and verbal experiences. Embraces empathy and understanding to craft ideal solutions for clients and their customers.

##### **BOLTGROUP**

##### **Senior Graphic Designer**

Peyton art directed and designed successful print and digital experiences, while assisting in leading a team through each phase of a project. He crafted innovative new packaging, retail, and digital experiences that increased customer loyalty and planned, art directed, and executed numerous photo and video shoots to craft meaningful content.

##### **SnyderCreative**

##### **Senior Graphic Designer**

Peyton worked closely with a creative director, writer, and freelance designers to produce strategy-based communications for non-profits and local organizations. He developed the visual and verbal identity for a \$25 million museum venture, including a launch campaign of print collateral, direct mail, outdoor signage, and a 5-story graphic building wrap. He developed numerous brand identities, annual reports, direct mail campaigns, and collateral pieces. Additionally, Peyton art directed and managed the redesign of the agency's website which led to signing 4 new clients.

#### **Background**

- CapTech 2020 – Present
- BOLTGROUP 2010 – 2020
- SnyderCreative 2008 – 2010

#### **Education**

- Bachelor of Fine Arts, Graphic Design, James Madison University



Name	Suresh Veeravalli	Location	Richmond, VA
Position	Testing Lead	CapTech Tenure	16 Years

## Summary

Suresh has over 25 years of experience managing key phases of the software project life cycle. His extensive project management, process improvement, and quality assurance skills make him an indispensable member of core program management teams on multiple high value client implementations and initiatives. Suresh is a skilled project manager capable of leading large, complex projects and has a proven ability to develop and present project deliverables at all levels of an organization. He has experience working with a wide range of technologies and platforms specific to the Financial, Health Care, and Manufacturing industries. Suresh is a Certified Project Management Professional (PMP), a Certified Scrum Master, a Six Sigma Green Belt, with background certifications in development, database, and test automation. Suresh holds an MBA and a Bachelor of Engineering degree.

## CapTech Experience

### Virginia Department of Motor Vehicles (DMV)

### Program Manager

Suresh has been working at Virginia DMV as the STP Program Manager for over four years. In this role, he is responsible for designing, implementing, and leading the Structured Testing Platform (STP). Suresh built a solid reputation as the testing subject matter expert and trusted advisor to the senior IT management. His responsibilities include test planning, test documentation, automated testing, manual test execution, performance testing, end-to-end testing, release planning, test data management, and various other initiatives related to mainframe re-platform testing. Suresh developed test strategies and templates to document process flows, business rules, and thousands of test cases for around 1500 mainframe screens/transactions. As part of his role, Suresh provided oversight to project managers of the various STP teams and other projects in the DMV IT portfolio. He participated in key strategic planning meetings with DMV IT leadership, providing thought leadership on all testing-related matters. Recognizing the importance of automation regression for the program's success, Suresh built a test automation team by interviewing and onboarding several senior automation engineers, including an automation team lead. He has been training additional DMV resources on test automation tools and skill sets to further expand this team. Suresh set up parallel test environments and developed strategies to identify, extract, and migrate test data from the ADABAS to the SQL Server environment. He also collaborated with other project managers to develop test strategies for approximately 250 interfaces and 1500 batch jobs required for system integration testing. The STP documentation teams and test execution teams follow an Agile methodology and work in a 3-week sprint cadence. When the velocity of some the STP documentation sprint teams fell below the expected target, Suresh mitigated the risk initiating additional teams to maintain progress. These strategic planning initiatives over the years have resulted in significant improvements in testing efficiencies and throughput. The extensive documentation produced through STP is used as a training tool to offset the knowledge drain caused by the retirement of key DMV resources. The templates and end-to-end mapping are also leveraged by DMV's IT Program and Project Management team for other IT projects. One notable achievement was during test execution of a third-party's mainframe code conversion, Suresh's team identified several critical vulnerabilities and issues in their architecture and conversion methodology, showcasing the low-quality delivery. As a result, the DMV made the decision to terminate the contract with the third-party.

**Fortune 500 Financial Services Company**

**Project Manager**

Suresh was a key member of the Data Refinery Program, which aimed to transform and continuously enhance the data infrastructure within the Commercial Banking Data Analysis space. The program had two main objectives: to refine a set of metrics to serve as a single source of truth for business consumers and transition from the current Teradata platform to AWS. As part of his role as Project Manager, Suresh worked closely with product owners to identify scope and developed a product roadmap and delivery schedule. He was responsible for Change Management and Communication, ensuring smooth transitions and effective communication with stakeholders. In addition to his primary responsibilities, Suresh managed the remediation of existing business as usual (BAU) routines and reports to the new data platforms in preparation for deprecation of platforms like Teradata and BOBJ, among others. To facilitate project management and reporting to senior management, Suresh built comprehensive project management trackers. These trackers helped document, manage and report progress, ensuring transparency and accountability.

**Fortune 500 Financial Services Company**

**Project Manager**

Suresh successfully managed a key Data Integration work stream as part of a Fortune 500 Financial Services Company's integration program. He worked closely with the VP of Data Analysis and managed three projects on the GE conversion portfolio including Data Conversion, Development of Reports to support overall conversion, and Historical Data Acquisition and upload to Hadoop. He performed additional project management oversight on the Salesforce migration and CBRO support projects. He tracked project milestones and progress across multiple functional teams. Suresh also supported the GE HFS Project Management Office by managing conversion schedules and providing weekly program reporting and status updates.

**Fortune 500 Consumer Packaged Goods Company**

**Project Manager**

Suresh managed a \$9 million initiative aimed at replacing 'end of life' network equipment located at 39 client facilities around the country. He collaborated with the internal project team and external third-party network resources to ensure the project's successful execution. Suresh coordinated various activities including procurement, delivery, design, configuration, shipping, and cutover. He also oversaw user acceptance testing, involving over 30 impacted business teams, for a critical firewall upgrade. His effective management of risks and issues throughout the project helped minimize time and cost overruns. To provide transparency and facilitate program management, Suresh provided weekly dashboards that offered a comprehensive view of the project's progress.

**Fortune 500 Consumer Packaged Goods Company**

**Project Manager**

Suresh managed the implementation of a telephony and network upgrade at over 20 remote client office locations. He collaborated with outsourced and remote resources from nine vendors and service providers to ensure project delivery progressed according to plan. Suresh worked with the project team to ensure pre-implementation tasks, such as business readiness and training, were in place. He also developed updated processes for level 1 support and created the transition-to-support documentation. He developed hour by hour cutover plans and successfully managed simultaneous deployments across the United States.

**Fortune 500 Consumer Packaged Goods Company**

**Process Reengineering Lead**

Suresh was tasked with documenting the existing Trade Program processes, identifying areas of weakness, and proposing opportunities for improvement. He identified and interviewed various stakeholders to understand and document the current state of the business process flows. Suresh then conducted Cause and Effect analysis workshops, utilizing the Ishikawa (fishbone) diagram to identify possible causes of existing issues. He performed process re-engineering analytics to eliminate waste and redundancies. After further reviews with the business stakeholders, Suresh documented and presented the improved and updated process recommendations to the client.

**Fortune 500 Consumer Packaged Goods Company**

**Integration Manager**

Suresh managed the integration efforts for a project aimed at modifying the current Returned Goods process for one of the client's operating companies. The primary objective was to address deficiencies and streamline the process,

ultimately improving the timeliness and accuracy of reimbursement payments/credits to direct distributors. Suresh facilitated process review sessions with the project team. These sessions focused on documenting the integration process with the third-party vendor, which involved tasks such as validation, destruction, and disposal of out-of-date products. He provided thought leadership and implemented test strategies to validate the return data exchanged between the third-party vendor systems and the client's JDE system, ensuring credits were issued accurately.

**State Government**

**QA Manager**

Suresh joined the project team during the midway point of a \$15 million initiative to implement a new Budgeting system for the State Government. Despite facing missed schedules, he quickly took control of the situation and worked closely with project management to introduce a plan for a phased delivery approach to manage the large backlog of work. Suresh was the primary point of contact for the business on all functional and testing work streams. He facilitated requirements sessions, ensuring that client input was captured accurately. Suresh also documented these requirements and obtained sign-off from the clients on all change requests. In addition, Suresh was responsible for prioritizing and scheduling the execution of work through the Team Foundation Server. He provided leadership and direction to the system test team. Suresh coordinated releases and managed issues during client User Acceptance Testing (UAT). Through his efforts, he successfully executed the project scope, meeting the scheduled go-live dates.

**Fortune 500 Consumer Packaged Goods Company**

**QA Manager**

Trade payments and 1099 processing was historically a tedious exercise that required data from multiple legacy systems with limited in-house support. Suresh managed testing of the trade payment processing within the native ERP system (SAP) for a Fortune 500 Consumer Packaged Goods Company. Additionally, he enabled 1099 and IRSNA processing through a third-party vendor. Suresh developed the test plan and successfully managed the development and execution of test cases across multiple integration systems.

**Fortune 500 Consumer Packaged Goods Company**

**QA Manager**

Suresh managed testing of the financial and manufacturing business transactions resulting from the setup of a new services company within a Fortune 500 Consumer Packaged Goods Company. His specific responsibilities included the development of a test plan development and the management of test resources for test case development, test execution, and reporting.

**Fortune 500 Consumer Packaged Goods Company**

**QA Manager**

Suresh was responsible for test management on a high value business intelligence dashboard designed to provide accurate and timely marketing data to the field sales force. The dashboard was developed in Business Objects utilizing consolidated data residing in Teradata tables. Suresh developed and implemented a test strategy to validate over 3,700 data points using around 500 complex SQL queries and pivot tables. He provided training and implemented Quality Center as a tool to manage test execution and defect management. Suresh successfully met all the quality and schedule milestones on this high visibility project.

**Fortune 500 Consumer Packaged Goods Company**

**Lead Process Analyst**

The business need was to implement a Matter Management System that would empower lawyers and their support personnel to effectively manage matters while also serving as business and resource managers. Suresh documented standardized processes for the Law department to enhance responsiveness, accelerate turnaround times, improve accessibility, and maintain high-quality standards throughout the Matter Management Lifecycle. Suresh conducted extensive interviews with various stakeholders and facilitated business requirement meetings. He created process flow diagrams to visualize the workflows and compiled high-level business requirements. Finally, he presented the final business requirement document.

**Fortune 500 Consumer Packaged Goods Company**

**Project Manager**

As the Project Lead for the CRM tool selection project, Suresh executed the client's Project Management Methodology.

He created the work breakdown structure, project initiation document (PID), project plan, project Business Requirements Document (BRD), change requests, risks and issues logs, and reports. Suresh was extensively involved in facilitating business requirement meetings. He created vendor demonstration scripts to help vendors prepare focused demonstrations. He created a scoring matrix to evaluate and grade the CRM tools at vendor demonstrations. Suresh also conducted data analysis and documented the as-is state of master data relevant to the project in preparation for project implementation.

### **Additional Relevant Experience**

#### **OpenQ**

#### **Director of QA**

Suresh headed the QA department at OpenQ and successfully implemented the testing process and methodology based on established industry best practices. He managed the planning, staffing, scheduling, and test assignments across multiple project implementations. He evaluated and implemented testing tools like QTP, openSTA, RM Track, etc. for Test Automation, Performance Testing and Defect Management and owned and managed the test environments. Additionally, Suresh coordinated weekly progress meetings among System Analysts, Developers, and Testers to ensure the successful and timely deployment of projects. He was responsible for managing production support activities of live projects, including troubleshooting of production issues.

#### **Tek Systems**

#### **Senior Consultant**

As the Test Lead for the Service Requests and Workflow project, Suresh designed and implemented the testing methodology for the project team. He designed the templates for the creation of Test Plans, Test Cases, Test Assignment and Test Progress Tracking documents. Additionally, he conducted multi-team training sessions and helped implement the Testing Process and Defect Life Cycle process using Test Director. Suresh provided leadership and managed test assignments within a team of Analysts, Automation and Manual Testers that included offshore testing teams. He employed risk-leveling methodology while scheduling multiple runs of test execution for adequate test coverage. Suresh also conducted daily Test Progress and Defect Review Meetings and helped enhance the automated Smoke and Regression suits, scheduled the daily execution of Silk/ QTP Smoke Test, and created and executed the Disaster Recovery scenarios for the Service Request Applications during the mandated DR exercises. Suresh represented the project team in the weekly corporate test status meetings as the single point of contact for all the testing related activities of the Service Requests and Workflow applications. He was responsible for managing the test metrics and providing daily Defect Status Reports to the management, as well as participating in process audits. Furthermore, Suresh enhanced the existing testing process to ensure CMM level2 compliance.

#### **Aquent**

#### **Senior Consultant**

Suresh managed the testing efforts for several HR applications including the implementation of high visibility projects like the PeopleSoft HR and Change Control Management. He successfully led the testing of end-to-end systems integration that required several XML and Database interfaces between multiple applications like GTX, PeopleSoft, and HPSD. Suresh enhanced the validation and reporting ability of the existing automated regression suit by designing and providing leadership to a team of WinRunner automation engineers and performed data analysis to create test datasets. Additionally, he coordinated testing efforts between in-house, external vendor, and offshore development. He actively worked with business, design, and development during design reviews, setting up test environment, test data, and defect reviews. Suresh provided Test Estimates and performed all the tasks in the testing life cycle, which included creating high-level Test Plans, Test Cases, Reporting on Testing Metrics, Testing sign-off and Test Completion Reports.

#### **Adya Consulting**

#### **Senior Consultant**

As the Senior Test Automation Engineer on an enterprise-wide Oracle ERP implementation project, Suresh worked closely with Test/Business Leads and Developers to capture the core Functional/Business scenarios for automated regression testing. He created WinRunner data driven tests to run the core functionality on different international operations. Additionally, Suresh played a leadership role in co-coordinating the group's activities by mentoring and

training the automation team to achieve the set targets. He helped in identifying network bottlenecks using the Optimal Application Expert for performance testing. Furthermore, he created scripts to validate downstream testing of various workflow scenarios, developed regression test scripts, and validated the product integrity and stability.

#### **JJE Engineers & Consultants**

#### **Project Manager**

Suresh managed multiple project implementations including Loan & Market Management System for A.P. State Fishermen Co-operative Societies Federation Ltd., HR Monitor for Mentor Graphics (India) Pvt Ltd, Hyderabad, Inventory / Purchase Management for Rock Wool Ltd, Hyderabad and JJE Management Systems for internal application. He performed Requirements Analysis, Design Specifications, Data Modeling and created Data Flow Diagrams. Additionally, he developed Client Server business applications using Visual Basic, Oracle and MS Access.

#### **Background**

- CapTech 2008 – Present
- OpenQ 2006 – 2008
- Tek Systems 2005 – 2006
- Aquent 2003 – 2005
- Adya Consulting 2000 – 2003
- JJE Engineers & Consultants 1998 – 2000

#### **Certifications**

- Certified Project Management Professional (PMP)
- Certified SAFe Agilist (SA)
- Certified SAFe Product Owner/Product Manager (POPM)
- Certified Scrum Master (CSM)
- PROSCI

#### **Education**

- Masters, Business Administration/Management, Nagarjuna University
- Bachelors, Mechanical Engineering, Bangalore University

## 5.7 - In Response to Section 5 Part H Paragraph 2.C.4

*The resumes of the top three candidates potentially available to lead the Contractor's onsite efforts as the Contractor Project Manager. The resumes of the proposed Contractor Project Manager must include summaries of similar projects managed by that individual in the past. Summaries must describe the purpose/intent of the project and the major accomplishments of the project manager towards achieving the project goals. DMV reserves the right to interview the proposed project manager(s) and either confirm the recommendation or request an alternate project manager.*

### Proposed Project Managers



Name  
**Chris O'Keefe**

Location  
**Richmond, VA**

Position  
**Project Manager**

CapTech Tenure  
**15 years**

## Summary

Chris is a dynamic leader and senior account executive with fourteen years of experience delivering capability-rich solutions to a diverse group of clients across state government and industries. He is a multi-disciplined public services industry expert, solution manager, and transformation lead with a passion for helping clients solve problems, deliver complex initiatives, and transform to realize strategic business outcomes and opportunities.

## CapTech Experience

### **State Department of Social Services**

### **Industry and Delivery SME**

Chris led an assessment to determine the agency's readiness to undertake several major, multi-million-dollar initiatives concurrently, and provided actionable recommendations to close readiness gaps. Following this assessment, Chris oversaw a team supporting an agile-based delivery enablement transformation. Throughout these engagements, Chris served as both a strategic advisor and subject matter expert (SME). He also played a key role as a tactical implementer of agile-tooling and processes that supported integrating teams, centralizing information, improving collaboration, increasing transparency, and enabling governance.

### **State Department of Taxation**

### **Solution and Change Management Lead**

Chris served as a Solution and Change Management Lead on several strategic assessments and initiatives at the State Department of Taxation. Specific areas of focus included identity and access management, enterprise architecture, service and incident management, business intelligence, application lifecycle management, and online capabilities for external stakeholder groups. Chris partnered with leadership stakeholders to create clarity and alignment around strategic goals and priorities. He collaborated with multiple teams across the agency to successfully implement enterprise initiatives while focusing on change management to help staff embrace, adopt, and use new solutions and capabilities.

### **Fortune 500 Electric Services Company**

### **Functional Architect and Solution Manager**

Chris served as the program lead and solution manager on a Smart Grid Optimization project at a Fortune 500 Energy Company. This client desired to improve vital system capabilities such as scalability, availability, and supportability using a microservices (cloud-native) architecture. Chris was responsible for working with product owners to develop a strategic vision for implementation, considering upcoming and in progress work across all work streams. Other leadership responsibilities included coordinating team members, mitigating risks, and resolving centralized issues, governing quality, and ensuring traceability throughout the software development life cycle. Chris also led all analysis efforts, including aligning priorities to strategic objectives, defining solution domains, managing analysis team tasks and workloads, eliciting and documenting solution requirements, establishing testing scenarios, and continuously grooming the product backlog.

### **Fortune 500 Electric Services Company**

### **Lead Systems Analyst**

Chris led a team of data and business systems analysts performing an assessment of a facility management (FM) historian at a Fortune 500 Energy Company. This client used the FM historian to collect, archive, and report time series data for over one million energy management systems (EMS), distribution management system (DMS), and interval metering

data points. Chris was engaged to assess and provide future state recommendations for over forty (40) custom reporting capabilities that required conversion to a new platform. He led all analysis activities and established current state documentation, defined a future state vision, identified capability gaps requiring customization, and produced a roadmap to achieve the client's objectives.

**Fortune 500 Electric Services Company**

**Senior Business Systems Analyst**

Chris served as a senior business systems analyst on a Case Management implementation project for a Fortune 500 Energy Company. The Case Management system supports the entry and tracking of allegations, security support incidents, disclosures, and advice guidance for Ethics & Compliance, Corporate Security, and Human Resource departments. Chris was primarily responsible for documenting the technical design and integration requirements for the document and records management system capabilities. Additionally, Chris assisted with the design and validation of several complex workflows, the security model, and synchronization events with external systems.

**Fortune 500 Electric Services Company**

**Data Analyst**

Chris served as a data analyst responsible for assessing a real-time outage processing (RTOP) environment at a Fortune 500 Energy Company. He worked with the outage management team to define strategic goals and objectives for the future state environment and delivered recommendations to optimize and govern the future data architecture.

**Fortune 500 Consumer Packaged Goods Company**

**Lead Business Systems Analyst**

Chris served as the lead business systems analyst on a learning management assessment for the compliance department of a Fortune 500 Consumer Packaged Goods Company. Chris assessed the current state solution for delivering and tracking completion of training for field sales force and administrative employees. He then elicited business needs and pain points, identified capability gaps, and partnered with business stakeholders to recommend a future state solution that was implemented on time and budget in a subsequent phase.

**Fortune 50 Telecommunications and Media Company**

**Lead Business Systems Analyst**

Chris was the lead business systems analyst and information architect on an intranet consolidation project at a Fortune 500 Telecommunications Company. Chris was responsible for constructing a content inventory of all regional SharePoint environments, defining, and modeling the proposed consolidated site hierarchy, proposing a navigation and collaboration taxonomy, and documenting the enterprise content management plan for the consolidated SharePoint environment. Additionally, Chris worked with the SharePoint architect to propose security and governance policies and procedures and defined the migration plan for each environment. During migration, Chris coordinated the team that successfully migrated all content to the consolidated SharePoint environment.

**Fortune 500 Holding Company**

**Lead Business Systems Analyst**

Chris was the lead business systems analyst and information architect on a project that integrated and enhanced several proprietary applications onto a modern SharePoint architecture at a Diversified Holding Company. His primary responsibilities included eliciting requirements, documenting and prioritizing enhancements and defects, and working with the product owners to maintain and groom the product backlog. During implementation, Chris was also responsible for performing integration tests, conducting defect reviews, assigning bugs to developers after completing triage, and managing other analysts' tasks and workloads. Serving as an information architect, Chris analyzed the legacy content and created a detailed inventory for migration, aided in the design of the future state system's information architecture, and managed the tools that staged content for migration.

**Fortune 500 Financial Service Company**

**Java Developer**

Chris was responsible for migrating legacy WebLogic Integration based web services to a modern web service architecture at a Top 10 Financial Services Company existing code and documentation, documented future state architecture, and developed the new services and automated tests.

#### **Fortune 500 Financial Service Company**

#### **Business Systems Analyst**

Chris was a member of multiple analysis and schedule management teams focused on deposit operations on a bank integration project at a Top 10 Financial Services Company analysis, documented data transmission requirements, and served as an expert resource during customer migration to the new system. In addition, Chris helped create and manage the minute-by-minute conversion plans for Account Analysis, Account Reconciliation, Wire Transfer, Investment Operations, and Automated Clearing House systems. During conversion, Chris served as the schedule manager responsible for the conversion of the Automated Clearing House system.

#### **State Lottery**

#### **Business Systems Analyst**

Chris designed the visual compositions for the State Lottery SharePoint intranet that were approved by the project stakeholders. He performed usability and information architecture reviews of the site content, designed, and implemented the custom brand, and assisted with the content migration, configuration, and transition activities.

#### **State Workers' Compensation Commission**

#### **Business Systems Analyst**

Chris was a business systems analyst on a project that migrated the State Workers' Compensation Commission's existing public facing website to a user-friendly system that provided enhanced content and security features. Chris was responsible for compiling the information architecture requirements, assisting with the implementation of the new solution, and performing content migration. In addition, Chris produced documentation and performed knowledge transfer to ensure stakeholders could effectively use and maintain the new solution after transition.

### **Background**

- CapTech 2009 – Present

### **Certifications**

- Certification Competency Business Analysis (CCBA)
- Certified SAFe Scrum Master (SSM)

### **Education**

- Bachelors, Business Information Technology, Virginia Tech
- Bachelors, Business Administration/Management, Virginia Tech



Name	Location
Craig Thomas	Richmond, VA
Position	CapTech Tenure
Project Manager	13 Years

## Summary

Craig has over 30 years of experience, with significant expertise in program and project management. He has extensive experience leading strategic analysis and planning at the executive level. With specialization in program and project management, Agile project management, process engineering, change management, and product management, Craig excels in leading strategic projects that streamline processes, optimize productivity, enhance data effectiveness, and reduce expenses. He possesses a deep understanding of industry-recognized best practices and methodologies, particularly in the domains of retail and commercial banking, loan origination and servicing, and operations and systems consulting. Craig also has experience in state government and wholesale/ retail brokerage. Craig holds several certifications, including Project Management Professional (PMP), Certified Scrum Master (CSM), SAFe Agilist, and Certified Tester-Foundation Level (CTFL). Additionally, he completed the George Washington University Master's Certificate in Project Management Program and holds a Bachelor of Science degree in Economics from Texas A&M University.

## CapTech Experience

### Global Market Leader in Chemical and Ingredients Distribution

### Chief of Staff

Craig served as the Chief of Staff for the President of the North America division and the CEO of the Global industry business unit during a significant reorganization within a chemical distribution company. Craig led the preparation, planning, and initiation of the project aimed at creating the North American business unit. This involved transitioning customers, suppliers, inventory, and operations from previous combined organization to two independent divisions. Concurrently, Craig established the Global industry business unit. He drove the planning, analysis, and execution efforts across regional presidents in the Americas, EMEA (Europe/Middle East/Africa), and APAC (Asia-Pacific). This initiative encompassed defining strategy and key performance indicators (KPIs), building regional management teams, and establishing operating norms to ensure smooth operations and alignment across different regions.

### Financial Institution

### Governance Assessment Leader

Craig conducted a root-cause analysis for a failed Online & Mobile Banking solution implementation within a mid-sized US financial institution. He reviewed program documentation and conducted interviews with leaders and key stakeholders involved in the project. Based on his analysis, Craig produced a report that identified the failure points within The System Development Life Cycle (SDLC), vendor management, functional quality assurance, performance management, and executive decision-making processes.

### State Employment Agency

### Program Manager

Craig led all aspects of a multi-year application transformation program, overseeing various components such as application design and development, quality assurance, data management, interface implementation with agency, state, and third-party systems, legacy system data migration and conversion, training and change management, multiple implementations, production support, and knowledge transfer. He managed a team of 80 CapTech employees and contractors and 200 client personnel. The application applied configurable business rules, automating previously paper-based processes, and modernizing medical claims processes. The move to a paperless system is expected to eliminate

yield significant benefits, including the elimination of approximately 50,000 Orders of the Chair per year, a reduction of 900,000 scanned documents per year, resulting in over \$850,000 in annual savings, avoidance of 2,450 unnecessary reviews of variance requests by the Medical Director's Office annually, and elimination of the need for staff to follow up on improperly filed variance requests, which amounts to nearly 48,000 forms per year.

**International Timeshare Company**

**Program Leader/Process Engineer**

Craig shared program leadership with another CapTech consultant to replace the loan servicing system for one of the largest timeshare providers in the world. Craig led a team of consultants, the system vendor, and a cross-departmental, cross-functional client team to document existing processes, and then reengineer processes to take advantage of new system capabilities and best practices. The initiative entailed Process Engineering, Business Analysis, Requirements Definition, and System Configuration. The consultant team was also responsible for Test Case creation and execution, test administration, and UAT coordination. The program piloted Agile methodology and tools in the Financial Services Department.

**Fortune 500 Financial Services Company**

**Data Transformation Leader**

Craig worked with Regulatory Compliance management to establish the strategy, governance structure, and roadmap to execute migration to an AWS cloud environment, and to implement business improvements leveraging the cloud. The department managed migration and transformation of business processes across the spectrum of regulations, including more than 20 risk models and more than 500 reports. Craig also implemented and led the strategy and execution of the cloud migration and data transformation for one of the two consumer US Card lines-of-business (LOB). The LOB migrated 10 programs and 8 applications supporting account acquisition and servicing. Craig' responsibilities included strategy and roadmap planning, change management, and executive reporting.

**Fortune 500 Financial Services Company**

**Middle Office Manager**

Craig led a cross-functional team of more than 50 consultants to drive production oversight and issue resolution in support of the bank's program to remediate KYC compliance for approximately 400,000 Wholesale Banking clients. The team served as the operations and communications epicenter for executive management, program management, supporting departments, subject-matter experts, more than 20 lines-of-business, and 2,000 on-shore and off-shore consultant analysts from four other consulting firms. Craig implemented processes and procedures necessary to promote communication efficiencies across multiple offices. His responsibilities included team leadership, relationship management across the organization, service quality and consistency assurance, and resolution of escalated issues.

**Fortune 500 Financial Services Company**

**PMO Manager**

Craig led PMO activities for the multi-year, \$100 million Single Security Program. The PMO, including 5 CapTech consultants and several employees, coordinated activities and deliverables of more than 200 full time equivalents (FTEs) across business and IT departments within the Fortune 500 Finance Company. Craig's responsibilities included Executive Reporting, FHFA communications, Issue and Risk Management, Continuous Improvement, and Knowledge Management. Craig implemented and ensured consistent processes and performance of 35 business and IT Project Managers and 45 projects.

**Fortune 500 Financial Services Company**

**Program Manager**

Craig worked with Single-Family leadership to establish a new department responsible for all aspects of Data Governance and Management within the Fortune 500 Finance Company's largest business unit. The team acquired staff and implemented processes to proactively monitor data quality, establish standards and controls, construct business and technical metadata, produce multi-level reporting, and standardize business intelligence tools and usage.

**Fortune 500 Financial Services Company**

**Project and Organizational Change Manager**

Craig led Risk Office projects to improve Home Loans effectiveness and performance necessary to address increased regulatory oversight and complexity. He implemented procedures and practices to prepare for audits and exams and to

communicate previews to executive management. Craig collaborated with executive management, Business Risk Office leadership, and key stakeholders and led the reengineering of the Event Management process. His responsibilities included project management, change management, creation of the Event Manager training program, implementation of reporting and visual management, and adherence to the organization's Lean-Six Sigma program.

**Fortune 500 Investment Management Company**

**Program Manager/Scrum Master**

Craig managed a diversified CapTech delivery team in the implementation of strategic data solutions to support multiple business units in an Agile environment. Sprints delivered Requirements Definition, ETL Design and Development, Spotfire Report Design and Development, Integrated Testing, and User Acceptance Testing. Notable achievements of the team included the creation of an integrated Third-Party Distribution datastore, implementation of a campaign management system, and the reengineering of analytical tools and reports. To facilitate collaboration and productivity, the team leveraged CapTech's Delivery Center, with team members working on-site at the client's location, at CapTech's Richmond-based Delivery Center, and from home offices.

**Fortune 500 Financial Services Company**

**Project Manager**

Craig managed Records Retention during the integration of a purchased business unit into the bank. As part of the project, he ensured the proper disposition of all paper and electronic documents. Additionally, Craig defined a process to request and exchange documents between the bank and the selling institution.

**State of Missouri**

**Project and Organizational Change Manager**

Craig managed a project to enable the State of Missouri system components using SharePoint 2010. The project also implemented and automated an end-to-end Enterprise Change Control strategy, reengineering the organization's design and development methodology to ensure consistent and effective technology implementations. Craig effectively managed a geographically dispersed team utilizing a combination of onsite presence and remote collaboration technologies. In addition to overall project management, Craig was responsible for all elements of organizational change, including communications and training.

**Fortune 500 Financial Services Company**

**Program Leader**

Craig managed a multi-project program to enable the bank to originate unsecured and deposit-secured loans in the national market. He implemented a Program Management Office that ensured consistent processes, facilitated effective communication, and drove the broad program to a successful conclusion. He managed cross-functional teams to implement a new multi-channel application capture engine, vendor-supported electronic signature functionality, and centralized funds disbursement. Throughout the program, Craig served on the program leadership team responsible for strategic planning and analysis and assured the program satisfied executive strategic priorities. Craig's critical areas of responsibility included program and project management, change management, regulatory compliance, business intent definition and assurance, and process engineering.

**Additional Relevant Experience**

**Texans Credit Union**

**Vice President**

Craig managed a 40-person Consumer, Mortgage, and Business Lending Group, supporting 30 branches, Contact Center, Internet Banking, and five Mortgage/Business Loan Officers. He managed \$20-30 million monthly originations, a \$1.3 billion loan portfolio, and a \$3 million annual budget. Craig was responsible for establishing Consumer and Business Lending strategic priorities and plans. He sponsored and managed projects and innovative data analysis programs that increased originations over 90%, reduced staff and expenses by 30% while fully centralizing loan origination, and decreased errors by more than 90%. He implemented Business and Real Estate Lending, creating products and processes executed by new and existing staff. As the senior business leader with the most extensive project management and systems implementation experience, Craig served as the organization's executive sponsor as it created an enterprise wide PMO to ensure proper project prioritization, management, and execution. Working closely

with the CIO, IT leadership, and Operations leadership, Craig defined expectations, provided guidance, and made key strategic decisions regarding implementation of tools, processes, responsibilities, and standards.

### **Capital One**

### **Senior Vice President**

Craig managed bank credit products and sales and marketing of national credit products through bank channels and executed associated projects. He also managed Business Banking marketing and sales support for more than 30 branches, more than 200 business bankers, and a telemarketing group.

### **Capital One**

### **Program/Project Manager**

Craig managed the successful execution of four programs and 11 projects, with a total three-year net present value of more than \$50 million. Among several strategic planning projects, Craig led strategy planning for corporate credit card implementation and for credit card and micro-business lending distribution through bank branch and call center channels. Craig created the Small Business PMO, aligning with corporate PMO standards. He also served as the Small Business representative within a multi-year program to implement an enterprise consumer loan accounting system and served in various PMO roles during this time. Projects included Small Business Installment Loan Implementation, SBA Lending Implementation, Small Business Internet Implementation, and Small Business Credit Merger Integration, utilizing both traditional and Agile methodologies. The Credit Merger Integration project increased branch business credit card applications 100%, branch business small loan applications 20%, outbound telemarketing business credit applications 300%, and outbound telemarketing business deposit sales 300%.

### **Background**

- CapTech 2011 – Present
- Texans Credit Union 2007 – 2010
- Capital One 1999 – 2007
- Crestar Bank/ SunTrust Bank 1998 – 1999
- Seer Technologies, Inc. 1997 – 1998
- ARGO Data Resource 1990 – 1997
- Lone Star National Bank 1986 – 1990

### **Certifications**

- Certified Project Management Professional (PMP)
- Certified SAFe Practitioner (SP)
- Certified Scrum Master (CSM)
- Certified Tester, Foundations Level (CTFL)

### **Education**

- Masters, George Washington University
- Bachelors, Economics, Texas A&M University



Name	Kristen Hundley	Location	Richmond, VA
Position	Project Manager	CapTech Tenure	9 Years

## Summary

Kristen has over 15 years of experience in transformation and delivery, successfully implementing custom and off-the-shelf technology solutions for clients in both public and commercial industries. Her recent experience has been in project and portfolio management, helping public sector clients deliver solutions across a range of system development methodologies. She blends management consulting disciplines, including project management, business analysis, and organizational change management, to facilitate effective communication, solution development, and the restoration of order amidst chaos. She thrives in fast-paced environments, paying meticulous attention to detail. Kristen is proficient in adapting to various technical environments and businesses, employing systematic thinking, teaching others, and bridging the gap between technical and non-technical resources through effective communication.

## CapTech Experience

### State Department of Social Services

### Project Delivery and State Government SME

As a project management and solution delivery subject matter expert (SME) within CapTech's state government practice area, Kristen played a crucial role in delivering an enterprise readiness assessment. The assessment aimed to evaluate a state agency's ability to successfully execute upcoming large transformation initiatives. Following the assessment, Kristen conducted evaluations of the agency's divisions and teams to identify cross-functional product teams that would provide on-going support. She also contributed to the development of processes and tools for integrated work management and increased transparency. In addition, Kristen provided training and support to teams to facilitate their adoption of new agile practices and integrated work management tools.

### Virginia Department of Motor Vehicles (DMV)

### Project Manager

The State Department of Motor Vehicles was redesigning their public website, moving to a new content management system and cloud-hosting environment. Kristen presented executive status and prepared dashboards for the commissioner, assistant commissioners, and the Governor's transformation office on this high-visibility project for the agency and Commonwealth. Kristen managed and facilitated the agency team's activities, including technical and security reviews, content development, and user acceptance testing. She tracked that the vendor was meeting contract commitments, including milestone dates, resulting in early delivery of the website. To prepare for launch, she facilitated agency-wide demos, open house events, contact center previews, and agency-wide communications to promote awareness and build excitement leading up to go-live.

### State Criminal Justice Services

### Project Manager

Kristen led a website redesign project for a state criminal justice agency's law enforcement division. The objective was to design a visually appealing, interactive site with an improved information architecture and content structure that would attract out-of-state recruits and contribute to the achievement of executive leadership's strategic goals. Kristen was the project manager for a CX team that consisted of a creative director, UX analyst, visual designer, content strategist, and content writer. The team delivered the design in 8 weeks, which included the development of a component library, as well as content and high-fidelity designs for 10 priority pages.

**State Corporation Commission**

**Project Manager and Process Improvement Analyst**

Kristen led a team of six people in a comprehensive assessment for a state agency to document new processes following a large technology implementation. The assessment included documenting standard operating procedures through staff interviews to identify opportunities for internal efficiency improvements. Concurrently, a full system assessment was conducted to evaluate internal processes and measure the usability of the new system for customers. The team also conducted a usability study with customers to uncover opportunities and provide system recommendations. Additionally, Kristen met with leadership to understand the division's mission, vision, and key metrics, and interviewed staff to identify current responsibilities and pain points. Based on these findings, she developed a business process improvement roadmap and is currently implementing iterative improvements for the client.

**State University**

**Engagement Manager**

Kristen provided project oversight and delivery assurance for the university's website redesign and implementation project. The goal of the project was to create and deliver a new and modern website that provides an easy to navigate digital experience for core audiences, while weaving in the university's rich history, traditions, and culture to increase student enrollment and make the university a frontrunner amongst other historically Black colleges and universities (HBCUs) in the surrounding region. In addition to project oversight, Kristen assisted with page design and content migration for the website during implementation.

**State Corporation Commission**

**Project Manager and Change Management Specialist**

Kristen provided support to a state agency in assessing their new information system and improving user adoption and enhancing external user communications. She led the execution of a customer survey to gauge user sentiment and implemented enhancements to the public website and training documentation. These improvements aimed to enhance information and communications for external users.

**State Corporation Commission**

**Project Manager and Solution Lead**

Kristen led the implementation of a new content management system and redesigned the public facing website for a state agency. She was responsible for developing the project schedule, developing, and managing the team's backlog and sprint planning, leading daily meetings to ensure clear team communication, managing and mitigating risks and issues, and providing support to the design, technical, and content work streams as needed for analysis and strategy. During the project, Kristen managed the auditing of current website content by the divisions, adhering to a "less is more" project goal, and coordinated the content migration efforts across CapTech and client resources, migrating 500 pages and 2000 documents to the new website. She was accountable for all aspects of discovery, development, and overall quality.

**Fortune 500 Electric Services Company**

**Senior Functional Lead**

Kristen played a key role as the functional business analyst for a software division of a Fortune 500 energy company. The objective was to enhance their Smart Grid Platform product, which lacked cohesion and scalability after being developed over several years. The project aimed to deliver a future state solution that would improve vital system capabilities, including scalability, availability, and supportability using microservices architecture based on Spring Boot and Docker. Kristen was responsible for collaborating with product owners to document functional component specifications, including complex electrical engineering algorithms, and overseeing test development and execution. She also actively contributed to agile team activities such as defining stories, assisting with backlog grooming and prioritization, tracking project status and risks with stakeholders, and facilitating the transition of responsibilities to the client support team.

**Fortune 500 Electric Services Company**

**Project Manager and Business Systems Analyst**

Kristen led a team of developers to implement a new mobile-web design for a Fortune 500 utility company. The primary objective of the project was to revamp the mobile-web experience for power outage reporting, aiming to enhance usability and decrease call center volume during outage events. Kristen ensured the effort remained on track and was

completed successfully. Kristen documented details designs from front-end and web service components, which leveraged usability study results while adhering to legacy mainframe data requirements.

**Fortune 500 Electric Services Company**

**Project Manager and Business Systems Analyst**

With the growth of distributed generation, a Fortune 500 utility company wanted to implement a solution to streamline coordination between third-party solar farm operators and their operations centers. Kristen completed an 8-week assessment where she interviewed business and IT stakeholders, defined requirements, and proposed a solution and roadmap for implementing an integrated application to fulfill internal and external user interactions.

**Fortune 500 Electric Services Company**

**Project Manager and Business Systems Analyst**

Kristen led a team of three .NET developers to implement a work management application to replace a legacy application. Kristen managed the schedule for the development, testing, and implementation phases and helped confirm the application design and validate functional requirements. She worked closely with business stakeholders to ensure satisfaction and coordinated their participation in testing and deployment activities.

**Additional Relevant Experience**

**Accenture**

**Solution Manager**

Kristen led a team of five consultants through the software delivery lifecycle for a \$16 million Oracle E-Business Suite (EBS) federal financial system implementation to replace a 25-year-old, custom legacy system. She prepared and delivered 14 pilot sessions to demonstrate EBS software functionality and facilitate design decisions with client stakeholders. To identify areas of improvement for business process efficiency, Kristen met with stakeholders and subject matter experts to document current processes and design desired future state processes for the new system. Kristen led a pilot Oracle Hyperion Planning solution for federal budget execution, acting as both the functional SME and developer for all planning forms and reports.

**Accenture**

**Business Area Solution Lead and Asia Pacific Deployment Lead**

Kristen was the “Record-to-Report” workstream lead for a global professional services company. She tested and deployed the global solution for North America and completed design, build and testing for subsequent releases to 37 additional countries in Europe, Africa, Latin America, Asia, and Australia. In addition to workstream lead responsibilities, Kristen led the Asia Pacific (APAC) Deployment for the configuration team covering 14 APAC countries over two deployment cycles. She developed a detailed project schedule for configuration and custom development designs and managed a team of ten consultants on the configuration team. Kristen collaborated with U.S. and overseas development teams for functional design hand-offs and support for unit testing. Kristen traveled to London, Frankfurt, Hong Kong, and Manila to facilitate acceptance testing with the system users and to train the local client support teams.

**Accenture**

**Business Systems Analyst**

Kristen joined the functional team during the integration testing and was quickly recognized as the system and process expert for the Federal Budgeting functionality. She delivered training to the Budget Division after working with the product for only four months. After deployment, Kristen investigated and resolved production support issues related to incorrect accounting entries. She trained users on ad-hoc financial reporting as the BI Functional Lead and assisted users to create their own reports to translate large amounts of transactional data into effective operational reports as part of production support.

**Accenture**

**Requirements and Testing Analyst**

Kristen worked on a project to upgrade a custom, web-based business mail tracking system to accommodate barcoding enhancements. The team completed requirements, design, build and test activities. Kristen contributed to all project deliverables with minimal supervision and attention to detail, demonstrating the ability to promptly add value to the team over an eight-month project duration.

## **Background**

- CapTech 2015 – Present
- Accenture 2008 – 2015

## **Certifications**

- Certified Project Management Professional (PMP)
- Certified SAFe Agilist (SA)
- Six Sigma - Yellow Belt

## **Education**

- Bachelors, Industrial Engineering, Virginia Tech

## 5.8 - In Response to Section 5 Part H Paragraph 2.C.5

*A narrative describing the level of access the proposed project team members have within your organization and the authority they have to commit resources to meet unexpected surges in activity and/or to respond to service issues.*

CapTech plans to assign the Managing Director who has served as CapTech's Senior Account Executive to the Commonwealth of Virginia since 2019 as the lead Project Manager on this initiative. This resource has been with CapTech since 2009 and has supported staffing operations for multiple large accounts at CapTech since 2015. This resource also reports directly to CapTech's Healthcare and Public Services Portfolio lead, who participates in CapTech's weekly staffing prioritization meetings.

In addition, CapTech will assign an Executive Sponsor to this initiative who direct responsibility for CapTech's go-to-market initiatives and delivery of all services for CapTech's Healthcare and Public Services Portfolio. This resource is a member of CapTech's Partnership Team and will work directly with the lead Project Manager to ensure delivery of services while providing a direct path for escalation of identified risks and issues.

As an organization, CapTech understands the importance of this initiative and plans to establish an executive governance team who will support all aspects of our delivery. This executive governance team will include Partners, at least one member of CapTech's Executive Management Team ("EMT"), and our most senior technical Fellows across our Systems Integration (SI), Data and Analytics (DA), Management Consulting (MC), and Customer Experience (CX) practice areas.

In summary, our assigned Project Manager and Executive Sponsor will have the necessary authority to commit resources to meet all but the most extreme and unexpected of circumstances. In the last year alone, this Project Manager supported the staffing of over a hundred consultants to meet the project demands of agencies across the Commonwealth of Virginia. CapTech's tiered levels of initiative support and governance will reinforce our ability to ensure delivery of services and remediation should any emergency circumstances arise.

## 5.9 - In Response to Section 5 Part H Paragraph 2.C.6

*A narrative describing the plan for addressing skills and services that are not provided in this base staffing assignment, how assignment of such staff will occur, how quickly the staff can be provided, and what procedures must be followed by DMV and the Contractor project manager in acquiring such additional staff.*

CapTech utilizes a rigorous weekly staffing process that enables rapid and quality assignment of staff to meet project needs. We maintain an up-to-date system with our staff, their skillsets, current project assignments, planned future assignments, and projected availability dates. Starting approximately sixty (60) days from our projected start dates, we evaluate our staffing demands on a weekly basis across new projects, extensions of existing projects, and staffing additions to existing projects.

Our staffing process begins on Mondays, when our Public Services team meets with our staffing operations and practice area teams to discuss staffing needs. Coming out of this call, our practice area leads evaluate demands across all clients on Tuesdays, and then our portfolio leadership team defines the top priorities for staffing when there are conflicts or limited supply of available resources. Coming out of the portfolio prioritization, we start meeting with identified individuals to confirm fitness for the role. We typically have clarity by Thursday on the specific resources that we can potentially align to various staffing needs and can begin scheduling interviews if required.

While we typically begin our staffing process sixty (60) days in advance, we can usually allocate staff to a project in approximately two to six (2-6) weeks depending on our overall client demand, particular skill sets, and numerous other factors. In the event we identify any skills or services that our base staffing assignments do not address, then we will add the staffing request into our staffing system and begin the process outlined in this section. Note, we typically find that the amount of time required to complete Commonwealth of Virginia onboarding tasks far exceeds the time it takes for us to identify and align resources to staffing needs.

DMV needs to stay in close coordination with our Project Manager to enable these staffing operations. In addition, if any skill gaps are due to additional scope that DMV did not include in the EPD, then we may need to enter negotiations using the project change process prior to staffing any resources to meet the needs of the enhanced / additional scope.

## 5.10 - In Response to Section 5 Part H Paragraph 3

*The Supplier must describe how quickly resources with the specific skills, expertise, and level of expertise can be acquired and provided by the Contractor in the event resources become unavailable at any stage of the project.*

CapTech will make every effort to begin work quickly using the qualified consultants presented in this proposal. All our consultants are full-time, salaried employees, and our turnover rate of only 5% is extremely low for our industry. Consulting Magazine’s Top 10 “Best Places to Work” has ranked us multiple years since 2012, demonstrating our employees’ work satisfaction. These attributes provide a deep and dependable base of consulting skills who are not likely to leave CapTech mid-project — creating very low turnover risk for DMV.

CapTech has approximately 300 consultants based in our Richmond office, 200 consultants based in our Reston office, and can reach back to our national network of more than 1,000 consultants should we require additional skills or personnel.

At all times, CapTech consciously reserves 10–15% of our consultant pool for a “bench,” which allows us to staff new and increased client requirements quickly. We have consultants regularly coming available that we could earmark for this engagement, if required. We provide more details about our staffing process in our response to the previous question.

Our recruiting and sourcing teams leverage multiple sources to obtain talent that aligns with our core service offerings. Our team continuously seeks strong CapTech talent and maintains a robust candidate pipeline, allowing us to grow our consultant base year over year to continuously improve our bench strength and our ability to serve our clients with talented and experienced consultants.

## 5.11 - In Response to Section 5 Part H Paragraph 4

*Throughout the project, the Contractor shall provide resumes for all proposed staff as they are identified for DMV approval. DMV reserves the right to be involved in the selection and rotation of any Contractor team members assigned to the project. Contractor staff will also be required to pass a background check and fingerprinting performed by DMV.*

CapTech can provide the resumes for all proposed key project resources to DMV for review, feedback, and approval. We will also involve DMV in the selection, rotation, and approval of any mutually agreed upon key project resources assigned to the project. However, CapTech needs some flexibility in staffing the resources that we believe will mesh the best on our teams, and while we are willing to provide resumes to DMV for the identified staff for feedback, we need to reserve the right to assign all non-key resources to the project. We understand that all staff must pass a background check and fingerprinting performed by DMV.

## 5.12 - In Response to Section 5 Part H Paragraph 5

*DMV reserves the right at any time during the life of the contract, including any renewal terms, to require removal of any Contractor personnel, including any employees and/or agents of Contractor and/or of Contractor's subcontractor(s), when, in the opinion of the DMV Project Manager, such person or persons is/are not performing effectively. Contractor shall acknowledge the request and provide replacement staff acceptable to DMV within a reasonable time.*

CapTech understands this request, and likewise will provide any feedback to DMV on any personnel that DMV assigned to the project, and when in the opinion of the CapTech Project Manager is/are not performing effectively. DMV shall acknowledge the request and provide replacement staff or work to remedy the situation within a reasonable time.

## 5.13 - In Response to Section 5 Part H Paragraph 6

DMV will provide Contractor staff with adequate on-site resources at the Richmond DMV Headquarters facility to perform all duties including:

- Adequate workspace
- PC with access to a workgroup printer
- Usage of on-site office supplies available at DMV (i.e., copier and printer paper)

Based on the nature of the work our teams will be performing, CapTech requests that DMV provide all CapTech team members with developer-grade laptops with sufficient hardware, software, capabilities, and required admin permissions to sustain project activities and meet project deliverable requirements efficiently and effectively. DMV agrees to provide new laptops to CapTech team members if previously provided laptops prove insufficient.

On-site resources will also need at least two displays (e.g., a laptop and monitor), laptop stand, keyboard, mouse, power adapter, and necessary accessories to connect to DMV conference room displays. While onsite at DMV facility during agreed upon times, CapTech personnel will have access to a workspace, equipment, software, and supporting infrastructure as necessary to accomplish their assigned tasks. This includes network access, internet access for remote connectivity, any necessary office automation software and web access.

In addition, on-site resources will need guest wireless access so that consultants can securely connect their CapTech-supplied laptops and devices to a high-speed network with sufficient bandwidth to support coordination with internal CapTech teams and stakeholders. We want to keep DMV / project and CapTech information separate whenever possible, and this requires the use of multiple laptops / devices unless DMV can provision secure virtual desktop environments for our team.

All personnel will also need to have secure remote access to the Authorized User network, software, web, and relevant supporting infrastructure using Authorized User provided equipment. This includes VPN access or secure virtual desktop environments for remote staff to work with onsite team members.

## Part 6 – Testing and Acceptance Proposal

## 6.1 - In Response to Section 5 Part I Paragraph 1.A – 1.D

*System acceptance will be based on individual Modernized CSS Solution components that are built in an agile-based iterative/release approach. For each component being reviewed and tested for acceptance, the following levels of testing will occur:*

- a. **Level 1 Testing:** General unit testing performed during the development stage. Testing is performed in a development environment.
- b. **Level 2 Testing:** System integration testing, to include regression testing, mock live testing, volume testing, security testing, and stress testing, prior to production implementation. Volume and stress testing must replicate anticipated volumes at all DMV service locations. Testing is performed in a test environment.
- c. **Level 3 Testing:** User acceptance testing which involves coordination of business user approval, and regression testing. Testing is performed in a test environment.
- d. **Level 4 Testing:** Component level acceptance review where system components are implemented and monitored for a minimum of 30 calendar days in a production environment. Upon successful review and monitoring, based on the sole judgement of DMV, the DMV Project Manager will issue a component level acceptance notice, in writing, to the Contractor.

CapTech will follow an iterative testing and quality management approach to align to our agile delivery model and industry best practices. This approach allows us to find, prioritize, and remediate defects as early as possible in the development process.

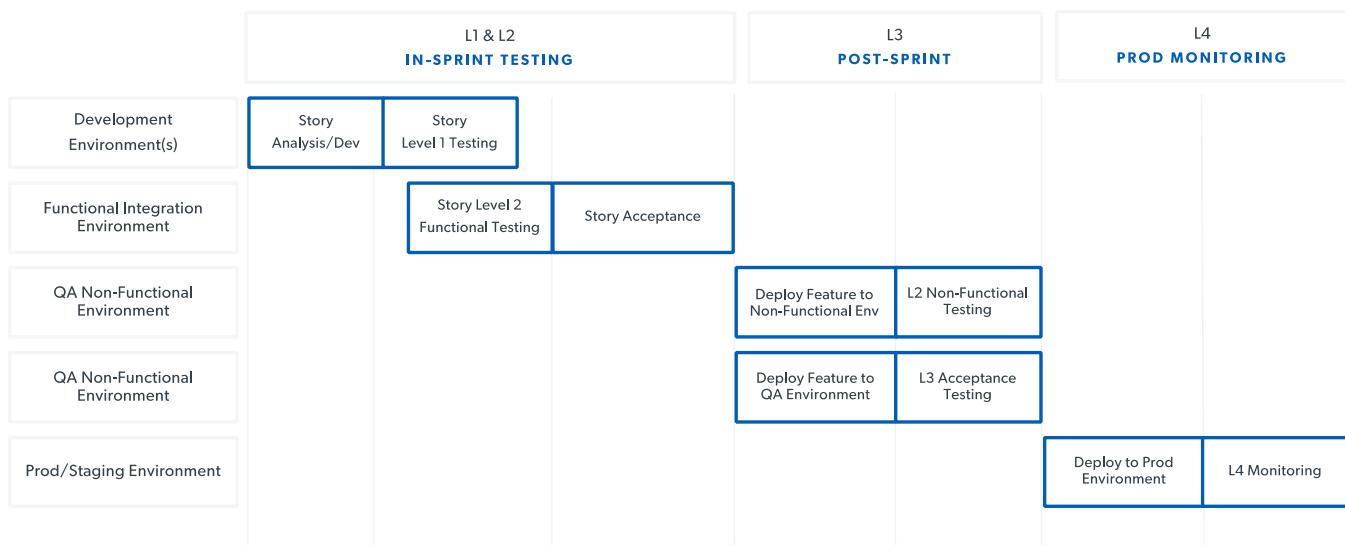


Figure 50 - Testing and Quality Management Approach

During Stage 1, CapTech will produce a comprehensive Quality Management Plan, documenting the overall Stage 2 approach to testing, environment management, and defect management.

This plan will identify:

- Description of the types of testing that will be performed by CapTech and DMV.
- Sample test scripts, including User Story and Feature acceptance criteria and entry/exit criteria for the levels of testing.
- A documented defect management process, including triage and remediation approach.
- Process documentation and sample reporting for defect metrics.
- An initial testing schedule and set of resource requirements for CapTech and DMV during development, testing, and hardening phases of the project.
- Testing tools to be used during development, testing, and hardening phases of the project.

- Documentation of the feature and final acceptance processes to secure DMV approval.

This plan will be initially completed during Stage 1. During each Program Increment, CapTech and DMV will update the strategy as additional information is available and opportunities to refine our approach are identified.

Detailed test scripts for components and features will be defined in an iterative manner.

- User Stories test scripts will be identified based on user story acceptance criteria. These are refined prior to accepting the story into a sprint for development and will happen iteratively throughout the project.
- Features and Components test scripts will be identified based on Feature acceptance criteria (including functional and non-functional requirements). These are refined prior to accepting the Feature into a Program Increment for execution.

Specific test execution plans for Feature and Component testing will be updated on a Program Increment by Program Increment basis and will be based on specific testing needs for that Program Increment. A high-level plan will be identified during Stage 1 for resource planning but will be committed to at each PI boundary.

## **Testing Methodology and Test Automation**

While some contractors use test automation as an “add-on” service, CapTech creates automated tests as a standard practice, included at no extra cost. This enables the code to constantly remain in a deployable state. We will use a mix of automated and manual testing.

We will use automated testing in three primary areas:

- Individual units of source code developers commit, which confirms that they did not break previously functioning code.
- Automated Integration Test Suite, which confirms solution components work together to produce the expected outcomes.
- Automated Regression Test suite, composed of test cases for critical functionality and features that require a large amount of time to test manually, which confirms that previously functional code still performs as expected after a change is made.

We will use manual testing for new features, to verify and validate that functionality performs as expected, because newly introduced functionality could exhibit unexpected behavior not handled by an automated test. Manual testing can identify issues that could pass an automated test, which focuses primarily on comparing outputs to expected values. For example, manual testing could uncover an edge-case not documented in the requirements that passes automated testing but fails requirement validation.

Creating automated tests in tandem with code development enables developers to identify issues in code quickly that they have recently developed, rather than refamiliarizing themselves with a portion of code

weeks later when the team has begun work on new features. Additionally, a well-maintained, automated regression test suite allows manual testers to focus more on investigative/ad hoc testing rather than repetitive confirmation tests. For instance, CapTech recently developed an automated regression testing suite for a Fortune 500 Car Retailer that covered 50% of their existing acceptance tests, reducing regression test runtime from 20 hours to 7 minutes. As a result, the client shortened the time required to release new functionality to customers, with increased confidence in the stability of the codebase.

CapTech will adjust the focus of test automation during each phase of development. During the initial development cycles, automated tests focus on expected functionality of individual components. As the complexity of the system increases, more tests are needed to verify expected functionality between components.

### **Iterative Testing**

By testing our code during every development cycle, CapTech finds defects and changes early. These changes can be remediated prior to final UAT, which in some cases results in altering to-be developed requirements to align better to user preferences. It also results in measurably fewer defects at final go live. For example, in a similar system replacement initiative, CapTech’s test-driven development resulted in only 12 total defects out of 450+ tested requirements prior to go-live. This is contrasted against the 800+ defects we found prior to go-live for another client who used traditional waterfall testing techniques.

While testing the completed code iteratively, we will verify two things: that functional requirements are met (verification that the system was built right), and that the system addresses the business need (validation that we built the right system) (Figure 51). Although most teams focus on requirement verification throughout iterative testing, CapTech reduces the likelihood of change orders by focusing equally on requirement validation. This means continuing to question if we developed functionality that will fulfill the intentions of the requirements, rather than waiting for stakeholders to provide feedback at the end during UAT. This extra focus on validation is possible because of CapTech’s test automation development, which frees up our testers to focus on value-added, strategic testing questions instead of day-to-day manual testing questions.

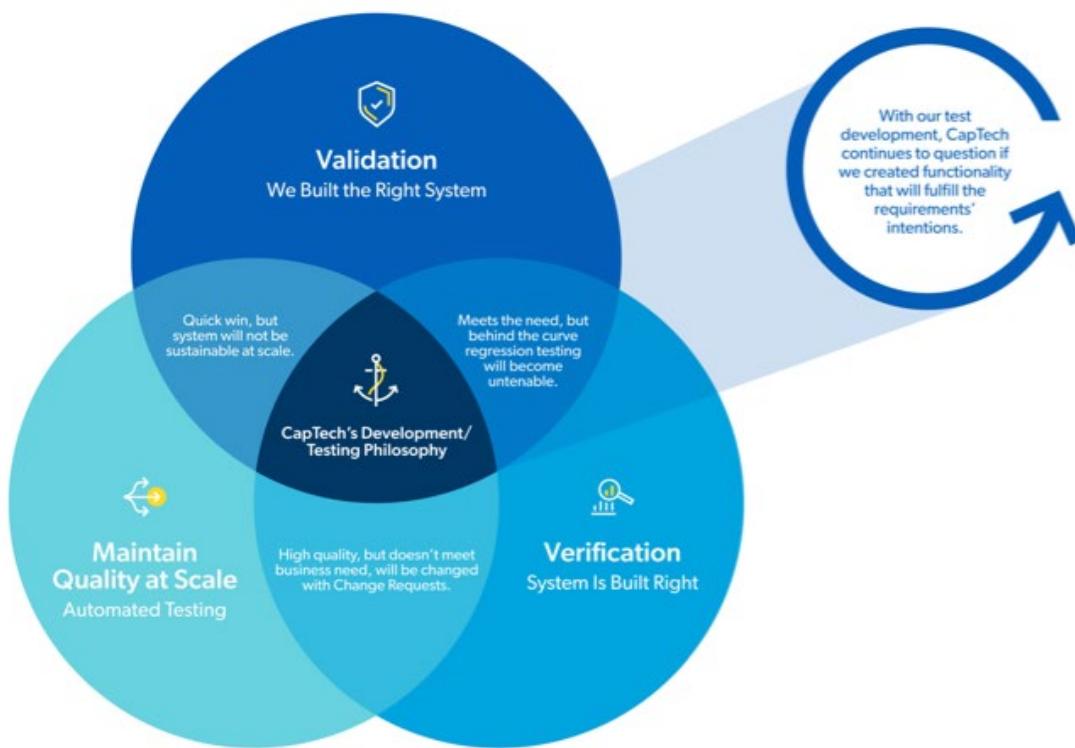


Figure 51 - CapTech's Testing Philosophy

We reduce risks of system failure by using test automation to free testers to focus equally on validating and verifying requirements. Since it is costly and often unrealistic to test every data combination possible in a system, CapTech will work closely with DMV's product owner to review the use cases and associated tests to confirm that requirements are traceable to a test case before each development cycle begins.

Every Cycle

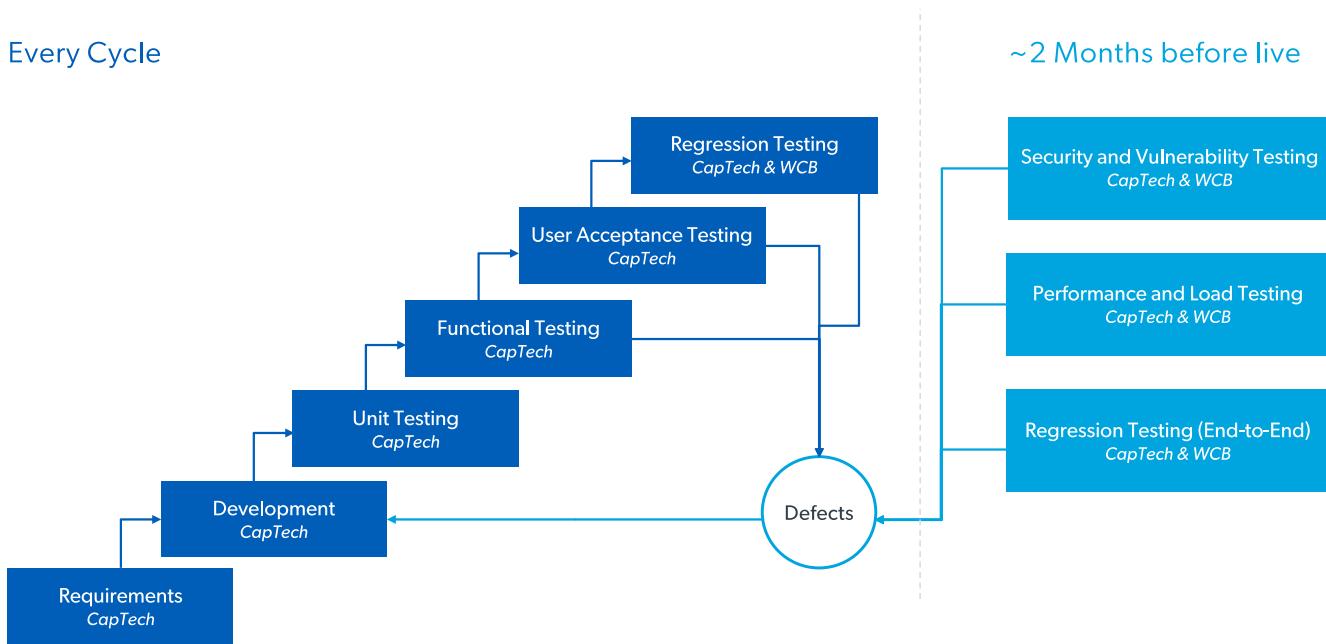


Figure 52 - Testing Process

Figure 52 summarizes the key activities of our proposed test management strategy. We will deploy code to lower environments for unit (module) testing, promoting only when the modules have been validated. This minimizes the impact to functioning, integrated modules. This practice is continued through higher environments to minimize downtime and environmental instability introduced by nonfunctioning code.

In-Sprint Testing (Level 1) includes:

- **Unit Testing:** CapTech development teams will execute unit tests, either manual or automated, following a build to the local/unit environment to confirm that the individual components work as expected.
- **Integration Testing:** CapTech development teams will execute integration tests within the development environment to validate solution components work as expected and produce the desired outcomes.
- **Functional Testing:** CapTech teams will perform functional tests in the QA environment, verifying and validating that functional requirements are met through the execution of test cases associated with use cases and user story acceptance criteria.
- **Regression Testing:** CapTech will maintain a suite of manual and automated tests that verify expected behavior of previously deployed functionality following the deployment of new code to the QA environment. During sprints, the execution of this testing will be targeted around the functionality being modified and the impacted components.
- **Static Code Analysis:** Upon code check in, CapTech will perform scans using GitHub Advanced Security for Azure DevOps to validate code meets security standards. All scan reports will be made available to DMV.
- **Accessibility Analysis:** Front-end developers ensure they are writing conformant code utilizing Axe accessibility testing or similar tools. By identifying any issues early, we establish reusable accessible

code components to be extended throughout the site.

Feature/Component Testing (Levels 2, 3, and 4) includes:

- **User Acceptance Testing:** DMV’s UAT Team will be responsible for developing and executing UAT activities, as well as providing objective feedback on the functionality of the system, based on feature acceptance criteria.
- **Regression Testing:** CapTech will maintain a suite of manual and automated tests that verify expected behavior of previously deployed functionality following the deployment of new code to the QA. A full regression test run will also occur prior to production release, verifying expected functionality of the system following any code review changes implemented at the end of the larger development cycles.
- **Security and Vulnerability Testing:** At regular intervals, CapTech will work with DMV to ensure all developed code proceeds through security testing, including automated static code analysis (conducted as a part of the development process by CapTech), security scans (conducted by DMV), and vulnerability and penetration testing (conducted by an independent third party). CapTech will support all DMV-owned security and vulnerability testing efforts outlined in the Quality Management Plan created during Stage 1.
- **Performance and Load Testing:** CapTech will focus performance testing on high-visibility areas of the system that experience the highest load for both internal and external components. It is also possible that the new functionality will result in increased traffic compared with current volume; this is mitigated by CapTech’s cloud-based microservices architecture, which can add or remove resources in response to variable load.

Performance and load testing are divided between internal and external sites:

- **Internal:** Search pages and data entry pages will be tested for a desired response time less than or equal to two seconds (when accessed by a computer on a stable network), providing the system a reasonable amount of time to perform complex processes without impeding staff efficiency.
- **External:** The public landing page will be tested for a desired response time less than or equal to one second (when accessed by a computer on a stable network), to support a positive user experience.

Performance testing may include combinations of these three common methods of performance testing: Break, Endurance, and Peak.

- **Break Testing:** Explores the “tipping point” at which the system will need to scale up to meet the increased demand.
- **Endurance Testing:** Exercises the system at less than 100% capacity for an extended period to uncover resource leaks.
- **Peak Testing:** Places the system under expected peak load for a shorter duration to verify that the system can handle expected load conditions.

- **Component Acceptance:** Following completion of Pre-Deployment Component testing activities and resolution of any findings requiring remediation, CapTech will deploy completed components to the Production/Staging environment ready for Go-Live. DMV will have the additional ability to test and monitor the functionality in this environment. 30 days following deployment, CapTech will request component-level acceptance from DMV.

Hardening/Release Support Testing (Level 3) includes:

- **Data Validation and Conversion Testing:** Testing of data migration/conversion to validate accuracy, quality, and conformation to business rules.
- **Full End-to-End Regression Testing:** A full regression test run will occur prior to go-live, verifying expected functionality of the system following any code review changes implemented at the completion of the larger development cycles.
- **Security and Vulnerability Testing:** Includes the validation of security design, security verification and penetration testing. During this phase of testing CapTech expects DMV to work with an independent party of their choosing to conduct penetration testing and provide CapTech any prioritized findings requiring remediation.
- **Performance Testing:** Validate the System performs well under expected workload and identifies potential bottlenecks.
- **Accessibility Testing:** Validate that the system conforms with the requirements of Title II of the Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act of 1973.

## 6.2 - In Response to Section 5 Part I Paragraph 2

**Final Acceptance:** After all components of the full Modernized CSS Solution have been built, deployed, and operational, DMV will conduct a review and monitoring period for a minimum of 30 calendar days. Upon successful review and monitoring, based on the sole judgement of DMV, the DMV Project Manager will issue a Final Acceptance notice, in writing, to the Contractor.

Following Go Live, DMV will review and monitor the full application in production for a 30-day period, evaluating the system against functional requirements and defined Service Level Agreements (SLAs). Upon completion of this review and monitoring period, DMV will issue a Final Acceptance notice to CapTech in writing.

### 6.3 - In Response to Section 5 Part I Paragraph 3

*The Contractor shall develop a detailed written test plan which should include at a minimum:*

- All necessary criteria and component-level tests which will be performed to ensure that the Modernized CSS Solution as a whole, and all components thereof, satisfy the requirements of this EPD.
- A description of all stages of testing.
- Detailed test scripts.
- Provisions for the documentation of testing results, problem detection, and corrective measures taken to permanently address problems.
- A description of the DMV and Contractor resources necessary to conduct testing.
- A description of the proposed testing tools that will be provided by the Contractor.

During Stage 1, CapTech will produce a comprehensive Quality Management Plan, documenting the overall for Stage 2 approach to testing, environment management, and defect management.

This plan will identify:

- Identification and description of the types of testing that will be performed by CapTech and DMV
- Sample test scripts, including User Story and Feature acceptance criteria and entry/exit criteria for the levels of testing
- A documented defect management process, including triage and remediation approach
- Process documentation and sample reporting for defect metrics
- An initial testing schedule and set of resource requirements for CapTech and DMV during development, testing, and hardening phases of the project
- Identification of testing tools to be used during development, testing, and hardening phases of the project
- Documentation of the feature and final acceptance processes to secure DMV approval

This plan will be initially completed during Stage 1. During each Program Increment, CapTech and DMV will update the strategy as additional information is available and opportunities to refine our approach are identified.

Detailed test scripts for components and features will be defined in an iterative manner.

- User Stories test scripts will be identified based on user story acceptance criteria. These are refined prior to accepting the story into a sprint for development and will happen iteratively throughout the project.
- Features and Components test scripts will be identified based on Feature acceptance criteria (including functional and non-functional requirements). These are refined prior to accepting the Feature into a Program Increment for execution.

Specific test execution plans for Feature and Component testing will be updated on a Program Increment by Program Increment basis and will be based on specific testing needs for that Program Increment. A high-level plan will be identified during Stage 1 for resource planning but will be committed to at each PI boundary.

## 6.4 - In Response to Section 5 Part I Paragraph 4 – 6

4. Unless otherwise specified by DMV, the requirements of this EPD must be completed, and Final Acceptance achieved within the mutually agreed upon project work plan and schedule.
5. The Contractor and DMV shall maintain appropriate records documenting results during all testing and Final Acceptance periods and such records shall be conclusive for purposes of determining compliance with testing criteria and Final Acceptance requirements. DMV shall be the sole judge of compliance with testing criteria and whether any failure to satisfy or pass testing criteria was due to operator error or system malfunction.
6. Final Acceptance and approval of all project deliverables will be based on successful reviews and written approval by the appropriate project team members, business owners, and the Steering Committee.

Following Go Live, DMV will review and monitor the full application in production for a 30-day period, evaluating the system against functional requirements and defined Service Level Agreements (SLAs). Upon completion of this review and monitoring period, DMV will issue a Final Acceptance notice to CapTech in writing.

Based on CapTech's proposed project roadmap, all go-live and monitoring activities will take place during our Hardening and Release Support project phase, to be completed within the proposed project timeline.

CapTech will produce reports documenting test results for each Program Increment with quality metrics as defined in the Test Strategy completed in Stage 1. Documentation of DMV UAT and Acceptance for each feature will be stored in Azure DevOps as well as within these reports and Program Increment review documents.

DMV Acceptance of Features and Components will be up to the judgement of DMV but will be based on Acceptance Criteria defined for each Feature. This will allow DMV to clearly articulate requirements and expectations for solution features to CapTech, and for CapTech to fully understand these expectations.

CapTech will document the process for Final Acceptance and approval in our overall Project Management and Test Strategy which will include review and approval by the appropriate DMV parties.

## 6.5 - In Response to Section 5 Part I Paragraph 7

DMV currently utilizes the following tools for testing and bug tracking:

- UFT – Automation Testing
- Azure DevOps – Manual and Bug Tracking
- Postman – API Testing

DMV is currently reviewing and may use the following tool for testing:

- Azure Load Testing – Performance Testing

The Supplier must propose the recommended testing and tracking tools to be utilized during the project based on the tools DMV currently utilizes and plans to utilize, as well as recommendations for any additional tools.

CapTech plans to use the following tools to support quality management for this project. This tool set will be evaluated and updated, if necessary, during the execution of Stage 1 for usage during Stage 2.

TEST LEVEL	TOOL	TYPE OF TESTING	ADDITIONAL NOTES
Level 1	Xunit	Unit Testing	CapTech development teams will build and execute unit tests. These tests will be integrated into the deployment pipeline and will be executed to confirm that the individual components work as expected.
Level 1	Custom developed C# integration tests	Integration Testing	CapTech will create and maintain a set of custom-developed integration tests, leveraging automation within Azure DevOps Build Pipelines to continually execute and validate integration between system components and external systems.
Level 1, 2	Postman	Integration Testing	In addition to custom-developed integration tests, CapTech will leverage Postman to assist with unit and integration testing.
Level 1, 2, 3	Azure DevOps	Manual Testing for User Stories, Features, and UAT	Azure DevOps will be used for tracking manual testing and results across all levels of testing.
All Levels	Azure DevOps	Defect Management	Azure DevOps will be used for tracking defects and the defect lifecycle across all levels of testing.
Level 2	Azure Load Test	Performance Testing	CapTech will leverage Azure Load Test to conduct performance testing.
Level 1, 2	GitHub Advanced Security for Azure Dev Ops	Static Security Testing	This tool will be included in the Azure DevOps pipeline to perform static analysis and identify security issues requiring remediation.

<b>Level 1</b>	Axe Dev Tools by Deque (or similar tool)	Developer-level Accessibility testing	Developer-level accessibility testing tool to identify and remediate accessibility issues prior to full accessibility testing in the project lifecycle.
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*Table 13 - CapTech Testing Tools*

## Part 7 – Deployment Plan

## 7.1 - In Response to Section 5 Part J Paragraph 1

The Supplier must submit with their proposal a detailed deployment plan and proposed schedule that utilizes an agile-based iterative/release approach while providing for the progression of implementation from a development environment, then into an integrated system testing environment, then into an acceptance test environment, then full production implementation.

CapTech is committed to delivering and deploying production-ready functionality during Stage 2 according to our Program Increment schedule (figure below). This detailed schedule will be updated during Stage 1 and will be reviewed and revised as necessary by CapTech and DMV at each Program Increment boundary.

### Stage 2 – Agile Work Plan

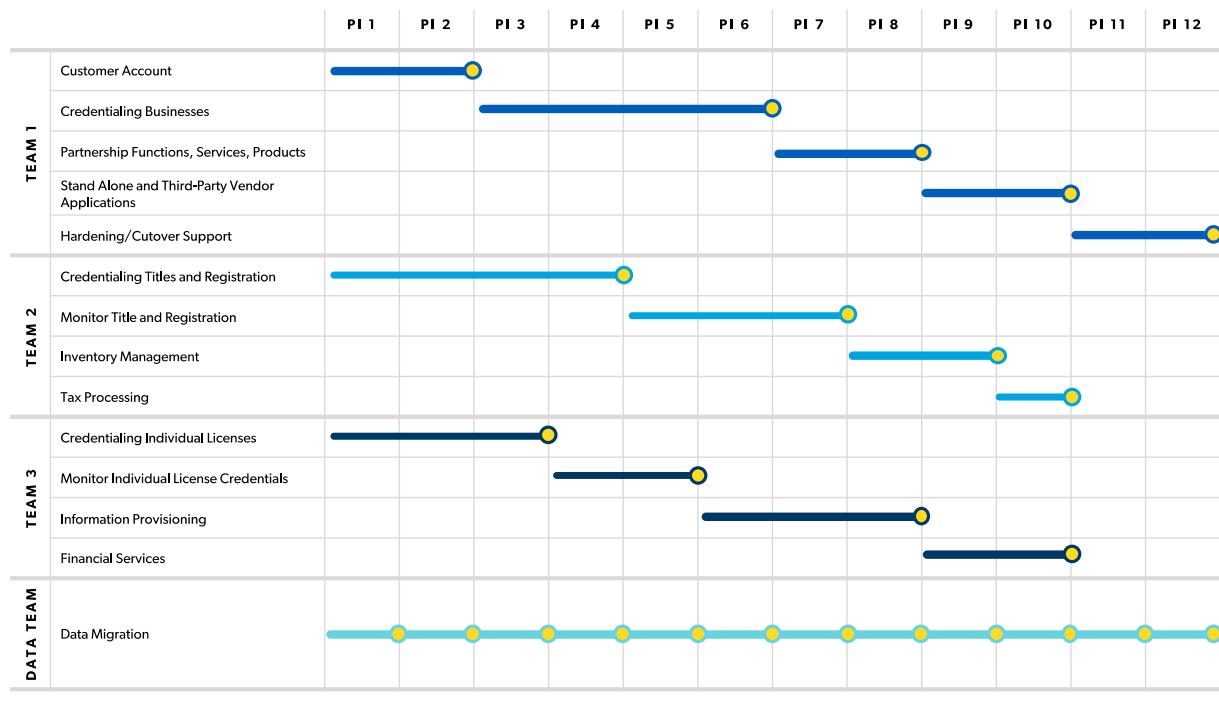


Figure 53 – Stage 2 Agile Work Plan

### Iterative Testing

CapTech will follow an iterative testing approach to support Agile software development. Testing will be completed at the story, feature, and solution level to validate the delivery of the platform meets DMV's requirements.

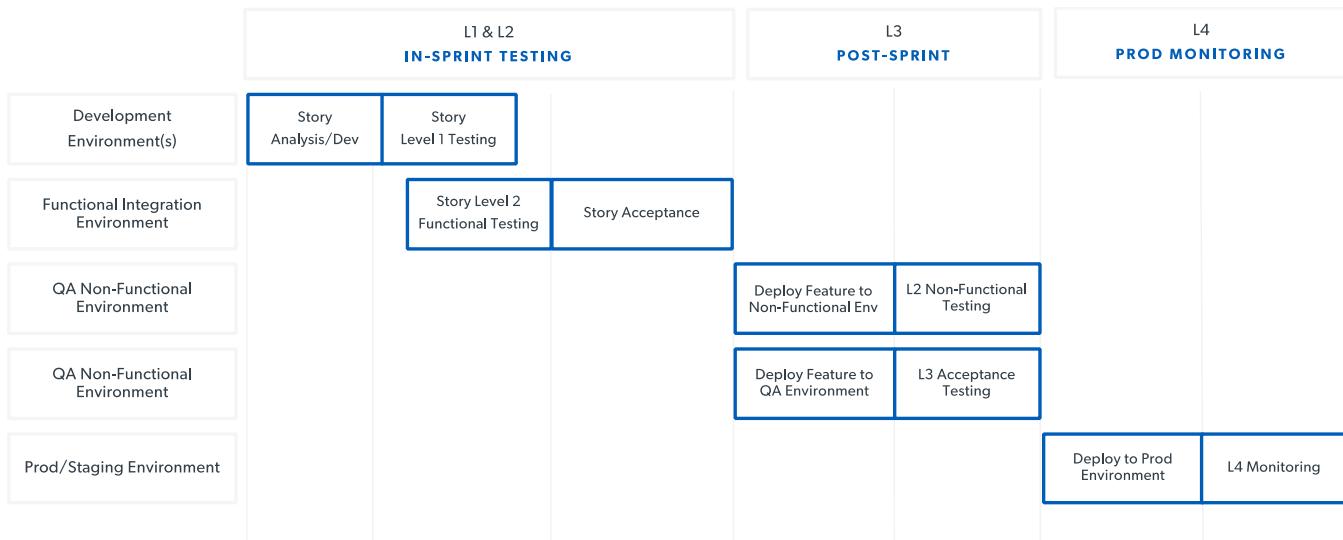


Figure 54 - Testing and Quality Management Plan

In each sprint, CapTech will perform Unit Testing, Integration Testing, and Functional Acceptance testing for the User Stories identified and committed to for that Sprint. This testing will be completed in the development environment(s) and the functional QA environment.

Following successful completion and acceptance of all relevant user stories for a Feature, CapTech will perform targeted regression testing and non-functional (Performance, Security, Accessibility) testing in the Non-Functional QA environment. In Parallel, CapTech will deploy the completed feature(s) to the User Acceptance Test (UAT) environment and facilitate UAT with identified DMV subject matter experts as defined in our testing approach. This testing will be decoupled from the strict sprint-based cadence but will be identified in CapTech's overall Quality Management Plan defined during Stage 1 and refined with each PI planning session.

Upon completion of Feature and Component Acceptance testing, CapTech will deploy completed and accepted Features to the Prod-like environment for additional monitoring and go-live preparation.

#### Hardening/Release Support

Prior to go-live, CapTech will conduct an additional round of testing (further defined in our testing approach) to validate the overall system meets functional and non-functional requirements and the system is ready for operational go-live. We call this period our Hardening phase, which includes:

- Data Validation and Conversion Testing
- Full End-to-End Regression Testing
- Security and Vulnerability Testing
- Performance Testing
- Accessibility Testing

## 7.2 - In Response to Section 5 Part J Paragraph 2

*The Contractor must provide appropriate level of staff to be on-site during the deployment periods to include:*

- *Staff fully knowledgeable with the operation of the system to perform on-site refresher training and system monitoring for the first full day of operation.*
- *Support staff on-site at DMV Headquarters in Richmond to resolve problems that may arise and to work with the DMV Help Desk.*

CapTech will comply with the DMV requirements as set forth in the Deployment Plan (Section 5 Part J) to provide appropriate level of staff to be on-site during deployment periods.

During Stage 2 of this project, two types of deployments to the DMV Production environment will occur: Iterative deployments of Features, and system Go-Live.

Iterative deployments will take place frequently throughout the project lifecycle. These deployments will be made to the DMV Production-like environment according to the overall Release Cycle Plan. This plan will be further defined in Stage 1 and will be revised at each Program Increment boundary. During these deployments, CapTech team members will be on-site to support technical deployment tasks, Production-like environment smoke testing, and support for DMV to begin monitoring in that production-like environment. These deployments will take place during regular working hours and will have no end-customer impact.

For system Go-Live, CapTech will build a Cutover plan documenting technical, people, and process steps required to move from DMV's legacy platform to the new CSS platform. The framework for this plan will be identified in Stage 1 and refined during development activities in Stage 2 as technical details are finalized. During Hardening and Release Support (Program Increments 11-12), CapTech will begin implementation of this plan, including full cutover plan walkthroughs with DMV and testing of any cutover steps possible in non-prod environments without end-user impact.

CapTech team members will be on-site as necessary with DMV to support activities defined in the Cutover plan, including any training, reviews, and change management activities necessary prior to go live, during and post-cutover communication, and technical support. This includes working on-site with DMV staff in Richmond to communicate successful cutover steps, challenges encountered, and supporting resolution with the DMV Help Desk.

## Part 8 – Training Proposal

## 8.1 - In Response to Section 5 Part K Paragraph 1

The Contractor shall provide training to adequately prepare technical and support staff in all aspects of tools required for this effort and the Modernized CSS Solution. Training for technical and system administration staff must adequately prepare them for ongoing Modernized CSS Solution support, maintenance, and batch production control in the new environment.

The scope of training and knowledge transfer provided by the Contractor will be limited to the concepts, processes and tools directly related to re-writing application code, ongoing maintenance and support of the applications and related code and migrating data for this effort.

Training must be tailored to the following DMV staff including, but not limited to:

- IT Project Managers, Developers, Analysts
- System Administrators
- Operations/Support staff
- DMV Print Shop for CSS printed output
- Help Desk staff
- External Users

CapTech will comply with the DMV requirements as set forth Training Requirement (Section 5 Part K) to develop and implement training to prepare technical and support staff for ongoing Modernized CSS Solution support, maintenance, and batch production control in the new environment. Training will be done in three phases:

**Phase 1 - Analysis:** During the Analysis phase, CapTech will conduct an audience analysis will be done to identify both technical and process learning needs for designing an effective blended learning program for DMV technical staff. This phase involves the following steps:

- **Needs Identification:** Conduct a thorough assessment of technical skills and knowledge gaps within each DMV technical staff audience to support, maintain and control the new environment, e.g., systems administrators, desk staff, etc. This can be done through observation, interviews, focus groups and/or job analysis.
- **Identify Training Resources:**
  - Leverage subject matter experts within DMV / CapTech to provide specialized coaching and training sessions to support and reinforce iterative learning.
  - Identify DMV super users to attend train-the-trainer sessions to support external technical resources.
  - Identify centralized learning management systems, documentation and knowledge repositories to house learning modules and reference materials.
- **Learning Strategy:** Develop a comprehensive and blended learning strategy that aligns with the identified needs. This strategy should outline the overall approach to address knowledge and skill gaps, including the selection of appropriate training methods and modalities.

**Phase 2 – Design:** During the Design phase, CapTech will focus on developing the curriculum and creating a detailed plan for implementing the training program. This phase includes the following components:

- **Curriculum Design:** Create an overall curriculum map that outlines the learning objectives, modules, and sequencing of topics. Develop a course catalog that provides a comprehensive overview of the available training courses, which may include both out-of-the box pre-requisite systems courses and customized supplemental learning.
- **Training Implementation Plan:** Develop a detailed plan that outlines the project development and delivery process. This plan should include timelines, resource allocation, review cycles and responsibilities for a smooth implementation of the training program.

- **Templates and Development Standards:** Establish standardized templates and development guidelines for consistency in the design and development of training materials. This includes presentation templates and documentation standards.
- **Course Design:** Design individual courses within the curriculum to align with audience needs. Specify course objectives, create a topical outline, select appropriate training modalities (e.g., on-demand or facilitated session) and determine supplemental online courses and reference documents to cater to different learning styles. Consider the timing and duration of each course and have a consistent look and feel across all courses.

**Phase 3 – Implementation:** During the Implementation phase, CapTech will develop and refine the training materials and reinforcement activities. This phase includes the following activities:

- **Draft Versions of Training Materials:** Develop initial versions of training materials, such as reference guides, presentations, and micro-learning videos. These drafts will serve as a starting point for feedback and further refinement or augmentation.
- **Revision Cycle:** Engage subject matter experts and stakeholders in a revision cycle to gather feedback and make necessary improvements to the training materials. This iterative process confirms that the final training materials meet the specific needs of the DMV technical staff.

Following the analysis, design, and implementation phases above, CapTech will train and knowledge transfer to the DMV to support coding, maintenance, migration, and support through the following activities:

## **Analysis**

- Identify skills and knowledge gaps within the technical team related to code re-writing, maintenance, support, and data migration.

## **Design**

- Identify, create learning objectives, and design learning interventions to close skills and knowledge gaps to acquire, such as programming languages, frameworks, database management best practices, and data migration practices.
- Document best practices, coding standards, and guidelines for application re-writing, maintenance, support, and data migration.
- Select a location and mode for the technical team to be able to keep these documents up to date.

## **Implementation**

- Organize knowledge sharing sessions for subject matter experts to share insights and best practices.
- Pair CapTech subject matter experts with DMV technical staff mentors with code reviews and other processes to answer questions and prepare the DMV technical staff for supporting post-deployment. This can be done through designing guided scenarios delivered either 1:1 or in a workshop setting leveraging a training environment for hands on practice.

This will be tailored for IT Project Managers/Developers/Analysts, System Administrators, Operations/Support Staff, DMV Print Shops for CSS printed output, Help Desk staff, External Users, and other impacted people. Refer to Table 14 for details.

## 8.2 - In Response to Section 5 Part K Paragraph 1.A

A training plan and approach for operational, administrative, and technical staff including:

- Method of training (such as face-to-face either in the classroom or on-site, e-learning, and self-guided)
- Training tools
- Length of training (estimate number of hours for each type of employee)
- Recommended number of training participants in each training session
- Detailed outline and description of each training session
- List of training materials and samples (provided by the Contractor)
- Description of any self-guided training modules

CapTech believes the most effective training approach involves blended learning solutions tailored to specific audience needs and learning styles. To validate the appropriate training plan, we will assess DMV resources and tools available to support learning and reinforcement will be conducted to support knowledge transfer and ongoing learning. CapTech will conduct regular evaluation and feedback loops with DMV throughout the training approach to enhance learning overtime with the mindset of smooth transition of learning back to the DMV technical staff.

Recommended method of training is as follows:

- Self-guided pre-requisite learning leveraging existing online resources, e.g., learning for code, maintenance, and data migration knowledge and best practices.
- Comprehensive user guide for on-demand reference of standards, guidelines, and best practices.
- Iterative learning sessions aligned with releases to mitigate the steep learning curve. These may include live demos, videos, and Q&A sessions.
- Facilitated train-the-trainer sessions for DMV technical trainers to train their external staff.
- Facilitated knowledge transfer and scenario-based practice sessions between CapTech SMEs and DMV technical staff to apply learning in the training environment.

As part of the training analysis, CapTech will identify DMV training tools to provide consistency and clarity on where to find learning and support materials. Examples of tools to identify and leverage would be:

- Learning management system
- Centralized knowledge repository
- In app training, help, or support tools within the system itself
- Video conferencing tools / onsite presentation tools
- Online forums or communities to support ongoing technology learning and leverage on-demand resources

Length of training and recommended number of training participants in each training session are covered in the Training Table 14.

Following the training analysis phase, CapTech will refine the following training sessions to meet audience needs. Representative training sessions, outline, recommended hours, maximum class size, and audience are listed below. This approach includes topic-specific sessions and supplemental persona-specific applied learning workshops.

Following the training analysis phase, CapTech will validate needed training materials with DMV. Examples of training materials to create, are as follows:

SUBJECT	SESSION DESCRIPTION	COURSE OUTLINE	HOURS	CLASS SIZE	AUDIENCE
<b>Onboarding &amp; System Walkthrough</b>	This session introduces tools used on the development team and sets up onboarding expectations, e.g., on-demand learning, pair-programming, and training sessions	<ul style="list-style-type: none"> <li>• Introduction to tools and their purpose</li> <li>• Demo of tools</li> <li>• Next steps for continuous learning</li> </ul>	4	20	Developers, System Administrators
<b>System Monitoring, Operations, and Troubleshooting</b>	This session walks through operational support of the system including monitoring and troubleshooting issues	<ul style="list-style-type: none"> <li>• Systems walkthrough</li> <li>• Monitoring</li> <li>• Reading logs</li> <li>• Troubleshooting</li> <li>• Application with common scenarios</li> <li>• Where/What to monitor</li> <li>• Align on next steps to update business processes</li> </ul>	4	20	Developers, System Administrators, Operations/Support
<b>System Security</b>	This session reviews the high-level security architecture of the system in providing and maintaining permissions	<ul style="list-style-type: none"> <li>• Review security structure / integrations</li> <li>• Review permissions for internal and external users</li> </ul>	2-4	20	Developers, System Administrators, Analysts
<b>DevOps Database Demo</b>	An overview of how DevOps is applied to Database Administration	<ul style="list-style-type: none"> <li>• Demo</li> <li>• Infrastructure</li> <li>• Configuration</li> <li>• Pipeline</li> <li>• Monitoring</li> <li>• Change Management</li> <li>• DevOps principles for database administration</li> <li>• Tools</li> </ul>	1-2	20	Developers, System Administrators, Database Administrators

SUBJECT	SESSION DESCRIPTION	COURSE OUTLINE	HOURS	CLASS SIZE	AUDIENCE
		<ul style="list-style-type: none"> <li>• Best Practices</li> <li>• Where to find documentation</li> </ul>			
<b>Data Migration Overview</b>	During this series of sessions, we will walk through migration requirements, how the migration code is designed, integration runtime, and source control of migration logic	<ul style="list-style-type: none"> <li>• Overview of mini sessions to cover:</li> <li>• Discuss migration requirements</li> <li>• Review migration code design</li> <li>• Discuss integration runtime</li> <li>• Demo tools / processes</li> <li>• Identify source control of migration logic</li> </ul>	6-10	10	Developers, System Administrators, Database Administrators
<b>Code Walkthrough</b>	During this series of sessions, we will walk through each solution, orient the developer(s) to how the code is organized, responsibilities of each project, and organizational patterns	<ul style="list-style-type: none"> <li>• Review scenarios and solutions</li> <li>• Identify how the code is organized</li> <li>• Discuss responsibilities of each project</li> <li>• Review organizational patterns</li> </ul>	8-12	10	System Administrators, Developers
<b>Dev Process Overview</b>	This session provides an overview on how system administrators and developers will do their work in the modern development environment	<ul style="list-style-type: none"> <li>• Overview of the development process</li> <li>• Discuss source control</li> <li>• Review the flow model</li> <li>• Discuss pull requests</li> <li>• Explain the defect resolution process</li> </ul>	4-6	10	System Administrators, Developers, Database Administrators
<b>DevOps Deep Dive</b>	An overview of the infrastructure that supports development and deployment of the systems, including automated tasks	<ul style="list-style-type: none"> <li>• Review source control</li> <li>• Overview of environments</li> <li>• Discuss builds and deployments</li> <li>• Explain configuration management</li> </ul>		10	System Administrators, Developers,  Operations/Support, Database Administrators

SUBJECT	SESSION DESCRIPTION	COURSE OUTLINE	HOURS	CLASS SIZE	AUDIENCE
		<ul style="list-style-type: none"> <li>• Discuss pipelines</li> <li>• Reference materials</li> </ul>			
<b>QA Automation</b>	Review how QA automation is set up and processes and best practices of QA / automated integration testing, unit testing, and regression testing	<ul style="list-style-type: none"> <li>• Review source control</li> <li>• Overview of environments</li> <li>• Discuss builds and deployments</li> <li>• Explain configuration management</li> <li>• Discuss pipelines</li> <li>• Reference materials</li> </ul>	1-2	20	Devs/Systems Admins (system admins first)
<b>Project Management Overview</b>	Fundamentals of programming languages, frameworks, database management best practices, and data migration practices. IT Project managers will gain insights into the future state technical aspects of software development to effectively manage IT projects and teams.	<ul style="list-style-type: none"> <li>• Review high-level changes</li> <li>• Development Lifecycle</li> <li>• Database Management</li> <li>• Data Migration</li> <li>• Project Management Methodologies</li> </ul>	2-5	20	IT Project Managers
<b>Developer Workshop</b>	A supplemental workshop to code review sessions, as needed	<ul style="list-style-type: none"> <li>• Online training and tutorials certification / certificate (pre-requisite)</li> <li>• Pair-programming / small group coding sessions</li> </ul>	4-6	2-5	Developers
<b>Analyst Overview</b>	An overview for analysts on what is changing with visualization, reporting, and decision-making	<ul style="list-style-type: none"> <li>• What is changing</li> <li>• Data analysis</li> </ul>	1-2	20	Analysts
<b>System Administrator</b>	A supplemental workshop for	<ul style="list-style-type: none"> <li>• Online courses and certification</li> </ul>	1-2	10	System Administrators

SUBJECT	SESSION DESCRIPTION	COURSE OUTLINE	HOURS	CLASS SIZE	AUDIENCE
<b>Overview</b>	System Administrators to apply learning to common scenarios, as needed	<ul style="list-style-type: none"> <li>programs for system administration (pre-requisite)</li> <li>• What is changing</li> <li>• Systems management</li> </ul>			
<b>Help Desk Overview</b>	An overview of anticipated support tickets, where to find support resources, and troubleshooting	<ul style="list-style-type: none"> <li>• What is changing</li> <li>• Anticipated help desk issues</li> <li>• Where to find resources</li> <li>• Role playing troubleshooting common scenarios</li> </ul>	1-2	20	Help Desk Staff
<b>Operations/Support Staff Overview</b>	Overview of common customer interactions, escalations, and applied troubleshooting	<ul style="list-style-type: none"> <li>• Online training / certification (pre-requisite)</li> <li>• Monitoring</li> <li>• Anticipated common customer interactions</li> <li>• Role-playing exercises</li> </ul>	2	20	Operations / Support Staff
<b>What is Changing: DMV Print Shop for CSS Printed Output</b>	Discuss integrations with their systems, change impacts, and where to get support	<ul style="list-style-type: none"> <li>• What is changing / Not changing with integration</li> <li>• Common troubleshooting</li> <li>• Where to get support</li> </ul>	1	20	DMV Print Shop for CSS Printed Output
<b>Train-the-Trainer</b>	Identified external user trainers should participate in all relevant topical sessions above, as relevant, prior to this session to prepare them to train their teams. Prepare external user trainer(s) to train their teams to support Modern CSS solution	<ul style="list-style-type: none"> <li>• Overview of training documentation, recorded sessions, and supplemental learning by persona</li> <li>• Review of training environment</li> <li>• Review scenarios and co-troubleshoot</li> <li>• Align on where external users can go for help</li> </ul>	2-3	5	External Users

Table 14 - Training Material and Details

TRAINING MATERIAL SAMPLE																																																																																																																																															
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<b>Online Repository for Training Documentation and Recordings by Persona</b> 																																																																																																																																															

TRAINING MATERIAL	SAMPLE
<b>Training Presentations for Classroom and Train-the-Trainer Sessions</b>	<p>The image shows three sample slides from training presentations:</p> <ul style="list-style-type: none"> <li><b>Logging and Monitoring:</b> A diagram showing a central monitoring system connected to multiple data sources (DB, Application, API) and a log store.</li> <li><b>Batch Integration Architecture:</b> A flowchart illustrating a batch integration process involving a source system, a transformation step, and a target system.</li> <li><b>System Architecture - Services - Microservices:</b> A diagram showing a microservices architecture with various components like databases, message queues, and application services.</li> </ul>

Table 15 - Training Material Samples

In addition to classroom training, CapTech will provide technical audiences links to technology-specific on-demand learning and certifications as pre-requisite learning for DMV-tailored classroom training and resources. Part of the training analysis includes identifying existing repositories to store supporting documentation and learning materials that will be seamless for the technical team to access and make future updates. Examples of resources stored by audience are:

- Links to pre-requisite systems learning and certifications
- Solution Design Document
- Recorded sessions / micro-learning videos
- Links to artifacts created by CapTech to supplement classroom training, e.g., business processes, functional architecture, technical architecture, data architecture, security compliance, batch processing, data mapping and validation, integration solutions, and systems architecture, etc.

## 8.3 - In Response to Section 5 Part K Paragraph 1.B

*A transition plan for technical staff that will adequately prepare them for ongoing development and maintenance in the new environment.*

After an analysis is completed of all technical staff audience and needs, the following approaches will be validated and tailored appropriately, however this is a recommended approach:

- Self-Study
  - Encourage DMV technical staff to engage in self-study to gain or reinforce knowledge of the future state technologies and systems.
  - Recommend existing online learning courses and tutorials as pre-requisite and ongoing learning.
- Co-Development
  - Facilitate co-development opportunities where DMV technical staff work alongside CapTech subject matter experts.
  - Assign a mix of DMV staff and external experts to jointly develop and enhance the DMV system.
  - Provide walkthroughs of the codebase, development processes, and test automation scripts to onboard new DMV developers.
- Knowledge Transfer Sessions
  - Conduct knowledge transfer sessions in-person or virtually, led by architects and development leads from the implementation team.
  - Cover high-level components of the system, such as code re-writing, data migration, support and other relevant topics.
  - Utilize interactive discussions, demonstrations, and hands-on scenario-based exercises to facilitate effective knowledge transfer.
- Documentation
  - Create comprehensive system documentation to accompany the delivery of the system.
  - Include user manuals, system administrator manuals, and other relevant documentation tailored to the DMV technical staff's needs.
  - Document processes, procedures, and best practices to guide DMV staff in using and maintaining the system effectively.
- Co-Design and Testing
  - Involve key DMV employees with functional knowledge of DMV processes as super users in the co-design and testing phases.
  - Collaborate with super users to design or redesign processes and test resulting user stories.
  - Encourage feedback and iterative improvements based on the insights and expertise of the super users.
- Business Administration Documentation
  - Develop business administration documentation to support the DMV staff in effectively administering and managing the system.

- Define roles and responsibilities for the DMV staff and provide guidance on issue resolution, escalation paths, and support processes.
- Include frequent questions, issues, and resolution steps gathered from user testing and deployment to assist IT and business users.

## 8.4 - In Response to Section 5 Part K Paragraph 1.C

*A description of the training personnel, equipment, tools, and facilities that DMV must provide in order to support the proposed training approach.*

### Training Personnel

- Subject matter experts (SMEs): Identify experienced DMV technical staff members who possess deep knowledge of systems and processes relevant to training design and development input.
- Super users: Identify super users within each audience group to attend train-the-trainer sessions to facilitate learning to external technical teams.
- Training coordinators: DMV individuals to support coordination and logistics for training sessions and/or uploading materials to learning management systems or other repositories where CapTech may not have access.

### Equipment and Tools

- Training sandbox for dedicated hands-on scenario-based learning and collaboration tools for hybrid learning opportunities to augment in-person training.

### Facilities

- Training rooms with projector or display screens

## 8.5 - In Response to Section 5 Part K Paragraph 1.D

*A description of how DMV training personnel can be utilized for delivering the proposed training.*

DMV training personnel can play a crucial role in delivering the proposed training by utilizing their expertise, knowledge of internal processes, and understanding of the DMV systems. Here are some ways to leverage DMV training personnel for delivering the training:

- **Subject Matter Expertise:** serve as SMEs in their respective areas of expertise to provide guidance on training materials and approaches that aligns with DMV systems and requirements. Additionally, provide guidance on terminology, scenarios and practical tips that will resonate with the technical staff.
- **Co-Facilitation:** Depending on the ongoing resources to support training for DMV beyond go-live, DMV training personnel can co-facilitate training sessions alongside super users and ongoing learning needs.
- **Documentation and Knowledge Sharing:** DMV training personnel can provide templates and best practices for user manuals, presentations, and other formats to align with best practices. Guidance of centralized repository and other learning tools would also be ways to collaborate with these resources. Finally, DMV training personnel can also provide training plans and training material review.

## **8.6 - In Response to Section 5 Part K Paragraph 2**

*DMV and the Contractor will establish a training schedule that will align with the agreed upon project work plan.*

CapTech will partner and align with DMV regularly through the analysis and design phases to validate the training approach and schedule.

## **8.7 - In Response to Section 5 Part K Paragraph 3**

*Prior to training, the Contractor must present a “dry run” training presentation to DMV staff for approval. This presentation must represent what will be presented during the actual training and must include the final training documents. At least two weeks prior to the “dry run”, the Contractor must present all training materials and curricula to DMV staff for approval.*

CapTech will integrate our training resources with the technical team to provide holistic modernization updates. Part of the demo will be updates on the training approach, schedule, and design. Included in the training plan will be ‘dry run’ sessions for DMV staff approval. Updates to training documents and training presentations will be uploaded to an agreed upon repository, and we will request iterative training review from DMV, two weeks prior to delivery.

## Part 9 – Service and Support Management Proposal

## 9.1 - In Response to Section 5 Part L Paragraph 1

### Account Management

The Contractor must appropriately manage the business and performance aspects of a resultant Contract to achieve maximum service and performance levels within a minimal amount of time during the project as well as during the life of the contract. To support this requirement, the Contractor must designate key individuals and primary points of contact for managing both business (including managing requests for additional needs and enhancements) and performance (including managing overall performance, trouble calls, and solution fixes) aspects of the contract. Contractor designated key individuals must attend monthly service review meetings, on-site at DMV Headquarters, to review all business and performance aspects of the Contract with DMV staff. The Supplier must provide a detailed narrative describing the proposed approach to meet this requirement.

CapTech will comply with the DMV requirements as set forth in the Service and Support Management (Section 5 Part L) to manage the business and performance aspects to achieve maximum service and performance levels within a minimal amount of time during the project as well as during the life of the contract.

CapTech has a dedicated Public Services Portfolio focused on State Government engagements. This team has deep expertise developed through years of leading State Government engagements across many states. Our Commonwealth of Virginia (CoVA) Account Team partners with our Public Sector Portfolio, and Practice Areas Leads to provide unmatched service to CoVA. Our team includes CoVA Directors, who are assisted by multiple Senior Managers, Delivery Leads, and support staff. Every project has a fully allocated Delivery Lead and is overseen by a Senior Manager who partners with the CoVA Directors on a weekly basis to review project status and escalate any issues for resolution. Every CoVA project is overseen utilizing our Four Pillars of Account Management:

- **Service Delivery** – Seeing that deliverables meet the requirements of each contract and bring value to the client.
- **People Management** – Caring for each consultant on our projects through weekly check-ins; supports alignment of project roles to career goals, providing a forum for coaching through any issues or concerns.
- **Account Strategy** – Building a strong client partnership through regular meetings to discuss project status, sees that resources are meeting expectations and discuss any future solutions the client is seeking to implement.
- **Financial Administration** – Creating a streamlined structure for contracts, invoicing, and any related administration so that contracts are executed as intended.

### **Steering Committee Participation**

CapTech will participate in a DMV Steering Committee to facilitate mutually beneficial contractual relationship between DMV and CapTech. CapTech's lead Project Manager and Executive Sponsor will serve on this Steering Committee.

CapTech's proposed Project Manager has also been our Senior Account Executive to all Commonwealth of Virginia Agencies since 2019. If assigned to this project, these resources will shift their focus exclusively to the DMV and the Modernized CSS Solution project. If not assigned to this project, then this individual will still serve as the key person for the business and performance aspects of the contract. This individual has been responsible for managing business requests for additional needs and enhancements and performance challenges for over fifteen (15) agencies and approximately one hundred (100) fixed price projects in the past five (5) years for Commonwealth of Virginia agencies. CapTech will also assign at least one backup / alternative resource with authority to attend service review meetings and/or handle ad-hoc business and

performance issues in the event the primary resource is unavailable.

Our Project Manager will escalate any business or performance aspect of the contract that they cannot independently handle for any reason to CapTech's Executive Sponsor, who will also serve on the Executive Steering Committee. CapTech's Executive Sponsor is directly responsible for CapTech's go-to-market initiatives and delivery of all services for CapTech's Healthcare and Public Services Portfolio. This resource is a member of CapTech's Partnership Team and will work directly with the lead Project Manager to across business and performance aspects of the project while providing a direct path for escalation of any identified risks and issues.

As an organization, CapTech understands the importance of this initiative and plans to establish an executive governance team who will support all aspects of our delivery. This executive governance team will include Partners, at least one member of CapTech's Executive Management Team ("EMT"), and our most senior technical Fellows across our Systems Integration (SI), Data and Analytics (DA), Management Consulting (MC), and Customer Experience (CX) practice areas. CapTech's Executive Sponsor may occasionally request that members of CapTech's executive governance team attend Executive Steering Committee meetings if we or DMV determine it to be to the benefit of all parties.

**Name:** Christopher O'Keefe

**Title:** Managing Director / CapTech (lead) Project Manager / Public Services Senior Account Executive

**Email:** cokeefe@captechconsulting.com

**Phone:** 804-258-8500

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**Name:** Jason Leonard

**Title:** Principal / CapTech Executive Sponsor / Healthcare and Public Services Portfolio Lead

**Email:** [jleonard@captechconsulting.com](mailto:jleonard@captechconsulting.com)

**Phone:** 803-394-6807

## 9.2 - In Response to Section 5 Part L Paragraph 2.A

*The Modernized CSS solution will require services and technical support for the software required for the Project. The Contractor will provide support services to include, but not limited to, the tasks listed below:*

- *Delivery and deployment of software (e.g., custom re-written code, Contractor tools and utilities) required for the future state environment. This includes maintenance of software and installation of upgrades, updates, and critical fixes.*
  - *Testing of new versions of software in order to ensure that they do not adversely affect any currently running applications.*
  - *Implementation of DMV requested new functionality.*
  - *Interface with the VITA engineering groups for storage issues, data requirement requests, VITA applications or IP port numbers.*
- In addition, there are tasks that DMV will assume responsibility for, but may request Contractor support. These tasks include, but are not limited to:*
- *Performance and tuning of database and software suite.*
  - *Interface with the VITA Security group for started task requests.*
  - *Testing of software suite under new operating systems versions.*

During the period of contract, CapTech will work with DMV to deliver and deploy the software components for the Modernized CSS Solution according to the terms in the EPD. CapTech may also be retained to provide ongoing enhancements for the Modernized CSS Solution, but the goal is for DMV to be self-sufficient in operating, maintaining, and enhancing the solution.

All the code developed will be in DMV's Azure DevOps instance in source code form, so DMV will have the ability to maintain the software, install upgrades or updates, and develop and deploy critical fixes. Unlike licensed software, DMV owns Intellectual Property and can make changes as it sees fit.

Testing to verify that changes do not adversely affect currently running applications is called regression testing, and the adverse impacts are regression defects. CapTech's Modernized CSS Solution provides several aids to help prevent regression defects. The first several aids are multiple levels of automated testing. There will be automated unit tests, an automated integration test suite, and an automated regression test suite. And as part of DMV's Level 2, 3, and 4 testing, regression testing is a key component. All of this is covered in more detail in Part 9 and Appendix 11 (Testing and Quality Management Plan). Any releases to production would be tested thoroughly by both CapTech and DMV. A decision to deploy to production or not would have input from stakeholders involved in the testing.

During the period of the contract, CapTech will work with DMV to implement new functionality. The process will follow the same process established in Stages 1 and 2. Requested functionality will start as a Feature or User Story and go through analysis and review by both people and LegacyLift. Developers will implement the functionality after it is approved. It will go through the same testing and deployment processes, progressing through the non-production environments. Once UAT is complete and signed off, it will be ready to deploy to production at an appropriate time. For a review of the process, see figure 28 in section 9.2.

During the period of contract, CapTech will interface with VITA engineering groups to assist with troubleshooting storage issues, data requirement requests, VITA applications, and IP port numbers.

During the period of contract, CapTech will interface with VITA Security group for started task requests. Having worked with various Commonwealth agencies over the past 20+ years, CapTech has significant expertise interacting with VITA.

During the period of the contract, CapTech will assist DMV in testing the software under new versions of various software. Since the new mySelect is a web application, new operating system versions should have minimal impact, but significant changes in browser functionality may require testing. Also changes to the .NET version will require testing that CapTech can assist with.

## 9.3 - In Response to Section 5 Part L Paragraph 2.B

*DMV must be self-sufficient to the fullest extent possible and transition into full system support once acceptance is achieved for each Modernized CSS Solution component. The Supplier must provide a detailed narrative describing the proposed approach, to include training and coaching, that will facilitate and ensure self-sufficiency of DMV with respect to transitioning ongoing management and maintenance of the Modernized CSS Solution to DMV.*

CapTech's response in Section 8: Training Proposal fully addresses the approach, includes training and coaching, and facilitates self-sufficiency of DMV with respect to ongoing management and maintenance of the Modernized CSS Solution. The following content highlights relevant aspects of our full Training Proposal.

### Knowledge Transfer to Support Successful Self-Sufficiency

CapTech brings the knowledge and support of a full Organizational Change Management (OCM) service with over 20 years of experience supporting public sector agencies across the country. Our training methodology focuses not only on the ability to use new data analytics solutions but also on the ability to provide basic support and maintenance internally, therefore avoiding those long-term ongoing costs.

Our training practices enable lasting value of the solution for both end users and resource owners. Once on the ground, each proposed team will tap into this shared knowledge to plan and implement knowledge transfer activities. Our team will provide documentation to enable your organization to capitalize on technology “quick wins,” and identify areas of third-party or “over-the-shoulder” training. Some examples of training support include:

- Manage and maintain the implemented technology long-term.
- Governance, workflow, studies, and improvements
- User centered design
- Audit/maintain content
- How to convert designs to code
- Best Practices

Training components can include but are not limited to:

- In-person training with SMEs
- Administration and Support training
- Technical documentation of solution data processes and services
- Other documentation and support artifacts of solution workings and details.

For details on this proposed approach refer to Section 8 Training Proposal.

## **9.4 - In Response to Section 5 Part L Paragraph 2.C**

*DMV may determine that additional Modernized CSS Solution service and support provided by the Contractor may be necessary. This service and support may be requested by DMV on an as needed basis, at DMV's sole discretion. The Supplier must provide a detailed narrative describing the Modernized CSS Solution service and support options that can be made available to DMV at DMV's option.*

CapTech has successfully partnered with DMV to provide services and support for over fifteen (15) years. If DMV desires to engage CapTech for any additional Modernized CSS Solution services and support, then we can utilize the hourly rates specified in Pricing Worksheet 2 as a basis for negotiating that support. CapTech is also open to estimating the cost of various services to reach an agreement on a fixed price that we can then execute using a milestone-based payment plan. Finally, CapTech is open to establishing a Fixed Capacity (i.e., Team in a Box) agreement where we negotiate a monthly run rate for additional services that DMV can then more flexibly prioritize work into throughout the course of term of the Fixed Capacity agreement.

Outside of the scope of this contract, DMV can also engage CapTech for additional services and support using other approved contracting vehicles, such as the CAI Contingent Labor contract.

## Part 10 – Supplier Profile and Customer Reference

## 10.1 - In Response to Section 6 Part A Paragraph 1

### Business

*The Supplier must provide a narrative describing its core business, background, and experience in the relevant market.*

### About CapTech

Founded in 1997, CapTech is a national IT Consulting firm that specializes in the design, management, and integration of IT systems for some of the largest government agencies and private sector businesses in the country. Headquartered in Richmond, VA, we are a full-service consulting firm, organized into four Practice Areas: Management Consulting (MC), Data & Analytics (D&A), Systems Integration (SI), and Customer Experience (CX). We have more than 1,000 national consultants across eight geographically diverse offices.

We have 26 years' experience architecting and delivering business process and systems optimization projects for hundreds of clients, including dozens of Fortune 500 companies. We are a recognized leader in financial services where we have led advancements in online banking, real-time credit decisioning, customer interactions, and regulatory compliance including Anti-Money Laundering process improvements. This comprehensive expertise makes CapTech the lowest-risk bidder for workers' compensation solutions. We dramatically reduce project delivery risks with extensive corporate capabilities, market-leading technology, breakthrough performance processes, and highly experienced personnel.

Our numerous awards highlighted below reflect our thought leadership and company culture:



Figure 55: CapTech's thought Leadership and Company Culture Awards.

- Consulting® magazine's "Best Firms to Work For" Top 10 list multiple times since 2012
- Inc. 5000 list for 13 years since 2002
- Forbes magazine's "America's Best Management Consulting Firms" multiple times since 2017
- Vault.com's "50 Best Consulting Firms to Work For" multiple times since 2015
- "100 Best Internships," 2015- 2022, and Top 5 "Best Consulting Internship" 2015-2022

### CapTech and the Public Sector

CapTech has been a trusted partner to public sector agencies for over twenty years, optimizing processes and systems, building innovative and intuitive end-user experiences, enhancing the citizen to government experience, and effectively administering organizational change. From small-scale strategic assessments to complete, large-scale modernization efforts, we design, develop, and manage business and digital solutions that are intuitive, efficient, innovative, and transparent.

Government IT programs face unique information technology challenges, such as limited resources and budgets, legacy IT systems, paper-based processes, antiquated system maintenance, and complex regulations. But constituents expect the same robust, intuitive experience they receive from the private sector. We apply commercial best practices to enhance the citizen-to-government engagement model by streamlining, simplifying, and automating processes that comply with enhanced regulations and better serve the public's needs.

CapTech's long-established Public Sector Practice has consultants with extensive government experience as well as commercial sector delivery so that we apply cross-industry best practices to all our projects. Our teams also come with extensive reach-back support to our CapTech talent that is delivering successfully on other state government IT transformations and Salesforce initiatives. CapTech has supported government agencies across the US, implementing technology solutions and driving innovation in a wide variety of agencies, as depicted in Figure 56.

CapTech not only understands how CoVA information technology (IT) systems work but also how DMV functions overall as a service organization and its underlying business goals. This understanding allows us to ramp up high-performing teams more efficiently and effectively. Below is a sampling of local agencies that we have supported.

<b>Colorado</b> A Denver-Metro Public School District	<b>Minnesota</b> Department of Labor and Industry Minnesota IT Services	<b>Virginia</b> Alcoholic Beverage Control Authority Department of Behavioral Health and Development Services Department of Criminal Justice Services Department of Forensic Science Department of Medical Assistance Services Department of Motor Vehicles Department of Social Service Department of Taxation State Corporation Commission Virginia Department of Health Virginia Department of Transportation Virginia Healthcare Foundation Virginia Housing Development Authority Virginia Information Technology Agency Virginia Retirement System Virginia State Police Virginia Workers Compensation Commission
<b>Florida</b> Hillsborough County	<b>Missouri</b> Department of Labor and Industrial Relations	
<b>Georgia</b> Department of Behavioral Health and Development Disabilities	<b>Nevada</b> Department of Industrial Relations	
<b>Illinois</b> Teachers' Retirement System	<b>North Carolina</b> Department of Information Technology Department of Health and Human Services Department of Transportation	
<b>Iowa</b> Workforce Development	<b>Ohio</b> Ohio Public Retirement Systems Central Ohio Transit Authority	
<b>Kansas</b> Department of Labor	<b>Pennsylvania</b> Large Transportation Agency	<b>Washington</b> Labor & Industry
<b>Kentucky</b> Department of Labor		

Figure 56 - CapTech's Public Agency Partners



Figure 57: A Sample of CapTech's Partnerships with CoVA.

## 10.2 - In Response to Section 6 Part A Paragraph 2

### **Corporate Identity**

*The Supplier must provide the identity of any parent company, including address, phone and fax numbers, FEIN or tax ID No., company web site and contact email. In addition, the Supplier must provide the identity of any subsidiaries, as applicable.*

Markel Ventures, Inc., a subsidiary of Markel Group, Inc., owns a controlling interest in CapTech Ventures, Inc.

**Parent Entity :** Markel Ventures, Inc.

**Address:** 4521 Highwoods Parkway Glen Allen, VA 23060

**Phone:** 800-446-6671

**Fax:** 855-662-7535

**FEIN or Tax ID No:** 54-1959284

**Website:** [www.markelcorp.com](http://www.markelcorp.com)

**Email:** <https://www.mklgroup.com/what-we-do/markel-ventures>

### 10.3 - In Response to Section 6 Part A Paragraph 3

#### Organization and Structure

The Supplier must provide an overview of its organizational operating structure and describe the operational and functional relationships of the business units of its organization, as they relate to its proposal and DMV's stated needs and requirements. Organizational charts are helpful supplements to the descriptions, if available.

An organization needs to be efficient, flexible, innovative, and caring to be successful, stable, and remain competitive in the market. CapTech has a well-established organizational structure that supports our guiding principles, facilitates administration, promotes growth and diversification, and fosters coordination across the company. Our centralized operational structure includes a Board of Directors, Executive Managers, Operations, Practice Areas, and Finance that support eight physical offices located across the U.S.

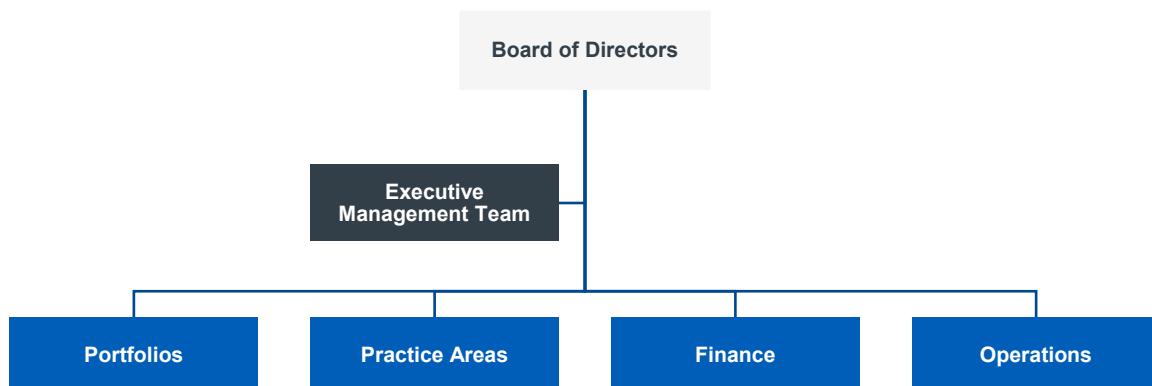


Figure 69: CapTech's High-Level Organizational Structure

To support Industry expertise, we organize utilizing a portfolio structure to help best align our domain subject matter expertise with industry experts. These portfolios organize our project delivery so that our core values are exemplified throughout interactions with clients, recruits, and the overall market.

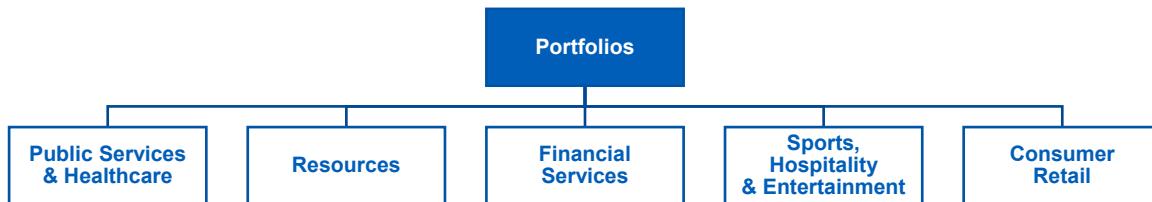


Figure 70: CapTech's Portfolio Organizational Structure

Our firm's operations are centrally managed at our Richmond, VA headquarters. Organized by specialties, each operational unit has an Operational Manager who provides professional guidance. All Operational Managers' report up to one Executive Director that is responsible for all CapTech's operational areas.

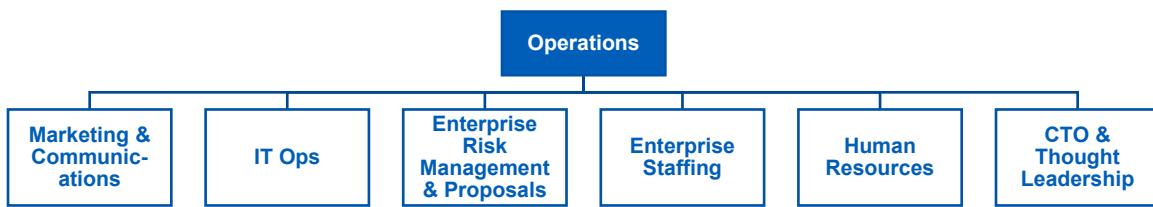


Figure 71: CapTech's Operations Organizational Structure

CapTech is a full-service consultancy organized into four Practice Areas: Management Consulting (MC), Data & Analytics (D&A), Systems Integration (SI), and Customer Experience (CX). Our motivated and experienced Practice Area Principals and Leads maintain the overall health of each practice area through a combination of business development, talent management, delivery assurance and oversight, and thought leadership responsibilities. Each Practice Area includes several Specialized Services, and staff within each office are responsible for facilitating, guiding, and coaching local delivery teams. This decentralized, service-oriented organizational approach to delivery with centralized thought leadership and strategy enables CapTech to remain a top IT consulting firm that brings best-in-class solutions to our clients in an industry that consistently re-invents the tools and methodologies.

Our Public Services practice provides business and technology consulting services to government agencies, localities, and higher education institutions. This practice is co-led by a team of Principals and Managing Directors that oversee a diverse group of professionals who help the public sector solve their most complex business issues and move forward with confidence across areas of technology modernization and innovation, human capital, strategy and analytics, customer experience, and enterprise operations. Our CoVA Account Team is comprised of CoVA Directors, Senior Managers, Delivery Leads, and support staff. The CoVA Account Team partners with the Public Services Portfolio and our Practice Area Leads to support our consultants and clients.

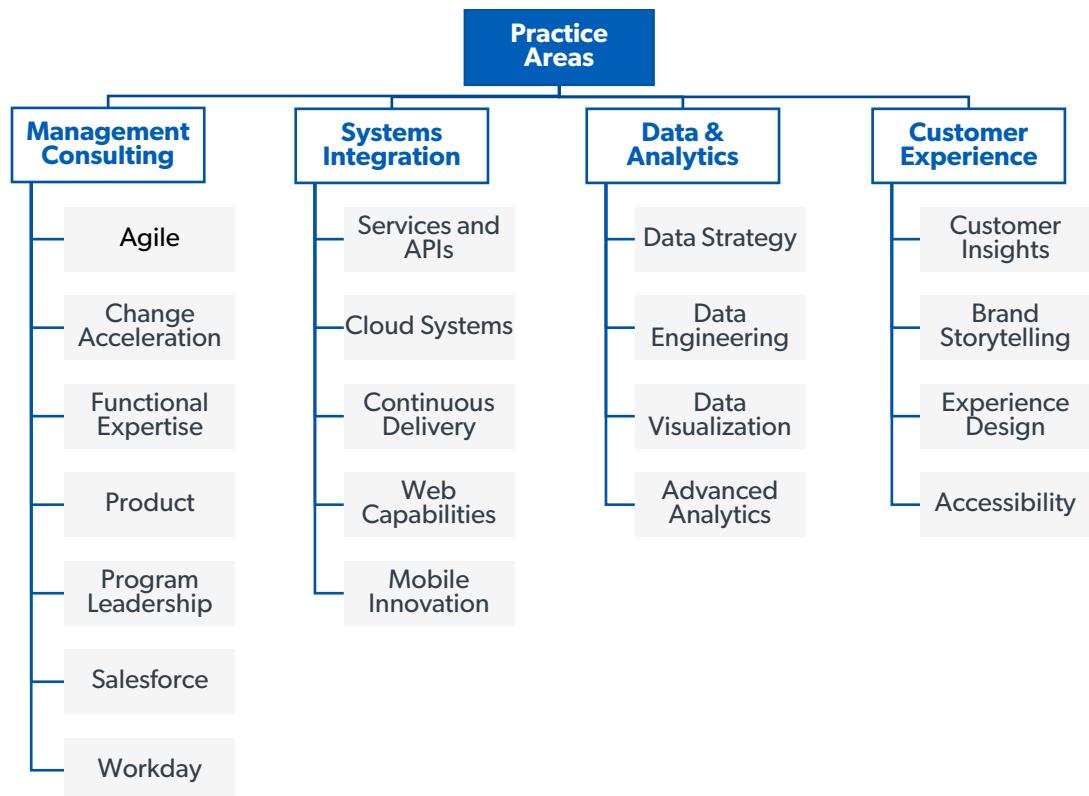


Figure 72: CapTech's Practice Area Organizational Structure

To staff each engagement, CapTech will utilize our 1000+ W2 workforce in addition to any consultants provided by Astyra. See Section 5 for more information on our strategic relationship with Astyra Corporation.

We are committed to providing the right resources in a timely fashion. Our W-2 employee workforce is comprised of talent in various markets that can be allocated to provide the appropriate support for CoVA needs.

CapTech is not a staff augmentation company and does not simply assign resources to roles to fill positions and reduce our bench. In fact, CapTech will not staff a role with a resource unless it is a successful pairing. We thoughtfully consider each consultant's fit with each project, role, and client.

## 10.4 - In Response to Section 6 Part A Paragraph 4

### Locations

*The Supplier must describe its geographical location(s) at the national, regional, and local levels, as applicable. The Supplier must identify all location(s) that will be used to support a resultant Contract and the operations handled from these location(s).*

CapTech Ventures, Inc. is a national consulting firm with more than one thousand (1,000) team members across our eight offices, located in:

- Atlanta, GA
- Charlotte, NC
- Columbus, OH
- **Richmond, VA (headquarters)**
- Chicago, IL
- Denver, CO
- Philadelphia, PA
- **Reston, VA**

Our local Richmond, VA and Washington Metro offices will be the primary locations used to support any contracts resulting from the EPD. We will also leverage our talent from other offices to round out our project delivery needs.

## 10.5 - In Response to Section 6 Part A Paragraph 5

### **Strategic Relationships**

The Supplier must indicate whether it expects to support this effort with existing resources or plans to secure additional resources by partnering, subcontracting, or hiring. The Supplier must identify and describe any strategic relationships with other related Contractors. The Supplier must identify all subcontractors expected to be used during this engagement and the timetable for obtaining such resources. Please describe the nature of your subcontracting agreement(s) and how these partners fit into your proposed approach.

CapTech will be leveraging our existing 15+ partnership with Astyra Corporation and potentially other hardware/software/SaaS partnerships as applicable. We would have Astyra Corporation as a subcontractor. We will primarily utilize Astyra to support development, quality assurance, data migration, test automation, and security testing activities. We anticipate the total subcontractor hours to be approximately 10% of the total CapTech project hours.

### **Astyra Corporation**

Astyra Corporation is an award-winning staffing, outsourcing and technology integration firm based in Richmond, Virginia. For over 25 years, Astyra has been bringing a unique approach to problem solving to their client roster of Fortune 500 companies to state and municipal government agencies and financial institutions to major systems integrators. Company highlights include:

- 21 years of experience supporting Human Services, and Medicaid/Medicare projects across eighteen states, including Virginia
- 2022 awards
  - Recognized by Inc Magazine for the 6th time as one of the fastest growing companies in America
  - Recognized by Richmond BizSense on the RVA25 - list of 25 fastest-growing businesses in the Richmond metro region
- History with Salesforce specific staffing support

### **Awards & Recognition**

In its history, Astyra has won over 25 awards and recognition for our work, for our business leadership, and for our community involvement. Here are a few from recent years:

- Fastest Growing Private Companies in America - Inc Magazine: 2009, 2010, 2011, 2012, 2021, 2022
- Top 100 Inner City Businesses in America – Fortune Magazine’s Initiative for Competitive Inner Cities: 2012, 2019, 2021, 2022 (Pending)
- RVA 25 Fastest growing businesses Richmond, VA– Richmond BizSense: 2022
- Corporate Plus© Member – National Minority Supplier Development Council: 2021 Inductee
- Emerging Business Award – Greater Richmond Technology Council: 2009
- Best Place to Work for Young Professionals – Greater Richmond Chamber of Commerce: 2011 (finalist 2018)
- Trailblazing Partnership Award – Metropolitan Business League – 2016 and 2004

- Top 500 African American Owned Businesses in America - DiversityBusiness.com: 2010, 2011, 2012, 2013, 2014
- Top 100 Minority Owned Businesses in Virginia - DiversityBusiness.com: 2009, 2010, 2011, 2012, 2013, 2014
- Lasting Impressions Award –Virginia Minority Supplier Development Council: 2003, 2006, 2013

### **SWAM Certified**

Astyra is a state-certified Minority Business Enterprise (African American) and federally certified Disadvantaged Business Enterprise (DBE). Astyra is certified in thirteen states including its home state of Virginia.

### **Commonwealth of Virginia Agency Experience**

Astyra has over 20 years of experience working with dozens of state agencies and municipalities. This includes IT Staff Augmentation through the Computer Aid Contract and Project Based Services across a variety of Agencies. Some agencies include VITA, VDOT, VEC, DMV, DSS, DMAS, DBHDS and VDH. Areas include Software Development, Project Management, Database Administration, Network Engineering, Business Intelligence.

## 10.6 - In Response to Section 6 Part A Paragraph 6

### Certifications

The Supplier must indicate if it is certified in any areas that benefit and/or be required when providing solutions and services in response to this procurement. Please identify the area(s) for which your company has been certified.

CapTech's Consultants are consistently up to date on certifications and seeking new certifications in areas of expertise that matter to our clients. Examples of our certifications are noted below and are just a representative of our work in areas that are meaningful to the DMV

### Scrum Framework

- Certified Scrum Master® (CSM) or Professional Scrum Master™ (PSM I)
- Certified Scrum Product Owner® (CSPO)

### Scaled Agile Framework (SAFe ®)

- SAFe ® SAFe Practice Consultant (SPC)
- SAFe ® SAFe Scrum Master
- SAFe ® Advanced Scrum Master
- SAFe ® Product Owner/Product Manager
- SAFe ® DevOps
- SAFe ® Release Train Engineer

### Project Management and Business Analysis

- Certification Competency Business Analysis (CCBA ®)
- Project Management Professional (PMP®)

### Change Management

- PROSCI certified
- CCMP

### Microsoft / Azure

- Azure Fundamentals (AZ-900) – Microsoft
- Azure Data Fundamentals (DP-900) – Microsoft
- Azure Fundamentals - Systems Integration
- Azure Solutions Architect Expert – Microsoft
- Microsoft Certified Solutions Associate - Data & Analytics

- Microsoft Certified Solutions Associate - Systems Integration
- Microsoft Certified Solutions Associate: Cloud Platform - Systems Integration
- Microsoft Certified Solutions Associate: Data Engineering with Azure – Microsoft
- Microsoft Certified: Azure Solutions Architect Expert - Systems Integration
- Microsoft Certified: Power Platform Fundamentals (Exam PL-900) - Data & Analytics

## 10.7 - In Response to Section 6 Part A Paragraph 7

### ***Overall Ability***

*The Supplier must submit a narrative describing its ability to offer the long-term commitment and the financial resources necessary to undertake the services required by this EPD. This must include a description of why, based on past performance and future prospects, DMV can be confident of the Supplier's viability during the term of this engagement. This also must include a description of the Supplier's capability to raise the necessary capital for the initial investments needed for this project.*

*The Supplier must explain why it is particularly suited to fulfill the requirements of this EPD.*

Throughout our extensive 28-year history, CapTech has consistently demonstrated its commitment to delivering exceptional solutions that align with the Virginia Department of Motor Vehicles' needs and vision. Our record of successful delivery, innovation, technology enablement, and strong client partnerships has positioned us as a trusted partner for large-scale modernization initiatives.

One key strength of CapTech lies in our stable and experienced senior leadership team, including our Chairman, Chief Executive Officer, and government portfolio leaders. This longevity within our leadership ranks provides the foundation needed to maintain our unwavering value and commitment to our clients.

As a testament to our success and collaborative approach, our first clients from our inception in 1997 remain clients to this day. We have consistently been entrusted with mission-critical projects, delivering complex business and technology modernizations for both Fortune 500 companies and State and Local Governments nationwide. Our experience and delivery capabilities have made us an expert in state government technology solutions, particularly architecting and building solutions for the cloud that have millions of annual interactions with the highest levels of performance.

CapTech possesses the financial stability and technology consulting expertise necessary to support the Virginia Department of Motor Vehicles throughout the duration of the contract. We are uniquely positioned to partner with the DMV to expedite the transformation away from the mainframe, with efficiency, cost-effectiveness, and minimal risk.

With a solid financial standing, CapTech is well-capitalized, profitable, and experiencing upward growth. This project holds significant organizational importance for us as a Virginia-based company, reflecting our personal investment in its success. We continue to maintain strong cashflow, annual positive EBITA and are debt free.

To further that point, while many consulting firms have faced challenges during the COVID-19 pandemic and with the recent economic uncertainties, CapTech remains financially healthy, profitable, and focused on growth. Additionally, our partnership with Markel Ventures (<https://www.mklgroup.com/what-we-do/markel-ventures>), as a majority owner, can provide further financial support if needed. The Markel Ventures portfolio, valued at over \$4 billion, offers a diverse and profitable foundation.

Further, CapTech has the consulting skills, technical, data, experience, and analytical bench to scale to the needs of the project without hiring unproven deliver consultants, we have the proven technology framework that has exceeded expectations and scale for other state agencies, and we know DMV and how you all operate. Our teams have successfully worked together as one for the few years. In summary CapTech has the technological acumen, financial backing and the proven DMV partnership that make us the ideal delivery partner. Success is the only option, we have never had a failed project and worked tirelessly to put our clients' needs beyond our own.

## 10.8 - In Response to Section 6 Part B Paragraph 1

### Total Annual Revenue

*The Supplier must provide total annual revenue information and indicate the revenues associated with the areas relevant to the proposal.*

Total CapTech annual company revenue for 2023 was \$252.2M, of which over 28% was attributed to areas relevant to the proposal.

## 10.9 - In Response to Section 6 Part B Paragraph 2

### **Dun and Bradstreet Report**

*The Supplier must provide its full D&B reports for the current and previous 3 years, if D&B issues a report for your company.*

CapTech's DUNS number is 02-761-1651.

CapTech does not maintain a Dunn and Bradstreet account and cannot provide reporting from that service.

## 10.10 - In Response to Section 6 Part B Paragraph 3

### ***Annual Reports***

*The Supplier must provide certified, audited financial statements (i.e., income statements, balance sheets, cash flow statements) for the most recent three years. Suppliers having been in business for a shorter period of time are requested to submit any available financial statements. DMV may request copies of or access to current and historic annual reports. DMV reserves the right to access the Supplier's publicly available financial information and to consider such information in its evaluation of such Supplier's proposal.*

A copy of CapTech's audited financial statements is included in the CapTech Annual Reports in Appendix 14.

## 10.11 - In Response to Section 6 Part C

### **FUTURE, LONG TERM VISION, AND STRATEGIC PLANS**

*The Supplier must provide a narrative describing its future, long-term vision, and strategic plans as they relate to this engagement and describe a clear vision of how your company plans to support emerging technologies and industry standards.*

### **Our Company Goals and Strategic Vision**

CapTech provides technology, business, and creative consulting services to help clients innovate, solve business problems, and create value.

CapTech's success is based on developing stable geographic diversity and delivering compelling services throughout core client relationships. We hire and grow top talent that embraces our core values and culture. CapTech continues to see and plan for a stable and bright future. We go through extensive corporate planning in the final months of every year and set not only company, but practice-level and consultant-level goals for the upcoming year.

We are building our community of subject matter experts (SMEs) by making strategic hires and providing a framework for support and training to our consultants. Because we are technology agnostic, it is important that we constantly evaluate modern technologies that could be worthwhile to our client engagements and invest in those technology partnerships. We closely monitor market trends and evaluate technology to keep pace with the rapidly changing landscape.

As a company, we focus on our clients, of which the Commonwealth of Virginia (CoVA) is a long standing one. Our company remains entrepreneurial in spirit so that our future vision and strategic plans are fluid and constantly evolving to adjust to industry and client demands.

CapTech has a long history of supporting emerging technologies. Within the last 10 years we have added Service Offerings and related partnerships and operational support in areas such as Salesforce, Workday, multiple cloud providers, and AI.

## 10.12 - In Response to Section 6 Part D

### **EXPERIENCE LEVEL AND CUSTOMER REFERENCES**

DMV requires a certain level of experience and demonstrated success in delivering solutions of similar scope and complexity. Where it is stated that Supplier shall meet the requirements it shall be understood that the requirement is equally applied to Supplier and any other third-party which Supplier intends to propose as part of its response to this procurement.

The Supplier must provide evidence that it is experienced and has engaged in the activity of developing and implementing systems of a similar size and nature.

The Supplier must describe the four (4) most recent engagements (of a similar size, nature, and complexity as defined by the EPD requirements) that it has performed within the last ten (10) years that demonstrates its capability to perform the services required in this EPD. Supplier must include the following:

1. Contract duration, including dates.
2. Brief written description of the project and the methodology employed.
3. Problems encountered and how they were resolved to the customer's satisfaction.
4. A reference that can be contacted for verification of all data submitted (include name, title, company name, address, e-mail address, and telephone number).
5. Name, address and telephone number of sub-contractors used, if any.

Supplier must state if it has no such contracts to report.

Supplier must use the attached Customer Reference Form (see Appendix F) to report information for each engagement. DMV may make such reasonable investigations as deemed proper and necessary to determine the ability of a Supplier to perform a resultant contract.

CapTech has a proven track record in mainframe replacement and modernization, as demonstrated by our successful implementations with Fortune 500 and public service client partners. For a Fortune 500 Financial Services company, we designed and implemented the architecture, enabling the migration from legacy mainframe to a modern, cloud-based Event Driven Architecture. We provided reusable data consumption patterns, established pipelines and infrastructure, developed multiple processing phases, and even created a Proof of Concept for consumption.

In another engagement, CapTech assisted a government pension agency in modernizing their aging mainframe-based retirement processing and payroll system. We designed a solution architecture that facilitated the transfer of existing functionality to a modern environment, including web-based features for members, retirees, and employees. Our approach also reduced benefit processing time and increased functionality through a self-service portal.

We have selected to highlight the additional references below in more detail based on the scope of work performed and size of the contract.

CUSTOMER REFERENCE FORM	
<b>Supplier Information</b>	
Name of Company: CapTech Ventures, Inc.	
Sub-Contractors Used: n/a	
<b>Client Information</b>	
Name of Company: CarMax Address: 12800 Tuckahoe Creek Pkwy, Richmond, VA 23238 Website: <a href="https://www.carmax.com/">https://www.carmax.com/</a>	
<b>Contract Information</b>	
<input checked="" type="checkbox"/> Existing Contract/Project	Date Awarded: January 2019
<input type="checkbox"/> Completed Contract/Project	Date Awarded:
<input type="checkbox"/> Terminated Contract/Project	Date Awarded:
Amount of Contract Award: N/A – Contract was Time and Materials	
Final/current Contract Amount: \$69,000,000	
Length of Project (start/end dates): January 2019 to present	
<b>Client Contacts:</b>	
Client Project Manager: Shamim Mohammad (CIO) Email: <a href="mailto:shamim_mohammad@carmax.com">shamim_mohammad@carmax.com</a> Phone Number:	
Client Technical Contact Person: See above for single point of contact Email: See above for single point of contact Phone Number: See above for single point of contact	

## Project Information:

### Description of project and problem solved:

CarMax is the largest used automotive retailer in the US. Headquartered in Richmond, VA and founded in 1993, operating a unique business model focused on providing a transparent, no-haggle and customer-centric car-buying experience. They further enhance their customer experience through services which include providing financing options, extended service plans, and vehicle appraisals. CapTech has maintained a strong and enduring relationship with CarMax for nearly two decades. Throughout this extensive partnership, CapTech has provided unwavering support to CarMax's diverse lines of business. This longstanding collaboration is built on a foundation of shared history and mutual understanding. Within the last five years, CapTech has partnered with CarMax on several key transformation and modernization efforts:

- 1) **CarMax Auto Financing (CAF) Platform Modernization:** CapTech led multiple aspects of this multi-year initiative to replace the former CAF legacy platform that was aging and provided inflexible account servicing, needed updates to the workflow and customer communications systems, and improvement to approximately seventy processes with a modern technology solution that provided a more stable, scalable, and user-friendly environment.
- 2) **Auctions Platform Modernization:** Post Covid, the client had to quickly shift to a virtual auction platform to keep operations moving. The demand for virtual, online auctions increased and the client needed a modern solution to scale for the increased volume and demand. CapTech partnered with CarMax to modernize their auctions platform leveraging cloud technologies. Together, we migrated away from a cumbersome legacy system and embraced modern, scalable architecture for future innovation.
- 3) **Online Vehicle Appraisal Product Engineering:** CapTech was engaged to collaborate with the client's full-time associates and form a product team. The goal was to innovate the online vehicle appraisal experience, which was previously cumbersome for both customers and buyer associates. Additionally, the existing system was not scalable. The client needed a highly available, high-volume product that could deliver offers on vehicles within seconds instead of hours.
- 4) **Dealer Appraisal Tool:** CapTech was asked to assist in completely refactoring, scaling, and maintaining a proof-of-concept dealer appraisal tool to better support future enhancements and significant increases in the number of users and appraisals. A CapTech team, working in conjunction with client developers, developed a revamped and modern front-end architecture, several advanced APIs and database services to help customers appraise and sell vehicles more effectively.
- 5) **Improving Customer's Online Experience:** CapTech worked with CarMax to improve their customer's online shopping experience by driving consistency across their inventory. The goal was to ensure every image displayed on their website met their high caliber standards. Using Computer Vision ML and cutting-edge Generative AI models, the team quickly enhanced and standardized the environment of each image without "touching" the vehicle.

**Centralized Claims with Salesforce Case Management:** CapTech streamlined communications between Store Managers and Claims Administrators by integrating CarMax's Third-Party Claims System with its inventory tracking and management system. CapTech helped replace the legacy manual claims system with Salesforce Case Management Tool, automating case creation and reducing error rates in reporting and payments.

**Products proposed and services performed:**

Below outlines the products and services that CapTech performed as well as the business of the corresponding projects mentioned above.

- 1) **CarMax Auto Financing (CAF) Platform Modernization:** CapTech played a pivotal role in the modernization of the CarMax Auto Financing platform, delivering a range of services that led to significant outcomes and impacts. CapTech designed and executed a seamless data migration process, successfully transferring data for over 1 million customers and \$15B in receivables. Additionally, CapTech designed and implemented an operational reporting solution that provided enhanced insights and reporting capabilities. The team also led the conversion strategy, ensuring a smooth system cutover with minimal disruptions to operations, ancillary systems, and customers. CapTech's expertise in organizational change management resulted in a well-architected strategy that facilitated the transition to the new platform. We also provided infrastructure design support, enabling the deployment of the new systems. These efforts caused three major systems to be replaced with minimal operational downtime. The flexibility and integration of the new systems drove efficiency in account servicing, while the data migration was executed flawlessly, resulting in no delays in accessing or understanding new data. Overall, CapTech's contributions to the CAF auto financing platform modernization have had a profound impact on the organization, improving operational efficiency and empowering better decision-making.
- 2) **Auctions Platform Modernization:** CapTech played a key role in the modernization of CarMax's auction platform, delivering a range of services that resulted in significant outcomes and impacts. CapTech partnered closely with the client to create a high availability inventory management system, replacing the existing slow experience, and improving overall performance. CapTech also designed and executed the creation of a cloud domain platform and core services that supported the modern Auctions Platform, enabling scalability and flexibility. The implementation of a scalable and reusable micro-frontend architecture allowed for quick and consistent delivery of new features and enhancements. CapTech's infrastructure design support ensured the deployment of the new systems in a repeatable manner, streamlining the process. Additionally, the company led multiple workshops and built guilds to provide teams with the necessary resources and guidance to build quality experiences. Overall, CapTech's services and contributions to CarMax's auction platform modernization have had a profound impact, enhancing performance, scalability, and delivery capabilities, ultimately improving the overall user experience



Figure 73 - Sample Roadmap

- 3) **Online Vehicle Appraisal Product Engineering:** CapTech played a pivotal role in CarMax's online vehicle appraisal, providing a range of services that resulted in significant outcomes and impacts. CapTech's software engineers seamlessly integrated with the product team, actively contributing to product ideation, customer discovery, experiment design, and implementation. They were responsible for building the front-end experience and back-end services, resulting in an available and reliable product utilizing technologies such as React, C#, and Microsoft Azure. One of the CapTech engineers even assumed the Lead Engineer role, taking charge of technical feasibility, product design, team leadership, and coordination across teams. The Instant Offer product became a billion-dollar success, enhancing CarMax's self-sufficiency in sourcing cars for sale to consumers and auctions. The solution introduced scalability and efficiency by leveraging machine learning, replacing the previously unscalable process and delivering instant appraisal offers to millions of customers. The streamlined customer experience reduced the appraisal time from hours to seconds, accelerating the buying and selling process and improving overall customer satisfaction. CapTech's services and contributions to CarMax's online vehicle appraisal have had a profound impact, driving revenue growth, operational efficiency, and customer satisfaction.
- 3) **Dealer Appraisal Tool:** CapTech made significant contributions to CarMax's dealer appraisal tool, resulting in transformative outcomes and impacts. CapTech's team members designed and developed a modern front-end application using React 16, incorporating both existing functionality and new features. They utilized tools like hooks, Redux, and configuration-driven development to enhance the user experience. Additionally, CapTech designed and developed cutting-edge APIs in C# and .NET 6, revamping existing functionality and creating highly responsive services following the orchestrator pattern. Leveraging Azure cloud services, CapTech implemented scalable patterns for infrastructure deployment, automation, and on-demand release capabilities. As a result of these efforts, the number of supported dealerships grew from a few hundred to over 3000, and weekly vehicle buys increased from 100 to 2000+. The advanced and modern rewrite enabled continuous improvements, optimizations, and feature updates, incorporating technologies such as Vite, TypeScript, React 17, micro-frontend, mono-repo architecture, .NET 7, and more. CapTech also facilitated experimentation with new user experiences through feature flags, allowing for agile pivoting based on metric outcomes. The ongoing contributions of CapTech developers continue to enhance the capabilities of the dealer appraisal tool, providing dealers with an end-to-end vehicle appraisal and purchasing experience.
- 4) **Improving Customer's Online Shopping Experience:** CapTech made significant strides in improving the customer shopping experience by leveraging advanced technologies and implementing innovative solutions. The team worked diligently to ensure that every image displayed on the website met high-caliber standards by utilizing Computer Vision ML and cutting-edge Generative AI models. Through this approach, they enhanced and standardized each image's environment without directly modifying the vehicle itself. As a result of these efforts, there was a notable 1.5% increase in the number of customers

progressing from searching for a vehicle to finding their desired vehicle. Additionally, there was a 0.2% increase in total sales, translating to an additional \$3.7 million in profit annually. CapTech's development of models such as angle detection, color correction, background enhancement, person detection, and damage detection further enhanced the overall image quality and accuracy. Notably, the creation of background blur for outdoor settings drove a significant 1.9% increase in views of the vehicle and future sales. CapTech's ability to process around 300,000 photos per day at scale or in real-time showcases their technological prowess and commitment to delivering an exceptional customer experience.

- 5) **Centralized Claims with Salesforce Case Management:** CapTech was responsible for the creation of a centralized claims system, resulting in significant outcomes and impacts for CarMax. CapTech helped replace the legacy manual claims system by implementing the Salesforce Case Management Tool, automating case creation and reducing error rates in reporting and payments. The team successfully integrated the Case Management system with the retailer's inventory tracking and management system, ensuring seamless data synchronization. CapTech also designed and implemented queues and routing rules to assign cases to the correct store, streamlining the workflow. By creating record types and routing rules, CapTech enabled dynamic updates to page layouts based on claim type, facilitating efficient collaboration between Store Managers and Claims Administrators. Additionally, CapTech implemented Automation Tools to send email reminders to key stakeholders at the appropriate stages of case processing, improving communication and ensuring timely actions. The team also leveraged Salesforce notifications to keep Claims Administrators informed about pending actions, reducing the need for excessive email communication. Overall, CapTech's services and contributions to the centralized claims system have resulted in improved operational efficiency, reduced errors, and enhanced collaboration, ultimately benefiting the retailer and its stakeholders.

CUSTOMER REFERENCE FORM		
<b>Supplier Information</b>		
Name of Company:	CapTech Ventures Inc.	
Sub-Contractors Used:	None	
<b>Client Information</b>		
Name of Company:	State of Minnesota, Department of Labor and Industry	
Address:	443 Lafayette Rd, St Paul, MN 55155	
Website:	<a href="https://www.dli.mn.gov/">https://www.dli.mn.gov/</a>	
<b>Contract Information</b>		
<input type="checkbox"/> Existing Contract/Project	Date Awarded:	
<input checked="" type="checkbox"/> Completed Contract/Project	Date Awarded: August 2018	Date Completed: February 2023
<input type="checkbox"/> Terminated Contract/Project	Date Awarded: August 2018	Date Terminated:
Amount of Contract Award: \$13,721,000		
Final/current Contract Amount: \$19,431,000		
Length of Project (start/end dates): August 2018 to February 2023		
<b>Client Contacts:</b>		
Client Project Manager: Brad Morse Email: <a href="mailto:Brad.Morse@state.mn.us">Brad.Morse@state.mn.us</a> Phone Number: 801.859.3959		
Client Technical Contact Person: See single point of contact above Email: See single point of contact above Phone Number: Single point of contact above		

**Project Information:**

**Description of project and problem solved:**

Minnesota's workers' compensation agencies have historically operated in a paper-based environment with poor data, little integration, and a time-consuming, manually intensive process and extremely limited external stakeholder self-service. CapTech partnered with the Minnesota Department of Labor and Industry (DLI) to modernize and streamline the worker's compensation process. CapTech performed the assessment, business process re-engineering, project management, development, testing and deployment of a new data-focused web portal application. The new web portal offers various functionalities to improve user experience and service delivery, including:

- Management of customers' individual and group roles and privileges: The portal allows for efficient management of customer roles and access privileges, ensuring that the right individuals have appropriate access to the system.
- Authorized customer access to certain information: The portal provides authorized customers with access to relevant information, ensuring transparency in the claims process for injured employees.
- Claim and case management: The portal facilitates the management of claims and cases, enabling efficient tracking and processing of workers' compensation claims.
- Payment information management: The portal allows for the management of payment information, ensuring accurate and timely processing of payments.
- Monitoring status of cases and claims: Users can easily monitor the status of their cases and claims through the portal, providing real-time updates and visibility into the progress of their claims.
- Secure electronic communications with customers: The portal enables secure electronic communications between the DLI and customers, facilitating efficient and confidential communication.

By implementing the new Azure Cloud based application, CapTech helped the DLI create a more user-friendly, modern, and efficient experience for external stakeholders. It also enabled the DLI to manage their operations based on data and proactively address sources of injury.

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By implementing the new Azure, Cloud based application, CapTech helped the DLI create a more user-friendly, modern, and efficient experience for external stakeholders. It also enabled the DLI to manage their operations based on data and proactively address sources of injury.

**Products proposed and services performed:**

CapTech and DLI collaborated to develop the Work Comp Campus (Campus), a cloud-based solution that transformed the workers' compensation process in Minnesota. Leveraging Azure and SQL Server, CapTech created a robust and scalable micro-service driven platform that transforms the overall experience for all user types and dramatically decreases costs associated with workers' compensation administration. The online portal offers a user-friendly interface and data-driven functionalities that improves support to injured workers and provides stakeholders with valuable insight into claims and disputes.

Campus serves as the first external portal to all workers' compensation stakeholders, including issuers, attorneys, medical professionals, employers, and injured workers. Campus' key performance highlights include:

- Reduced cycle time for cases and disputes by using real-time information to create efficiencies in business processes.
- Improved transparency by providing stakeholders easier access to relevant data through intuitive internal and externally facing web applications.
- Provided valuable information to injured employees about their case and the services to which they are entitled.
- Improved data quality processes to benefit service to stakeholders as well as ensure compliance to state policy and laws.
- Created a unified, integrated system that consolidates Workers' Compensation business processes into one intuitive system for users.

Additionally, Campus enables DLI to proactively identify higher-risk organizations and environments, recommend training to improve worker conditions, and assign necessary resources and requirements to improve the overall safety of all workers in the state.

Furthermore, the design of Campus ensures intuitive and user-friendly experiences for all stakeholders, simplifying complex processes and automating tasks. Key benefits of Campus to stakeholders include:

- Injured employees have more transparency to help them understand the status of their filed claim, what to do next, and access needed resources.
- Employers can monitor the status of their employees' workers' compensation claims and proceedings.
- Insurers and self-insurers can submit documentation, correct errors, and resolve claims and disputes, which will minimize their costs.
- Attorneys can submit filings, have real-time access to the complete, accurate and current DLI file, and be able to manage calendars for proceedings.
- Trading partners can maximize data-driven and automated processes to submit and receive information with DLI.
- Health care providers can file medical reports and have a consolidated view of claims and disputes to which they are a party.
- Vocational rehabilitation providers can create, file and view documents related to an employee's vocational rehabilitation, or a dispute related to rehabilitation.

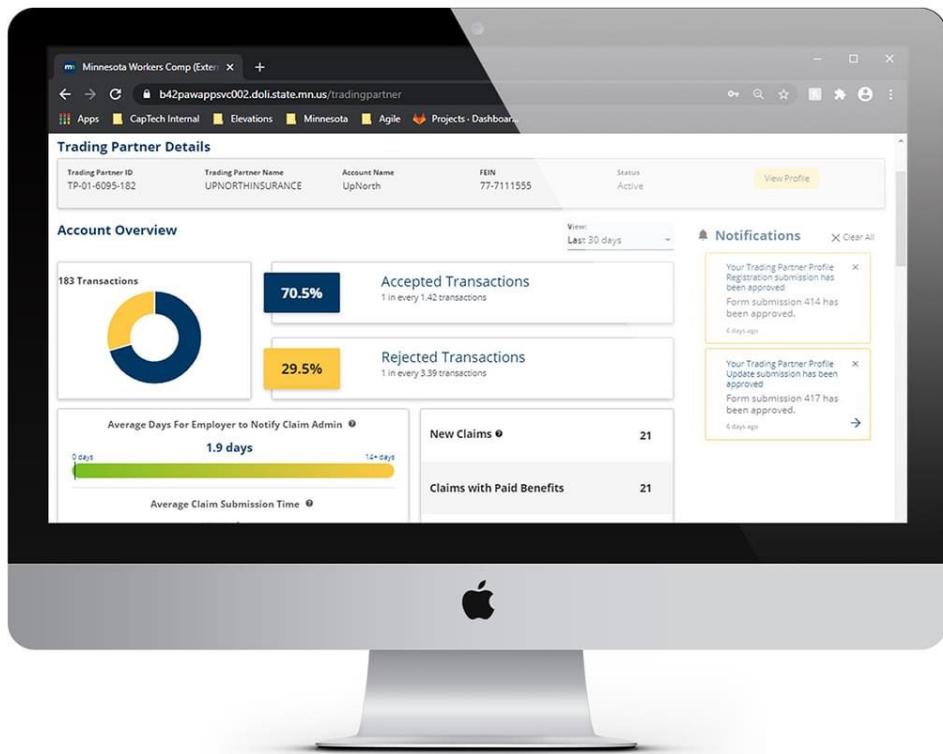


Figure 74 - Example Micro-Services Driven Solution

#### **Problems encountered and how they were resolved to Customer's satisfaction:**

The legacy system faced significant challenges with poor and inconsistent data quality, including the changing and repurposing of data elements over time due to legislative changes. For example, one field that was originally alphabetic became alphanumeric due to the implementation of a new law. When the corresponding law expired, it reverted to its original format. To solve these data inconsistencies, CapTech expanded the scope of testing to include full historical data sets and defined a more extensive data cleansing program.

Additionally, the transition from a paper-based system to a data-driven approach posed significant challenges for DLI. One major issue was the abundance of data captured on physical documents and image files that were not reflected in the system's metadata or data feeds. To address this, old files and comments attached to pictures were reviewed to extract and transition the relevant data into the system. To ensure a more efficient and streamlined future process, CapTech defined efforts for their business users to convert active claim files and capture data from these documents and images. Additionally, CapTech defined a system that required data entry and rejected non-searchable and non-queryable data. This shift towards a data-driven approach facilitated various business projects aimed at capturing and incorporating the necessary data into the system. These efforts ultimately improved data integrity, accessibility, and the overall effectiveness of the workers' compensation process.

CapTech identified that internal teams faced difficulties in comprehensively providing requirements and meeting the expectations of external stakeholder groups, who previously relied on mail, phone, or in-person correspondence, due to the increased visibility of data and workflows provided by the first external-facing workers' compensation platform. To address these challenges, CapTech implemented a stakeholder engagement program, which involved regularly meeting with industry groups and leaders within each stakeholder group to gain insights and understand specific stakeholder needs. CapTech also established a series of stakeholder testing events. By involving stakeholders in the testing process, CapTech ensured stakeholders felt like integral contributors to the project and gained a comprehensive understanding of their use cases. This collaborative approach fostered a sense of ownership and collaboration, resulting in a more effective and user-centric system.

Link to online case study: <https://www.captechconsulting.com/client-stories/mn-workers-comp>

CUSTOMER REFERENCE FORM		
<b>Supplier Information</b>		
Name of Company:	CapTech Ventures, Inc.	
Sub-Contractors Used:	none	
<b>Client Information</b>		
Name of Company:	State of Kansas Department of Labor (KDOL)	
Address:	401 SW Topeka Blvd, Topeka, KS 66603	
Website:	<a href="https://www.dol.ks.gov/">https://www.dol.ks.gov/</a>	
<b>Contract Information</b>		
<input type="checkbox"/> Existing Contract/Project	Date Awarded:	
<input checked="" type="checkbox"/> Completed Contract/Project	Date Awarded: January 2017	Date Completed: November 2018
<input type="checkbox"/> Terminated Contract/Project	Date Awarded:	Date Terminated:
Amount of Contract Award:	\$6,600,000	
Final/current Contract Amount:	\$8,000,000	
Length of Project (start/end dates):	January 2017 to November 2018	
<b>Client Contacts:</b>		
Client Project Manager: David Sprick (CAO) Email: <a href="mailto:David.sprick@dol.ks.gov">David.sprick@dol.ks.gov</a> Phone Number: 785-296-4000, ext 7372		
Client Technical Contact Person: n/a please see above Email: Phone Number:		

## Project Information:

### Description of project and problem solved:

Kansas' previous workers' compensation platform was hindered by outdated technology and organizational paper-based processes, which limited the efficient consumption of data. To address these limitations, CapTech deployed a modern workers' compensation platform to serve the entire lifecycle of Kansas' workers' compensation process. This comprehensive platform includes features such as EDI, claims management, dispute resolution, fraud detection, payment processing, proof of coverage, medical fee management, and various forms.

### Products proposed and services performed:

CapTech managed the full system development process, from analysis and design to implementation, testing, go-live and post-go-live support. Using a custom .NET-based solution, CapTech integrated new and existing internal and external entities. The supporting back-end data model enables the linkage of entities to dispute data, case data, and claim data. The application offers reporting and business intelligence features that enable registered attorneys, employers, insurance carriers, and individuals to manage claims, schedule hearings, submit electronic forms, and apply for self-insurance.

The implemented system significantly reduced the amount of paper processed by the state. It brings additional business values through the following:

#### Increased Efficiency:

- External stakeholders can now schedule hearings and view case details from mobile devices.
- Improved operational reporting and analytics facilitates better decision making.

#### Increased Effectiveness:

- Data has been cleaned, consolidated, and structured to ensure all legacy cases and images are in the system from day one.
- The system provides an intuitive and user-friendly experience for all stakeholders, regardless of their role or which module they use.
- The system adheres to the state's enterprise architecture standards, leveraging the Microsoft platform for standardized tools and technologies.

#### Lower Cost of Ownership:

- The system remains maintainable, allowing the state's technical staff to continue supporting and enhancing it after the completion of the project.

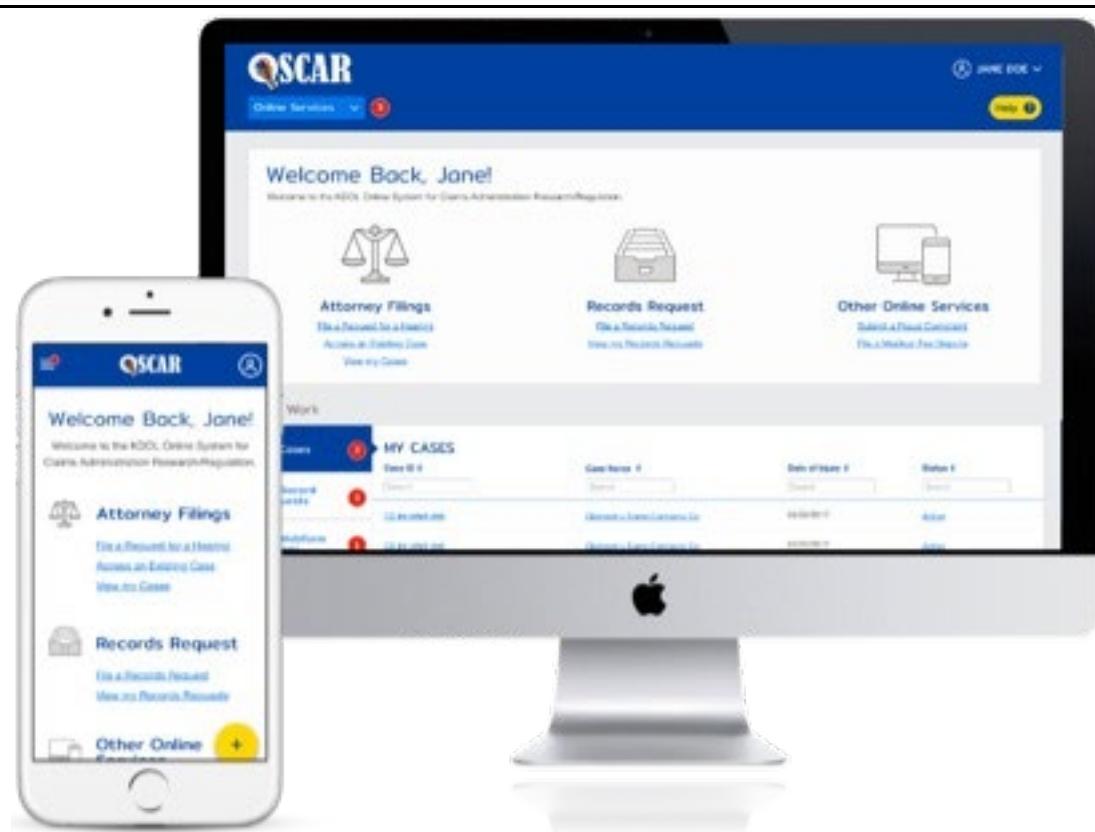


Figure 75 - Example of System Implemented

**Problems encountered and how they were resolved to Customer's satisfaction:**

Transitioning from a paper-based system to a digital one posed challenge for testing, as the legacy data did not exist in a digital format. To overcome this challenge, CapTech created synthetic data to ensure that negative test cases would not impact the functionality of the system.

CUSTOMER REFERENCE FORM		
<b>Supplier Information</b>		
Name of Company:	CapTech Ventures, Inc.	
Sub-Contractors Used:	None	
<b>Client Information</b>		
Name of Company:	TMRW Sports Group	
Address:	2060 S. Congress Avenue,	
Website:	West Palm Beach, FL 33406 <a href="https://www.tmrwsportsgroup.com/">https://www.tmrwsportsgroup.com/</a>	
<b>Contract Information</b>		
<input type="checkbox"/> Existing Contract/Project	Date Awarded:	
<input checked="" type="checkbox"/> Completed Contract/Project	Date Awarded: December 2022	Date Completed: December 2023
<input type="checkbox"/> Terminated Contract/Project	Date Awarded:	Date Terminated:
Amount of Contract Award: \$8,500,000		
Final/current Contract Amount: \$8,410,999		
Length of Project (start/end dates): December 2022 – December 2023		
<b>Client Contacts:</b>		
Client Project Manager:	See below for single Point of Contact	
Email:	See below for single Point of Contact	
Phone Number:	See below for single Point of Contact	
Client Technical Contact Person:	Andrew Macauley	
Email:	Andrew.Macaulay@TMRWsportsgroup.com	
Phone Number:	303.748.9971	

Project Information:
<b>Description of project and problem solved:</b>
TMRW Sports is launching a tech-infused, pro-golf simulator league (TGL) in January 2025. The new golf league backed by professional golfers Tiger Woods and Rory McIlroy, was built from the ground up to attract a younger, more diverse audience to golf. TGL gameplay blends virtual and physical spaces. Weekly matches feature two teams competing over 15 holes, starting on a simulator, and finishing on a dynamically adjusted green with a physical pin. TGL fans will experience a modern version of team-based golf that is approachable, exciting, and infused with persona-driven insights. To bring their vision to market, TMRW Sports required a modern competition scoring platform to capture and deliver real-time data across distribution channels. They partnered with CapTech to build ScoreSight, a platform which consumes, stores, transforms, and serves competition data. The platform provides information to venue display boards, on-air broadcasts, digital web and mobile applications, and other sports and entertainment entities.
TMRW Sports' vision is centered on TGL being a data and technology advanced product. As a new venture, the firm had no IT footprint, making the platform a complete greenfield build. From the outset, CapTech designed a centralized, cloud-native system for real-time data ingestion, transformation, and distribution, aligning with other major sports. CapTech recognized that a key objective of ScoreSight is to serve proprietary league data, enhanced by the fascinating physics of the simulator, and aggregated to assess player skills in real-time. Users expect accurate data about the live event instantly. TGL fans want to consume a variety of information and view analytical insights. For example, they want to know specific details about a golfer's driving distance and ball speed, as well as which teams excel at gamesmanship and winning close matches.
CapTech specifically saw the need to address data segmentation, computation auditability, and distribution with broadcast time delay in mind. A core principle was to record transactions and perform calculations with minimal processing latency and read delay. With a vast catalog of data about the players, teams, holes, and matches, analytics would need to utilize various business dimensions. As a new sport, TGL is expected to evolve with subsequent seasons. The platform would not only deliver many well-known metrics but also enable TMRW Sports to expand their information offering and easily add new statistics as needed.

### **Products proposed and services performed:**

CapTech executed the entire product lifecycle: discovery, definition, design, development, and deployment. CapTech created ScoreSight by leveraging deep understanding of cloud and data architecture, data management best practices, event processing, and front-end application design as well as sports expertise. First, CapTech conducted an eight-week technology assessment to fully explore TMRW Sports' vision for TGL. The assessment included interviewing stakeholders, defining high-level requirements, reviewing the technology landscape, conducting technical feasibility, evaluating vendors, estimating infrastructure cost, and assessing risks. The team then provided TMRW Sports with a roadmap for launching ScoreSight in under 12 months, detailing their recommendations for the future state architecture, integration patterns, storage design, and consumption policies. Next, CapTech conducted a design phase for the front-end scoring user interface. The team developed user flows, an information architecture, visual & accessibility designs, and prototypes. This allowed stakeholders to iterate on changes and provide feedback on critical business functions for scoring the competition. Subsequently, CapTech led in-person gameplay testing, leveraging prototypes to understand activity sequencing and timing. Collaborating closely with TMRW, they iterated on critical league rules to ensure the competition would be entertaining for the fans. Finally, CapTech implemented the three-tiered platform consisting of the scoring application, services layer, and data storage. Each layer was augmented with flexible processes to ingest live simulator data, preserve data integrity, and enrich competition data.

CapTech chose AWS Services based on a cost-benefit analysis, considering factors such as reduced infrastructure costs, scalability, services commonly used in the pro golf industry, and existing platform services. Whenever possible, CapTech prioritized using serverless AWS toolsets (Lambda, IoT Core, EventBridge, API Gateway) to provide a scalable and cost-effective solution. The only service incurring 24/7 costs was the physical data storage (Aurora RDS global cluster). CapTech worked with all external parties to integrate APIs and event messaging. CapTech engineers used consistent and repeatable approaches for batch ingestion, real time ingestion, processing, serving, and archiving. They carefully selected the most suitable AWS services for each requirement, adhering to established implementation patterns. This approach reduced the time and effort required for producers and consumers to handle diverse data scenarios. As a result, data onboarding became faster, operational efficiency increased, and time-to-insight accelerated. The streamlined interaction allowed TMRW Sports to focus more on deriving business value from the data rather than managing the intricacies of data processing.

CapTech's ScoreSight implementation yielded a robust platform utilizing modern architecture principles that met the desired business functionality. The platform governs data access, lineage, and integrity. ScoreSight directly enables TMRW Sports' business vision by demonstrating the feasibility of their new sport. It empowers TRMW Sports to serve a diverse range of consumers, providing them with varying levels of detailed information and positioning the company to monetize their data. CapTech achieved the goal of processing data at near real-time speeds while ensuring system security, resiliency, and reliability for on-air broadcast during live competition. ScoreSight enables TMRW Sports to administer their league, score live matches, reconcile simulator data with scoring data, computed statistics in real time, and analyze player performance. Through this platform, consumers and fans gain access to deep insights into the golfers' capabilities and league's results.

CapTech addressed several of the previously noted challenges in their solution architecture. The following architectural decisions were made to safeguard the quality of the real-time analytics and the integrity of the game:

- API managed time delays ensured consumers did not receive gameplay scoring details ahead of the on-air broadcast or the closure of betting markets.
- A secure-multi region AWS platform allowed gameplay and in-venue applications to be in a private network, while external endpoints were publicly available.
- A manually triggered process enabled failover to a secondary AWS region in under three minutes, supported by regular performance and disaster recovery tests to ensure reliable platform scaling to meet demand.
- Processes for auto-scaling reader clusters, restoring snapshots, change auditing for data lineage tracking, and match "re-playability" were all in place.
- The infrastructure scaled up with larger database clusters and out with reader instances during matches when data change and integrity was most critical, while also controlling cloud spend for times of lower demand.
- Processing events in real-time, rather than a holistic batch manner, allowed for up-to-the-minute player and team stat calculations and live and projected league standings.

Beyond the technical solution, ScoreSight was built with the future in mind. CapTech's flexible code patterns and infrastructure deployment patterns enabled TMRW Sports to implement new features quickly. The architecture is designed to maximize long term profit by best allocating technical spend towards the greatest return on investment. The platform positions TMRW Sports for future revenue from partnership deals, media licensing, and engaged users and fans. CapTech delivered a resilient and responsive system, aligning technology performance with business objectives.

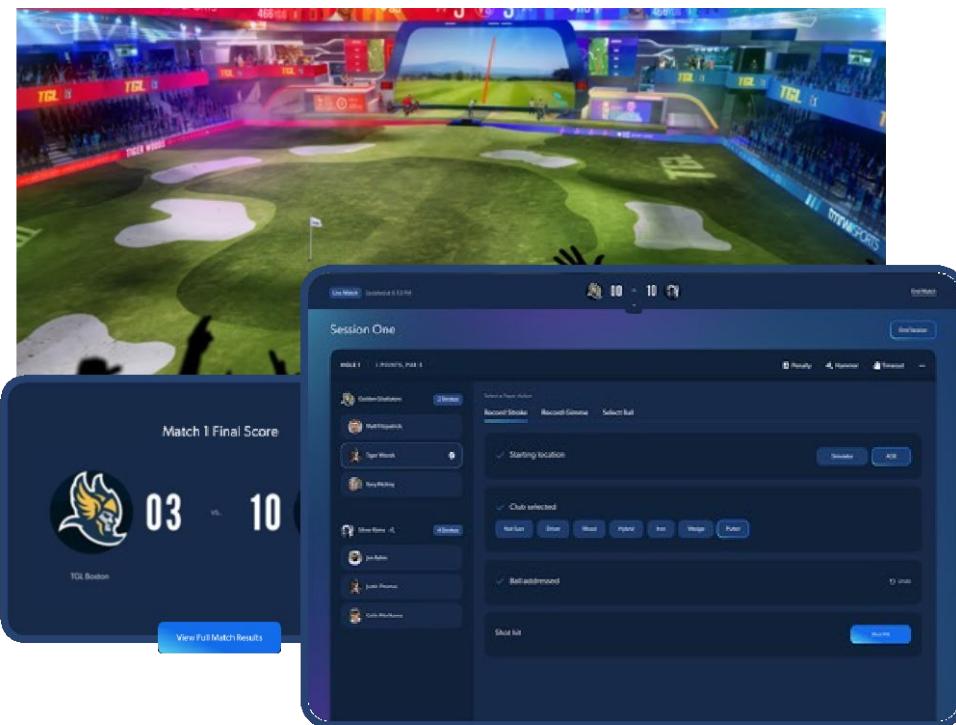


Figure 76 - Example of Solution Implemented

**Problems encountered and how they were resolved to Customer's satisfaction:**

To address the challenges of creating a brand-new solution for TGL from scratch, CapTech strategized and developed an innovative platform with all new rules and features. They demonstrated exceptional product ownership, ensuring the system could accommodate live audiences, maintain uptime, and support television broadcasts to make it more resilient. Through strong client ownership and collaboration, CapTech responded in real time to meet the client's vision and deliver a successful solution.

The project was postponed a year due to physical building damage caused by a major Florida storm. This resulted in a significantly longer testing period before going live to ESPN. CapTech navigated changing scope and numerous moving pieces, as multiple vendors with varying timelines pushed for rapid product delivery. CapTech played a crucial role as the 'heart' of the technology solution, orchestrating game play, league administration, and integrating various data sources to meet the needs of target consumers.

## 10.13 - In Response to Section 6 Part E

### **ANTICIPATED PROJECT RISKS**

*The Supplier must provide a written description of lessons learned from similar projects as well as the anticipated project risks that your company considered while preparing your response to this procurement. For each anticipated project risk identified, also provide an associated mitigation plan with concepts for both the Contractor and DMV for the type of Contract being awarded.*

### **Empowering Product Owners**

When product owners lack decision-making authority, it poses a significant risk to any project. This risk can impact the project in several ways. First, it leads to delays. Critical decisions get deferred or bottlenecked, slowing down progress. Second, there is a risk of scope creep as stakeholders and leadership may bypass product owners, resulting in scope changes that are not evaluated. Third, quality issues may arise as decisions are made by members of the team that are not necessarily best suited to making those decisions.

To mitigate this risk, CapTech will strongly encourage the following practices:

- Empower Product Owners: DMV can clearly define product owners decision-making boundaries and enable them to have access to necessary resources and information.
- Effective Communication: We will foster open communication channels between product owners, stakeholders, and the development teams. We will provide regular updates to stakeholders on progress and decisions.
- Escalation Paths: We will define clear escalation paths for unresolved issues, so that we have alignment with DMV leadership on important decisions.
- Collaborative Culture: We will encourage collaboration and trust among team members, and promote a culture where decisions are made collectively.

## 10.14 - In Response to Section 6 Part F

### **SMALL BUSINESS PARTICIPATION**

*It is the policy of the Commonwealth of Virginia to contribute to the establishment, preservation and strengthening of small businesses and micro businesses including those small or micro businesses owned by women, minorities or service-disabled veterans and to encourage their participation in State procurement activities. The Commonwealth of Virginia encourages all Suppliers to provide for the participation of small businesses through partnerships, joint ventures, subcontracts, and other contractual opportunities.*

*A Supplier which is a small business, a small women-owned business, a small minority-owned business or a small service-disabled veteran-owned business as defined in § 2.2-4310 of the Code of Virginia, or a certified micro business as defined in Executive Order Number 20 (2014), is a SWaM business. If Supplier is a SWaM business, the Supplier should include a copy of all Virginia SWaM certifications with its proposal. No Supplier shall be considered a small business, a women-owned business, a minority-owned business, a service-disabled veteran business or a micro business unless certified by Department of Small Business and Supplier Diversity (DSBSD). For more information, go to: <http://www.sbsd.virginia.gov/>.*

*As part of its proposal, Supplier shall provide a Small Business Subcontracting Plan as set forth in Appendix C. In the submitted Small Business (SWaM) Subcontracting Plan, state the percentage of the contract's value that will be spent with SWaM subcontractors. Please also include in your plan a list of all subcontractors you plan to utilize who are not Virginia-certified SWaM businesses. If the Supplier does not plan to use small or micro business subcontractors in executing a Contract resulting from this procurement, so state.*

See Small Business Subcontracting Form in Appendix 2.

## 10.15 - In Response to Section 6 Part G

### **PERFORMANCE STANDARDS METHODOLOGY**

*The Supplier must describe the methodology used to develop its internal performance standards, the processes and tools used to monitor and measure performance against those standards, and the management reporting systems that capture these data.*

*The Supplier must describe its present customer satisfaction rating, summarize customer satisfaction criteria, and describe the methodology used to measure customer satisfaction. The Supplier may include any relevant publication ratings or articles.*

CapTech has a multi-tiered approach by which we govern performance:

- **Corporate Performance:** On a corporate level, CapTech's executive management committee is responsible for developing an annual strategic playbook. This playbook includes performance standards and metrics to measure progress against the annual plan and developed through a process of including feedback from across all CapTech leadership levels. CapTech uses Workday, Salesforce, and Smart Recruiters to track and report against financial metrics and performance standards. CapTech's management team evaluates progress against each metric monthly and shares results across the company, during the quarterly business meeting.
- **Practice Area Performance:** To support the corporate playbook, each of CapTech's four practice areas develops an annual strategic playbook that is also shared across the company. Each practice area tracks progress against their playbook monthly and shares this progress both to CapTech senior leadership and to the consultants aligned to the respective area.
- **Consultant Performance:** To aid in tracking performance at the consultant level, CapTech has defined a core competency framework that lists the behaviors expected from employees within the company and aligns with our vision and core values. This framework is used to support a multi-source feedback approach, in which feedback is collected from clients, CapTech supervisors and peers to promote transparent, constructive review and emphasize impactful behavioral development. The standard evaluation process includes creating a feedback list, gathering feedback, writing an evaluation, reviewing evaluation, and providing evaluation feedback. The evaluation process is conducted in Workday, which outputs an Evaluation and Scorecard Form and a completed Employee Development Plan. These outputs are used to document and communicate the performance evaluation and its outcomes to various stakeholders.
- **Customer Satisfaction:** CapTech's evidence of customer satisfaction can be demonstrated by our long-term relationships with our clients. In fact, the first clients we worked with in 1997 remain our most committed partners today. We have also been recipients of numerous awards, including Consulting® magazine's "Best Firms to Work For" Top 10 list 2023, Inc. 5000 list for 15 years since 2002, Forbes magazine's "America's Best Management Consulting Firms" 2022, Vault.com's "50 Best Consulting Firms to Work For" 2022, "100 Best Internships," 2015-2020, and Top 5 "Best Consulting Internship" 2023. CapTech's Salesforce AppExchange listing has a 4.8 (out of 5) average rating.

## 10.16 - In Response to Section 6 Part H

### **GOVERNANCE AND COMPLIANCE MANAGEMENT**

*The Supplier must describe its management processes that ensure governance and compliance with all federally mandated laws and regulations used by your industry and in provision of services to its customers. Also, describe how you will provide governance and compliance with any of VITA's or DMV's required security and data privacy or other requirements specified in the EPD, not currently managed by your firm, but that you will do should an award be made to your firm.*

CapTech's Risk Management Team works with our internal stakeholders, management, and outside counsel to see that CapTech complies with all federal, state, and local laws, regulations and guidelines that are applicable to CapTech as a technology and management consulting services company (which includes, but is not limited to, those applicable to information security and privacy). The Risk Management Team includes a Contract Management and a Compliance Team, and those teams are responsible for:

- Day-to-day management of CapTech's contractual and compliance obligations
- On-going employee training activities
- Checking that its client and 3rd party vendor contracts reflect the applicable information security and data privacy requirements
- Seeing that CapTech's internal policies and processes reflect its obligations

CapTech's Information Technology and Information Security Teams are primarily responsible for maintaining that CapTech's infrastructure is secure and that its information security related policies and process comply with NIST and other applicable industry standards so that CapTech mitigates information security and data privacy risks.

To the extent that the services we perform for DMV, or an Authorized User require that CapTech adhere to specific information security or data privacy policies or additional federal, state, and local laws, regulations and guidelines or regulatory standards, CapTech will be glad to discuss those requirements and the process for complying as part of the post-award contract negotiation process.

## 10.17 - In Response to Section 6 Part I

### RISK MANAGEMENT

*The Supplier must provide an overview of its comprehensive security risk management processes including the application, monitoring, and management of the controls used. Provide details as to how you establish the context for security risk-based decisions, how you assess the risk, how you respond to the risk once it's determined, and how you monitor the risk on an ongoing basis using communications and feedback for continuous improvement within your organization.*

It is CapTech's standard policy to perform all services that require access to its clients' sensitive information such as Personal Data (i.e., Personally Identifiable Information or PII), Payment Card Industry (PCI) data, Personal Health Information (PHI) or other similar forms of sensitive data information on client provided equipment and systems only.

CapTech has a robust NIST-based information security governance program that includes an Information Security Policy and associated standards, Incident Response Policy, and numerous other policies such as Access Control Policy, Anti-Virus Policy, Authentication Standards Policy, and other information security policies so that CapTech complies with all applicable standards. CapTech's IT and Information Security teams perform frequent self-assessments and engage external providers to perform IT, HIPAA, and security-related audits annually (or more often if necessary). CapTech's has annual and quarterly Information Security Training that includes data/privacy classification and protections, client concerns and other information security related subjects including, but not limited to 2023 Information Security - Common Threats; Insider Threats for End Users; Taking Security Home; Working Remotely; Phishing, etc.

To the extent that the services we perform for DMV, or an Authorized User require that CapTech adhere to specific information security or data privacy policies or additional federal, state, and local laws, regulations and guidelines or regulatory standards, CapTech will be glad to discuss those requirements and the process for compliance as part of the post-award contract negotiation process.

## Part 11 – Pricing, Incentives, and Payment Response

## 11.1 - In Response to Section 7 Part A Overview

### **PRICE PROPOSAL**

DMV is seeking a firm fixed price proposal for providing the services and support described in this EPD. Supplier must submit a price proposal using the Pricing Worksheet templates provided in Appendix B.

Supplier must provide complete and detailed service fees and costs on each Pricing Worksheet. Detailed breakdowns of each item, detailed descriptions, and detailed service fee and cost breakdowns must be included. Supplier's proposed pricing data must include all charges of any kind associated with this engagement.

Additional information and backup detail should be attached as appropriate. Any scheduled price change must be identified, and actual new prices and proposed effective dates must be stated.

All one-time and recurring service fees and costs and any underlying assumptions on the part of Supplier must be clearly, conspicuously, and fully disclosed.

Supplier must clearly describe where pricing incentives and savings are offered and included

CapTech appreciates the opportunity to propose our approach to implementing the Modernized CSS Solution, which we believe will provide the most overall value at the lowest total cost of ownership to DMV. Technically, we intend to leave you with a Modernized CSS Solution that leverages industry leading technologies and best practices, enabling DMV to sustain, enhance, and scale the solution for many years to come. The operational Modernized CSS Solution will use non-proprietary frameworks and our proven approach to mentoring, educating, and peer programming will enable DMV staff to support the solution without reliance on outside vendors or expensive license arrangements. Throughout the project we will partner with DMV on all aspects of this delivery to empower DMV staff to own ongoing sustainment and enhancement activities. DMV will not only receive the direct technical benefits of the modernized solution but will also be able to confidently attract and retain top talent that is excited to work on the modern solution in an environment that embraces agile ways of working.

## 11.2 - In Response to Section 7 Part A Paragraph 1

### Base Service Fees

Use Pricing Worksheet I to clearly summarize the service and support fees associated with all elements of the Supplier proposal. If the Supplier is proposing multiple options, the Supplier should duplicate the worksheet to present a complete representation of each option.

Our pricing approach aligns the agile / iterative delivery approach that we detail throughout our proposal. Our goal is to frequently deliver small to medium size increments of valuable components and capabilities to a production-like environment for inspection, feedback, acceptance, and payment at least once every quarter (i.e., every 12 weeks). During Phase 1, we will primarily focus on building out the architectural enablers, proof of concept components, and go-forward plan for Phase 2. During Phase 2 we will iteratively define, develop, validate, and deploy functionality to a production-like environment as frequently as is reasonably possible to support continuous delivery, inspection, and feedback with formalized review and acceptance at the end of each twelve (12) week planning interval ("PI").

Category/Item	Qty/Unit	Unit Price	Total
<b>Contractor Services and Support For Base Scenario (Build From Ground Up)</b>			
<b>Services and Support (One-Time Service and Support Fee)</b>			
1. Stage 1 – Services and Support for Proof of Concept	Milestones / 3 Total	Milestone 1: \$ 1,230,000.00  Milestones 2 - 3: \$ 5,535,000.00 each	\$ 12,300,000.00
2. Stage 2 – Services and Support for Entire Modernized CSS Solution Build and Delivery Under Base Scenario (Build from Ground Up)	Milestones / 12 Total	Milestones 4 - 15 \$ 3,075,000.00 each	\$ 36,900,000.00
3. Other (Specify Details)			
<b>Grand Total One-Time Service and Support Fee (Base Scenario)</b>			<b>\$49,200,000.00</b>
<b>Pricing Assumptions:</b> <ul style="list-style-type: none"> <li>If CapTech's LegacyLift becomes subject to VITA (State of Virginia Directive on AI) AI review and approval process and it is ultimately determined by either VITA or DMV that it cannot be used, then the pricing, scope, and project schedule will be subject to change.</li> </ul> For Stage 1 POC components and documentation: <ul style="list-style-type: none"> <li>CapTech will submit completed POC components, and/or documentation describing component(s) along with corresponding written DMV acceptance to DMV.</li> </ul> For Stage 2 components and documentation: <ul style="list-style-type: none"> <li>CapTech anticipates deploying components to a production-like environment as frequently as is reasonably possible to support more frequent inspection of smaller batches of components. We expect DMV to calculate the component review and monitoring period on a component basis, not a milestone basis. Therefore, each component's review and monitoring period will start when we successfully deploy the component to a production-like environment and will end thirty (30) calendar days later. CapTech expects DMV to continuously review and validate components as we deploy them to the production-like environment.</li> <li>DMV and CapTech will mutually agree to the necessary refinements to components and documentation during quarterly planning and subsequent joint reprioritization agreements for each "Iterative Deployment / Component Acceptance" milestone and the "Final Acceptance" milestone. CapTech will submit completed components, and/or documentation describing component(s) along with corresponding written DMV acceptance to DMV.</li> <li>DMV will exclusively evaluate component acceptance based on the component's working functionality within the Modernized CSS Solution and will not accept or reject components based on the completeness of documentation.</li> </ul>			

<b>Contractor Services and Support For Alternate Scenario (Build From ADOT MVD MAX As Starting Point)</b>			
<b>Services and Support (One-Time Service and Support Fee)</b>			
1. Stage 1 – Services and Support for Proof of Concept	Milestones / 3 Total	Milestones 4 - 5 \$ 3,437,500.00 each	\$ 6,875,000.00
2. Stage 2 – Services and Support for Entire Modernized CSS Solution Build and Delivery Under Alternate Scenario (Build from ADOT MVD MAX As Starting Point)	Milestones / 12 Total	Milestones 6 - 17 \$ 3,437,500.00 each	\$ 41,250,000.00
3. Other (Specify Details)			
<ul style="list-style-type: none"> <li>Stage 1 – Services and Support for Proof of Concept (Build from Ground Up)</li> </ul>	Milestones / 3 Total	Milestone 1: \$ 1,230,000.00  Milestones 2 - 3: \$ 5,535,000.00 each	\$ 12,300,000.00
<b>Grand Total One-Time Service and Support Fee (Alternate Scenario)</b>			<b>\$ 60,425,000.00</b>

**Pricing Assumptions:**

- The pricing scenario in the table above assumes that the project will begin with a POC of CapTech's "Build from Ground Up" Modernized CSS Solution to enable informed analysis and go-forward planning. If DMV decides to shift to ADOT MVD MAX after Stage 1, then we will need to repeat a subset of Stage 1 activities for the ADOT MVD MAX solution (e.g., environments, architecture, POC, etc.). Therefore, the total cost for this approach will be \$ 60,425,000.00.
- Alternatively, If DMV instead decides to move forward with the ADOT MVD MAX solution in Stage 1 without an initial evaluation of CapTech's "Build from Ground Up" solution, then CapTech can update our pricing to reflect this alternative scenario, which we estimate as follows: Stage 1: \$ 13,750,000.00, Stage 2: \$ 41,250,000.00, and Grand Total: \$ 55,000,000.00.
- All other assumptions from the "Build from Ground Up" scenario apply.

## 11.3 - In Response to Section 7 Part A Paragraph 2

### Optional Services, Components, and Solutions

Use Pricing Worksheet 2 to clearly identify and price each optional service, component, and solution that is being proposed.

Use Pricing Worksheet 2 to identify the blended optional hourly rate for overall system development/configuration changes to be used when quoting human resource costs related to additional services and support related to the Modernized CSS Solution during the Contract. DMV reserves the right to purchase additional services and support at any time during the term of the Contract.

Should it be later determined by DMV, at any time during the term of the Contract, that some additional work or service is required by the Contractor which was omitted from the broad intentions identified within this EPD, the hourly rate identified in response to this paragraph will be the basis on which DMV will be charged for such work, if determined necessary, unless otherwise quoted separately.

We summarize the service and support fees associated with all elements of our proposal in Pricing Worksheets 1, optional services components in Worksheet 2, our blended optional hourly rates for overall system development/configuration changes in Worksheet 2, and our Milestone Payment Plan in Worksheet 3. CapTech asserts that all statements concerning time are good faith estimates based upon information available and circumstances existing at the time made in the EPD.

Category/Item	Unit	Unit Price
<b>Optional Services, Components, and Solutions</b>		
<b>Services and Support (One-Time Service and Support Fee)</b>		
1. transactions.dmv.virginia.gov User interface updates and integration with Modernized CSS Solution	Quarterly 8 Milestones	Per Milestone: \$ 500,000.00 Total: \$ 4,000,000.00
2. Virginia MCS User interface updates and integration with Modernized CSS Solution	Quarterly 8 Milestones	Per Milestone: \$ 375,000.00 Total: \$ 3,000,000.00
3. EZ Haul, EZ Fleet, and EZ Reg User interface updates and integration with Modernized CSS Solution	Quarterly 8 Milestones	Per Milestone: \$ 375,000.00 Total: \$ 3,000,000.00
4. VAETS (Virginia Excise Tax System) User interface updates and integration with Modernized CSS Solution	Quarterly 8 Milestones	Per Milestone: \$ 375,000.00 Total: \$ 3,000,000.00
5. Fuels Tax Refund System User interface updates and integration with Modernized CSS Solution	Quarterly 8 Milestones	Per Milestone: \$ 375,000.00 Total: \$ 3,000,000.00
<b>Optional Staffing Resources (Hourly Rates For Optional Requests As Needed)</b>		
1. Individually list all available resources/roles, resource/role descriptions, level of expertise, and hourly rates	-	-
• Testing & Quality Automation - Junior	Hourly	\$ 115.00
• Testing & Quality Automation - Mid-Level	Hourly	\$ 155.00
• Testing & Quality Automation - Senior	Hourly	\$ 195.55
• Agile, Project Management, or OCM - Junior	Hourly	\$ 120.00
• Agile, Project Management, or OCM - Mid-Level	Hourly	\$ 165.00
• Agile, Project Management, or OCM - Senior	Hourly	\$ 205.00
• UX/UI and Design - Junior	Hourly	\$ 125.00
• UX/UI and Design - Mid-Level	Hourly	\$ 175.00
• UX/UI and Design - Senior	Hourly	\$ 215.00
• Software Engineer, Data Engineer, or Architect - Junior	Hourly	\$ 130.00
• Software Engineer, Data Engineer, or Architect - Mid-Level	Hourly	\$ 185.00
• Software Engineer, Data Engineer, or Architect - Senior	Hourly	\$ 225.00
<b>Pricing Assumptions:</b>		
<ul style="list-style-type: none"> <li>CapTech's base Modernized CSS Pricing requires DMV staff to update their systems that integrate with the Modernized CSS Solution. This includes transactions.dmv.virginia.gov, EZ Haul, EZ Fleet, EZ Reg, VAETS, Virginia MCS, and any other DMV-owned systems that will consume the new microservices. DMV can instead</li> </ul>		

engage CapTech for these services, components, and solutions utilizing either a milestone payment plan or the hourly rates in the pricing tables above.

- CapTech needs at least (2) years notice before the projected end date for the Modernized CSS Solution scope to secure necessary staff and to incorporate the development of these optional components into the Iterative Release Cycle Plan and Agile-based Project Work Plan of the Modernized CSS Solution.
- DMV can use the hourly rate table provided above to engage CapTech staff to support services related to the delivery, configuration, and support of this project. DMV understands that it must grant CapTech staff the necessary access and authority for CapTech to provide necessary services and sustain project activities.

## 11.4 - In Response to Section 7 Part B

### **CREATIVE PRICING OPTIONS**

DMV encourages the Supplier to provide alternate pricing options for DMV consideration. The Supplier must describe each alternate pricing option being proposed in detail, if offered.

### **Agile Modernization using Multiple Production Releases and Data Sync**

DMV requests us to develop and deploy the Modernized CSS Solution using an Agile / Iterative process. However, in the Q&A DMV clarified that it only expects iterative deployment of components to a production-like environment with a single cutover from the legacy to the Modernized CSS Solutions once minimum, “Must Have” scope and components are available. We plan to establish a DevOps pipeline, approach, and culture that supports frequent deployments and testing of small batches of components in a production-like environment so that DMV can continuously review and gain confidence in the Modernized CSS Solution. However, we are still building towards a single cutover event at which time we will retire the legacy system and the Modernized CSS Solution will become operational. The primary benefits of this approach include that we will not need to build any temporary data synchronization capabilities between live production systems, and we will not need to support both the legacy and Modernized CSS Solutions in production at the same time.

While we will be operating using Agile / Iterative techniques with frequent deployment, inspection, feedback, and validation, the overall approach in this EPD still largely aligns to a more traditional, waterfall delivery because DMV is going to realize most of the value at the end of the project instead of throughout the project. We understand that the primary challenge with modernizing using Agile / Iterative releases to production is decoupling aspects of the mainframe and legacy systems from the Modernized CSS Solution while ensuring continuous operation and data synchronization between all systems. To accomplish this style of iterative Modernization with production releases throughout delivery, we would first need to implement an approach that supports synchronizing changes between the legacy and Modernized CSS Solutions. The overall benefit of this type of approach is it reduces the risks associated with a single cutover event after multiple years of development, and it enables incremental savings and value generation as we replace the mainframe with modernized components. However, the overall modernization may take significantly longer and cost more than the single cutover approach.

If DMV is interested in CapTech proposing an approach that supports multiple production releases, then we are willing to negotiate a different type of contract and approach that supports Agile / Iterative releases, but we assert that this style of approach is not currently compatible with this EPD, and we therefore cannot currently provide any firm pricing estimates.

## 11.5 - In Response to Section 7 Part C

### **INCENTIVES**

*Incentives are designed to motivate Suppliers to surpass specific requirements of the EPD while discouraging inefficiency and waste. The Supplier is encouraged to submit a proposal describing any available incentives, additional benefits, or rewards to DMV to enhance the value of its proposal. (Examples of incentives may include additional services, rebates, training, support, Contractor right to copy/resell Modernized CSS Solution application code, etc.)*

### **Incentive-Based Discounts to Pricing**

- If DMV is willing to reduce the hold-back from 20% to 10%, CapTech is willing to offer a one-time, invoice-based discount of \$500,000.00 to DMV, which CapTech will show as a deduction on its final invoice.
- CapTech is interested in obtaining the intellectual property rights to the Modernized CSS Solution and would be willing to negotiate an additional discount in exchange for the exclusive rights of ownership to the Modernized CSS Solution. In the event DMV agrees to this, CapTech would provide a full license grant to DMV for the use of the solution pursuant to mutually negotiated terms.

## 11.6 - In Response to Section 7 Part D

### **DELIVERABLES AND PAYMENT**

Payments will be based on the delivery of services as defined in the Contract.

Upon Final Acceptance, DMV will pay the total fee for Base Service Fees as defined in Pricing Worksheet 1.

The Supplier may propose, for DMV consideration, a milestone payment plan for Base Service Fees where periodic payments are tied to Contractor meeting prescribed milestones and/or timely delivery and acceptance of deliverables and iterations/releases of the Modernized CSS Solution components that provide business value to DMV.

If proposed, the suggested milestone payment plan must be provided using Pricing Worksheet 3 and include a minimum 20% withholding amount which will be paid upon successful Final Acceptance.

For each completed deliverable, component, and/or iteration/release, documentation describing component(s) delivered along with corresponding written DMV acceptance must be submitted to DMV by the Contractor before payment will be granted.

CapTech summarizes the service and support fees associated with all elements of our proposal in Pricing Worksheets 1, and our Milestone Payment Plan in Worksheet 3. We understand that DMV is including a minimum 20% withholding amount which DMV will pay upon successful Final Acceptance and our Milestone Payment Plan takes this into account. As mentioned in response to 7.A, we aligned our milestone payment plan to our agile / iterative delivery approach. We anticipate deploying components and capabilities to a production-like environment on at least a quarterly (i.e., every ~12 weeks) basis for inspection, feedback, acceptance, and payment.

Contractor Services and Support for Base Scenario (Build From Ground)					
No.	Milestone Event	Associated Milestone Deliverables	Milestone Payment	Retainage (20%)	Net Payment
1.	Stage 1: Project Initiation and Planning	<ul style="list-style-type: none"> <li>• Project Kickoff Presentation</li> <li>• Stage 1 Agile-based Project Work Plan</li> <li>• Stage 1 Milestones Deliverable Plan</li> <li>• Stage 1 Initial Product Backlog</li> <li>• Stage 1 Iterative Release Cycle Plan</li> <li>• Stage 1 Staffing Plan</li> <li>• VITA Initiation Documentation</li> <li>• Azure DevOps Work Management Structure</li> <li>• PoC Vision / Scope</li> </ul>	\$ 1,230,000.00	(\$ 246,000.00)	\$ 984,000.00
2.	Stage 1: POC Architecture and Requirements	<ul style="list-style-type: none"> <li>• Business Processes and Rules</li> <li>• Established Dev Environment</li> <li>• Provisioned Azure Instance and Infrastructure</li> <li>• Repos to Deploy Code</li> <li>• Third Party Tools Installed</li> <li>• UX Flows for new mySelect</li> <li>• Initial Wireframes</li> <li>• Design System Foundation</li> <li>• Security Architecture</li> </ul>	\$ 5,535,000.00	(\$ 1,107,000.00)	\$ 4,428,000.00
3.	Stage 1: POC Demonstration and Go-Forward Plan	<ul style="list-style-type: none"> <li>• Demonstration of working functionality of the POC sample system components</li> <li>• Stage 2 Agile-based Project Work Plan</li> <li>• Stage 2 Milestones Deliverable Plan</li> <li>• Stage 2 Product Backlog</li> <li>• Stage 2 Iterative Release Cycle Plan</li> <li>• Stage 2 Staffing Plan</li> <li>• Go-Forward Plan</li> <li>• Executive Steering Committee Presentation</li> </ul>	\$ 5,535,000.00	(\$ 1,107,000.00)	\$ 4,428,000.00

No.	Milestone Event	Associated Milestone Deliverables	Milestone Payment	Retainage (20%)	Net Payment
4.	Stage 2: Iterative Deployment / Component Acceptance #1	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> </ul>	\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
5.	Stage 2: Iterative Deployment / Component Acceptance #2	Refinements to the following deliverables and documentation as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements:	\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
6.	Stage 2: Iterative Deployment / Component Acceptance #3		\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
7.	Stage 2: Iterative Deployment / Component Acceptance #4	<ul style="list-style-type: none"> <li>Project planning documentation, including Agile-based Project Work Plan, Product Backlog, Staffing Plan, and Iterative Release Cycle Plan</li> </ul>	\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
8.	Stage 2: Iterative Deployment / Component Acceptance #5	<ul style="list-style-type: none"> <li>Architecture documentation – business, functional, CX, technical, security, and data</li> <li>Testing documentation – test plans, test results, and bugs</li> </ul>	\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
9.	Stage 2: Iterative Deployment / Component Acceptance #6	<ul style="list-style-type: none"> <li>Training plans and documentation</li> <li>VITA project management and compliance documentation</li> </ul>	\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
10.	Stage 2: Iterative Deployment / Component Acceptance #7	<ul style="list-style-type: none"> <li>Status reports and key decisions from Executive Steering Committee</li> </ul>	\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
11.	Stage 2: Iterative Deployment / Component Acceptance #8		\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
12.	Stage 2: Iterative Deployment / Component Acceptance #9		\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
13.	Stage 2: Iterative Deployment / Component Acceptance #10		\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
14.	Stage 2: Iterative Deployment / Component Acceptance #11		\$ 3,075,000.00	(\$ 615,000.00)	\$ 2,460,000.00
15.	Final Acceptance	<ul style="list-style-type: none"> <li>Modernized CSS Solution production release, cutover, and data migration.</li> </ul> <p>Final versions of the following deliverables and documentation as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements:</p> <ul style="list-style-type: none"> <li>Project planning documentation, including Agile-based Project Work Plan, Product Backlog, Staffing Plan, and Iterative Release Cycle Plan</li> </ul>	\$ 3,075,000.00	\$ 9,225,000.00	\$ 12,300,000.00

No.	Milestone Event	Associated Milestone Deliverables	Milestone Payment	Retainage (20%)	Net Payment
		<ul style="list-style-type: none"> <li>• Architecture documentation – business, functional, CX, technical, security, and data</li> <li>• Testing documentation – test plans, test results, and bugs</li> <li>• Training plans and documentation</li> <li>• VITA project management and compliance documentation</li> <li>• Deployment Plan</li> <li>• Status reports and key decisions from Executive Steering Committee</li> </ul>			

Table 16: Services and Support

Contractor Services and Support for Alternate Scenario (Build From ADOT MVD MAX As Starting Point)					
No.	Milestone Event	Associated Milestone Deliverables	Milestone Payment	Retainage (20%)	Net Payment
1.	Stage 1: Project Initiation and Planning	<ul style="list-style-type: none"> <li>• Project Kickoff Presentation</li> <li>• Stage 1 Agile-based Project Work Plan</li> <li>• Stage 1 Milestones Deliverable Plan</li> <li>• Stage 1 Initial Product Backlog</li> <li>• Stage 1 Iterative Release Cycle Plan</li> <li>• Stage 1 Staffing Plan</li> <li>• VITA Initiation Documentation</li> <li>• Azure DevOps Work Management Structure</li> <li>• PoC Vision / Scope</li> </ul>	\$ 1,230,000.00	(\$ 246,000.00)	\$ 984,000.00
2.	<b>Ground Up</b> Stage 1: POC Architecture and Requirements	<ul style="list-style-type: none"> <li>• Business Processes and Rules</li> <li>• Established Dev Environment</li> <li>• Provisioned Azure Instance and Infrastructure</li> <li>• Repos to Deploy Code</li> <li>• Third Party Tools Installed</li> <li>• UX Flows for new mySelect</li> <li>• Initial Wireframes</li> <li>• Design System Foundation</li> <li>• Security Architecture</li> </ul>	\$ 5,535,000.00	(\$ 1,107,000.00)	\$ 4,428,000.00
3.	<b>Ground Up</b> Stage 1: POC Demonstration and Go-Forward Plan	<ul style="list-style-type: none"> <li>• Demonstration of working functionality of the POC sample system components</li> <li>• Stage 2 Agile-based Project Work Plan</li> <li>• Stage 2 Milestones Deliverable Plan</li> <li>• Stage 2 Product Backlog</li> <li>• Stage 2 Iterative Release Cycle Plan</li> <li>• Stage 2 Staffing Plan</li> <li>• Go-Forward Plan</li> <li>• Executive Steering Committee Presentation</li> </ul>	\$ 5,535,000.00	(\$ 1,107,000.00)	\$ 4,428,000.00
4.	<b>ADOT MVD MAX</b> Stage 1: POC Architecture and Requirements	<ul style="list-style-type: none"> <li>• Business Processes and Rules</li> <li>• Established Dev Environment</li> <li>• Provisioned Azure Instance and Infrastructure</li> <li>• Repos to Deploy Code</li> <li>• Third Party Tools Installed</li> <li>• UX Flows for POC components on ADOT MVD MAX</li> <li>• Initial Wireframes</li> <li>• Design System Foundation</li> <li>• Security Architecture</li> </ul>	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
5.	<b>ADOT MVD MAX</b> Stage 1: POC Demonstration and Go-Forward Plan	<ul style="list-style-type: none"> <li>• Demonstration of working functionality of the POC sample system components</li> <li>• Stage 2 Agile-based Project Work Plan</li> <li>• Stage 2 Milestones Deliverable Plan</li> <li>• Stage 2 Product Backlog</li> </ul>	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00

No.	Milestone Event	Associated Milestone Deliverables	Milestone Payment	Retainage (20%)	Net Payment
		<ul style="list-style-type: none"> <li>• Stage 2 Iterative Release Cycle Plan</li> <li>• Stage 2 Staffing Plan</li> <li>• Go-Forward Plan</li> <li>• Executive Steering Committee Presentation</li> </ul>			
6.	Stage 2: Iterative Deployment / Component Acceptance #1	<ul style="list-style-type: none"> <li>• Demonstration of working Modernized CSS Solution components in production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> </ul>	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
7.	Stage 2: Iterative Deployment / Component Acceptance #2	Refinements to the following deliverables and documentation as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements:	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
8.	Stage 2: Iterative Deployment / Component Acceptance #3		\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
9.	Stage 2: Iterative Deployment / Component Acceptance #4	<ul style="list-style-type: none"> <li>• Project planning documentation, including Agile-based Project Work Plan, Product Backlog, Staffing Plan, and Iterative Release Cycle Plan</li> </ul>	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
10.	Stage 2: Iterative Deployment / Component Acceptance #5	<ul style="list-style-type: none"> <li>• Architecture documentation – business, functional, CX, technical, security, and data</li> <li>• Testing documentation – test plans, test results, and bugs</li> </ul>	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
11.	Stage 2: Iterative Deployment / Component Acceptance #6	<ul style="list-style-type: none"> <li>• Training plans and documentation</li> <li>• VITA project management and compliance documentation</li> <li>• Status reports and key decisions from Executive Steering Committee</li> </ul>	\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
12.	Stage 2: Iterative Deployment / Component Acceptance #7		\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
13.	Stage 2: Iterative Deployment / Component Acceptance #8		\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
14.	Stage 2: Iterative Deployment / Component Acceptance #9		\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
15.	Stage 2: Iterative Deployment / Component Acceptance #10		\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
16.	Stage 2: Iterative Deployment / Component Acceptance #11		\$ 3,437,500.00	(\$ 687,500.00)	\$ 2,750,000.00
17.	Final Acceptance	<ul style="list-style-type: none"> <li>• Modernized CSS Solution production release, cutover, and data migration.</li> </ul> <p>Final versions of the following deliverables and documentation as mutually agreed upon during quarterly planning and</p>	\$ 3,437,500.00	\$ 11,397,500.00	\$ 14,835,000.00

No.	Milestone Event	Associated Milestone Deliverables	Milestone Payment	Retainage (20%)	Net Payment
		<p>subsequent joint reprioritization agreements:</p> <ul style="list-style-type: none"> <li>• Project planning documentation, including Agile-based Project Work Plan, Product Backlog, Staffing Plan, and Iterative Release Cycle Plan</li> <li>• Architecture documentation – business, functional, CX, technical, security, and data</li> <li>• Testing documentation – test plans, test results, and bugs</li> <li>• Training plans and documentation</li> <li>• VITA project management and compliance documentation</li> <li>• Deployment Plan</li> </ul> <p>Status reports and key decisions from Executive Steering Committee</p>			

Table 17: Services and Support Scenario 2

## Part 12 – Modernized CSS Solution Contract Response

## 12.1 - In Response to Section 8

Any resulting agreement shall be defined by a written contract, which shall be binding only when fully executed by both parties. DMV's standard contractual terms and conditions are embodied in the Proposed Modernized DMV CSS Solution Contract (Proposed Contract), provided as part of this EPD in Appendix A.

Supplier shall submit the following items with its proposal:

1. A detailed response to the Proposed Contract (see Appendix A) indicating the level of Supplier willingness to accept the terms and conditions of the Proposed Contract as they are written. The detailed response shall include the following:

a. For each term and condition of the Proposed Contract, the Supplier must indicate whether it fully accepts or takes exception.

b. For each term and condition that is NOT fully accepted, the Supplier must:

- Provide suggested alternate wording in a tracked change, redline format, directly within the Proposed Contract wording.
- Indicate the rationale and reason(s) for taking exception using the Proposed Contract Exceptions Matrix in Appendix A.

Any Supplier provided exceptions and/or suggested language revisions will be considered; however, DMV may reject any proposed edits, deletions, or additions at any time.

Supplier exceptions and/or suggested language revisions shall exclude exceptions or suggested language revisions to any provisions regarding liability. If Supplier is selected to go forward into negotiations, at that time Supplier may identify exceptions to any liability provisions contained in the EPD and the Proposed Contract in writing at the beginning of such negotiations, submitted via email to the DMV Single Point of Contact.

The final terms and conditions of the Contract shall be agreed upon during negotiations.

2. Proposed Summary of Contractor Performance Measures (see Appendix A, Proposed Contract, Section 18.A and Appendix G).

Suppliers are encouraged to utilize the Single Point of Contact to address any questions they may have regarding any part of the Proposed Contract.

For Contract Redline refer to Appendix 15.

For Contract Exception Matrix refer to Appendix 16.

Question	Response (Y/N)
1. Does Supplier agree that the contents of your response to this EPD will become part of any Contract that may result from this procurement?	Y
2. Does Supplier agree that all provisions of the Proposed Modernized DMV CSS Solution Contract that are NOT redlined or noted with comments and/or exceptions are acceptable as written?	Y
3. Does Supplier affirm that it will be properly registered with the Virginia State Corporation Commission to conduct business in the Commonwealth at time of award should Supplier be awarded a contract?	Y
4. Does Supplier affirm that it and all affiliates are current with all sales tax obligations to the Commonwealth as of the due date of the proposals in response to this procurement?	Y

## Part 13 – Proposal Assumptions

## 13.1 – Proposal Assumption Table

TYPE	ASSUMPTION
<b>3.A and 3.B - Scope</b>	<p>CapTech asserts that all statements concerning time and scope are good faith estimates based upon information available and circumstances existing at the time made in this EPD. If CapTech determines that the Modernized CSS Solution project must be delayed, then DMV agrees to enter into good faith negotiations to revise, in writing, the applicable project documentation including, but not limited to, the project schedule, deployment plan, training plan, and staffing plan in response to the delay. Cost impacts may be discussed during the negotiations.</p>
<b>3.A and 3.B - Scope</b>	<p>CapTech's acknowledgement and confirmation of "all in-scope core lines of DMV business activities through all DMV point of contact channels, and the necessary shared services described and defined in this EPD" only extends to the minimum, "Must Have" scope, which DMV and CapTech will jointly define through requirements elicitation, refinement, validation, and acceptance throughout the project. CapTech's understanding of "Must Have" scope only includes the minimum functionality, features, and capabilities required for DMV to cutover from the mainframe-based solution to a Modernized CSS Solution, including:</p> <ul style="list-style-type: none"> <li>• Scope for DMV and its internal stakeholders, such as headquarters ("HQ") and customer service center ("CSC") staff, necessary to support external stakeholders (e.g., citizens, businesses, other state agencies, etc.) or necessary for DMV to perform its administrative responsibilities in compliance with applicable laws.</li> <li>• Scope for external stakeholders, such as citizens, businesses, government agencies, non-profit organizations, and other third parties, who currently depend on DMV data, information, and online services.</li> </ul>
<b>3.A and 3.B - Scope</b>	<p>CapTech understands DMV's desire to receive an equivalent (or better) Modernized CSS Solution. However, in our experience the migration from a "monolithic" mainframe technology to the desired "microservice" technology patterns of the Modernized CSS Solution will require changes to existing functionality and capabilities to be compatible with best practices in modern technology solutions.</p> <p>CapTech will work with DMV to ensure that the functionality and capabilities of the Modernized CSS Solution are equal, if not better, than what exists today, but we cannot guarantee that the Modernized CSS Solutions will have functionality and capabilities that are identical to what exists today.</p>
<b>3.A and 3.B - Scope</b>	<p>CapTech and DMV must come to an initial agreement on the minimum, "Must Have" scope during Stage 1 – Proof-of-Concept Activities. Based on this initial agreement, CapTech will present any required changes to price, schedule, or team composition to the Executive Steering Committee as part of the "Go-Forward" Plan for further consideration and approval.</p>
<b>3.A and 3.B - Scope</b>	<p>During Stage 2 – Full Modernized CSS Solution Build and Implementation, CapTech and DMV must formally review and agree to a refined agreement of the minimum, "Must Have" scope on at least a quarterly (i.e., every 3 months) basis. Based on the refined "Must Have" scope agreement, CapTech will present any required changes to price, schedule, or team</p>

TYPE	ASSUMPTION
	composition using the change management process defined in section 4.7 to review, evaluate, and approve the change.
<b>3.A and 3.B - Scope</b>	Whenever CapTech identifies a change in scope that requires a change to the price, schedule, or team composition CapTech will use the project change process to review, evaluate, and approve the change.
<b>Access</b>	CapTech will use Azure DevOps for work management and code repositories for the POC. DMV will grant CapTech Project Collection Admin permissions to Azure DevOps.
<b>Access</b>	CapTech requires access to a non-prod mainframe instance that is not under development by the DMV by the end of week four (4) of the project for the POC.
<b>Access</b>	DMV will provide access to non-prod versions of all external APIs that the Modernized CSS Solution must interface with or use.
<b>Access</b>	DMV is responsible for securing the necessary approvals to procure, provision, and configure all technologies and services specified in this proposal by the project start date.
<b>Access</b>	DMV must provide, at minimum, a Test and a prod-like instance that is not under active development by DMV for each DMV-owned application that needs to connect to the Modernized CSS Solution. DMV must promote any production code changes for DMV-owned applications to these test and prod-like environments monthly, at minimum.
<b>Access</b>	DMV and/or VITA is responsible for configuring all shared network infrastructure that exists outside of the production and non-prod environments that directly support the Modernized CSS Solution.
<b>Access</b>	DMV will provide all CapTech team members with developer-grade laptops with sufficient hardware, software, capabilities, and required admin permissions to sustain project activities and meet project deliverable requirements efficiently and effectively. DMV agrees to provide new laptops to CapTech team members if previously provided laptops prove insufficient.
<b>Access</b>	While onsite at DMV facility during agreed upon times, CapTech personnel will have access to a workspace, equipment, software, and supporting infrastructure as necessary to accomplish their assigned tasks. This includes network access, internet access for remote connectivity, any necessary office automation software and web access.
<b>Access</b>	CapTech assumes project team members will have access to project environments to work offsite and during non-business hours to meet project timelines and deliverable

TYPE	ASSUMPTION
	requirements.
<b>Access</b>	CapTech will be given access to relevant system and technical documentation at the beginning of the project.
<b>Access</b>	DMV will provide CapTech with necessary access to appropriate subject matter experts and systems in a timely manner to sustain project activities. DMV resources will be available for meetings/requirements and design sessions within two (2) business days of the request.
<b>Access</b>	DMV resources must be available as identified in the project schedule for requirements definition, business requirement document review, data collection and validation, User Acceptance Testing, and go-live validation activities.
<b>Access</b>	CapTech's approach requires sufficient administration and/or leadership stakeholders from the DMV to be engaged with the project team on a regular basis. This stakeholder will provide existing organizational documentation, identify, and coordinate additional project participants, participate in interviews and elicitation meetings, review work products and deliverables, and work to mitigate or resolve project risks and issues quickly.
<b>Access</b>	DMV will provide complete and accurate documentation or will specify the requirements in the absence of documentation. DMV will provide all requirements by the identified deadlines throughout the project.
<b>Accessibility</b>	CapTech will develop user interfaces in accordance with Section 508 requirements, which includes compliance with WCAG 2.0 AA. DMV understands that CapTech cannot independently state that the site meets 508 standards, and that it is the responsibility of the DMV to validate compliance using the CapTech-provided Accessibility report(s) and any independent or third-party testing that DMV deems necessary.
<b>Accessibility</b>	CapTech will remediate all WCAG Level A issues during the development work phase. At the conclusion of this work, the site may not be fully conformant with WCAG 2.0 AA standards if all identified issues are not able to be remediated. Any outstanding issues will be documented in the Accessibility report and provided to Authorized User for exemption sign-off. Additionally, CapTech will not be responsible for WCAG or Section 508 conformance on any user interface that we do not develop.
<b>Accessibility</b>	CapTech's accessibility team will review up to 25 unique core templates, all global components (for example, the navigation and footer), and up to five key flows or key functions in English content only. CapTech will not be responsible for third-party assessment of accessibility of the solution.

TYPE	ASSUMPTION
<b>Accessibility</b>	CapTech's accessibility testing will include both automated and manual testing and CapTech will only perform accessibility on desktop. CapTech's accessibility review will include an automated test (with Axe Dev Tools or equivalent tool as agreed upon with Client), a keyboard review, and screen reader review (with Mac + Voiceover or Windows + NVDA, unless otherwise agreed upon with Client). DMV will provide the CapTech team with access to all tools, systems, and development environments necessary to conduct accessibility testing.
<b>Accessibility</b>	CapTech will develop to WCAG 2.1 AA standards - code will be conformant at time of delivery. CapTech is not responsible for the accessibility of the code and any updates that are made after the time of delivery.
<b>Accessibility</b>	CapTech will complete accessibility testing on any new user interfaces developed for the Modernized CSS Solution. Accessibility testing for any existing user interfaces or applications that integrate with new microservices is out of scope.
<b>Approval Process</b>	DMV will provide feedback and approval of the final version of each of the deliverables detailed above within two (2) days of submission. Failure to provide feedback/approval within the specified timeframe will result in automatic approval of the document. Any changes to the document at that point will go through the project change process and may impact the schedule and/or pricing.
<b>Approval Process</b>	CapTech will perform one revision per deliverable in response to DMV feedback.
<b>Approval Process</b>	DMV Product / Business Owners will provide feedback and Approval of Epics and Features within two (2) business days. DMV Product / Business Owners will provide feedback and Approval of User Stories within 1 business day.
<b>Approval Process</b>	All DMV Business / Product Owner stakeholders that provide approval or acceptance must have alternates identified with the authority to make decisions. A DMV stakeholder that is unavailable due to being out of office or other reasons is not cause for delaying approvals or acceptance or providing feedback in the specified times.
<b>Approval Process / Change Control</b>	Once a deliverable has been approved, changes to that deliverable must go through the project change process.
<b>Change Control</b>	Once requirements (e.g., Features, User Stories) are approved, then changes must go through the project change process.
<b>Change Control</b>	Any delays in the project schedule not caused by CapTech (e.g., late delivery of dependent tasks from third parties or other external entities) may result in a change request.

TYPE	ASSUMPTION
<b>Change Control</b>	CapTech will notify DMV of any changes that affect these assumptions and result in material changes to time and cost to DMV.
<b>Client Engagement</b>	DMV will allocate as many Business Owners as necessary to sustain a continuous flow of work from the development teams. DMV Business Owners must have authority to independently sign off on features and epics. DMV understands that if DMV Business Owners become a constraint (i.e., bottleneck) then CapTech may need to initiate the project change process.
<b>Client Engagement</b>	DMV agrees to review all non-component deliverables within two (2) business days. CapTech will make one revision addressing reasonable DMV concerns. Any additional changes will require CapTech to initiate the project change process.
<b>Client Engagement</b>	DMV Business Owners / Product Owners / Lead Stakeholders will support the solution confirmation and backlog refinement to finalize the "Must Have" scope and priorities for development.
<b>Client Engagement</b>	DMV Business Owners / Product Owners / Lead Stakeholders will engage in ongoing Sprint activities such as backlog refinement, sprint planning, program planning, and sprint demo.
<b>Client Engagement</b>	DMV will provide Product Owners who are involved with the CapTech team daily. The Product Owners will participate in project standups, agile ceremonies, etc. The Product Owners will also assist with development, grooming, and prioritization of the backlog.
<b>Client's Applications</b>	DMV must secure approval of CapTech's proposed usage of AI from VITA, the Secretariat, and any other necessary parties within four (4) weeks of starting Stage 1.
<b>Client's Applications</b>	The current code base is free of common errors and bugs that would slow down the effort.
<b>Data Availability</b>	DMV will provide a full copy of production data with all required PII redactions for use in development, testing, and validation by the end of week four (4) of the project in Stage 1.
<b>Data migration</b>	DMV will procure a third-party tool to support data replication to Azure. CapTech recommends Treehouse Rocket Data Replicate and Sync (RDRS). CapTech will evaluate other tools identified by DMV that meet all requirements for replicating data and meeting the needs of the Mainframe migration. DMV must select and install a data replication tool by the end of week four (4) of the project in Stage 1. If DMV cannot meet this deadline, then CapTech's ability to migrate data for the Stage 1 POC will be severely limited or delayed. Any delays or changes in scope may require CapTech to initiate the project change process.

TYPE	ASSUMPTION
<b>Data migration</b>	DMV will configure the third-party data synchronization tool on Mainframe to support data replication for migration to Azure and will provide on-going support of the configuration on the Mainframe.
<b>Data migration</b>	CapTech asserts that all data will be migrated as is. CapTech will perform no cleansing or data clean-up as part of this migration/conversion effort. If data is failing load in the new system due to validation requirements, DMV will remediate and provide data to CapTech that meets the requirements of the target system.
<b>Data migration</b>	DMV will identify, procure, and provision a third-party tool for data migration by the end of week four (4) of the project. CapTech plans to utilize Treehouse Rocket Data Replicate and Sync (RDRS) unless DMV has another preferred tool with comparable capabilities.
<b>Dependencies</b>	CapTech is not responsible for third-party software not functioning as expected.
<b>Environments, Supporting Tools &amp; Licenses</b>	An adequate number of test devices are available to support the testing timeline.
<b>Environments, Supporting Tools &amp; Licenses</b>	Non-prod “dummy” data will be available in dev and test environments.
<b>Onboarding</b>	DMV's consultant onboarding process (including background checks if applicable) will not delay CapTech's schedule by more than five (5) business days.
<b>Onboarding</b>	Once awarded, CapTech assumes thirty (30) days to start the project. Official start date will be managed through the contracting process but may impact recommended timelines and team structure if delays extend to beyond forty-five (45) days.
<b>Project Cancellation</b>	If the project is cancelled for any reason, CapTech will be paid on a prorated basis for all progress made on paid deliverables.
<b>Reporting</b>	CapTech plans to use SQL Server Reporting Services for standardized reports. CapTech will use reasonable efforts to implement similar logic, data, formatting, and display of information within the bounds of standard SSRS functionality.
<b>Scope - CX</b>	DMV will provide CapTech access to all relevant user research, including customer or employee surveys, call center feedback and reports, and any other relevant user research.
<b>Scope - CX</b>	For the mySelect UI customizations, CapTech will leverage the design system created for the dmv.virginia.gov user experience or a similar agreed-upon design system that is

TYPE	ASSUMPTION
	compatible with the Blazor UI framework.
<b>Scope - CX</b>	DMV assumes responsibility for providing all necessary content, including text, images, videos, and any other assets required for the website, unless content creation is part of the EPD.
<b>Scope - CX</b>	CapTech limits wireframes and visual design efforts to 25 core pages at the desktop breakpoint.
<b>Scope - CX</b>	CapTech limits usability studies to a maximum of 10 participants (desktop only).
<b>Scope - CX</b>	CapTech limits usability studies to no more than 8 tasks per study and may use unmoderated and moderated research methods.
<b>Scope - CX</b>	DMV will assist CapTech with the recruiting process to ensure qualified participants are recruited in a timely manner.
<b>Scope - CX</b>	DMV will assist CapTech with identifying up to 5 end users (e.g., DMV customer service center employees) for field research (i.e. shadowing or “ride along”) sessions.
<b>Scope - CX</b>	CapTech limits CX stakeholder interviews to a maximum of 20 interviews in total, and these sessions may be conducted individually or in small groups.
<b>Scope - Technical</b>	CapTech will demo the Stage 1 PoC in the Dev Environment.
<b>Scope - Technical</b>	CapTech will not migrate or convert batch jobs if the information / data is available in another manner in the Modernized CSS Solution architecture.
<b>Scope - Technical</b>	CapTech will not convert or migrate anything to the Modernized CSS Solution that is not part of the existing operational system (i.e., non-archived data).
<b>Scope - Technical</b>	DMV will grant admin permissions to at least X CapTech personnel in non-prod environments. VITA is responsible for executing scripts and making changes in prod-like and prod environments.
<b>Scope - Technical</b>	CapTech asserts that modernizing mySelect and other desktop/mainframe UIs to a web application(s) will have changes or limitations on functionality. For example, Users will not be able to add a printer through a mySelect web application. CapTech can recommend alternative options when such limitations arise, such as installing printers to DMV desktop

TYPE	ASSUMPTION
	computers using Active Directory group policy.
<b>Scope - Technical</b>	CapTech will replace the Mainframe application which also includes any functionality that is in the Broker server tier. Applications that connect to the broker tier, such as but not limited to dmv.virginia.gov, EZHaul, etc., are the responsibility of the DMV to update to the Modernized CSS Solution APIs. CapTech will attempt to keep the API as close to the original as possible subject to the limitations of the new modern technology platform (e.g., .NET 8, ASP.NET Core, etc.), but changes should be expected. A new mySelect will be developed by CapTech in order to retire the use of 3270. CapTech assumes that no DMV applications call EntireX Brokers directly.
<b>Scope Limitation (General)</b>	The estimated level of effort defined in this proposal will be dependent on the requirements defined in the RFP. Any changes to those requirements will require a change request and may increase the overall price of the application development.
<b>Scope Limitation (SI)</b>	The project does not require technical integration with other systems. The addition of any external interfaces will affect the project's timeline and pricing.
<b>Scope Limitation (SI)</b>	The project does not require authentication, security trend presentation, personalized content based on authentication, or transactional capabilities.
<b>Scope Limitation (SI)</b>	CapTech is not responsible for making changes to source systems to allow for integration. Data from source systems will be presented "as is".
<b>Scope Limitation (SI)</b>	Enhancements to downstream and/or upstream systems are out of scope for this project.
<b>Staffing</b>	The resumes in this proposal are representative of the types of resources that CapTech will place on the project. The actual resources on the project will be dependent on the timing of the project start
<b>Staffing</b>	Final personnel assignments will be determined upon final timeline, award date and technology selection.
<b>Staffing</b>	CapTech will notify DMV when a resource rolls off the project. If a backfill resource is required, CapTech will provide DMV with a resume of the substitute resource.
<b>Staffing</b>	DMV will allocate resources to provide continuous support to the project. If a backfill is required, DMV will provide CapTech with two (2) weeks of notice or as soon as they are aware.

TYPE	ASSUMPTION
<b>Staffing</b>	<p>By the beginning of Stage 2, DMV's selected developers will be proficient enough to match the velocity of a CapTech Senior Consultant according to the staffing plan.</p> <p>During the first PI of Stage 2, the combined CapTech and DMV team will establish criteria for point estimates for standard development activities. DMV developers will need to match the point velocity of the CapTech Senior Consultant. If DMV developers are unable to meet the velocity requirements, then CapTech may need to initiate the project change process.</p>
<b>Testing</b>	DMV will dedicate UAT Testers throughout the engagement who will provide feedback on components as soon as reasonably possible and no later than two (2) business days. DMV will allocate UAT Testers at least 80% during the stabilization period. DMV will allocate UAT Testers at least 40% during development sprints. DMV understands that if DMV UAT Testers become a constraint (i.e., bottleneck) then CapTech may need to initiate the project change process.
<b>Testing</b>	CapTech will perform 2 successful disaster recovery failover tests in close partnership with DMV during Phase 2 of the project.
<b>Testing</b>	CapTech asserts the performance of the system will be tested and measured in a controlled, production-like Azure environment. Tests will be initiated from DMV headquarters.
<b>Testing</b>	DMV or DMV designated third party is responsible for dynamic security testing and any external penetration testing.
<b>Testing</b>	Web-based User Interfaces will be tested on the latest version of Chrome and Safari.
<b>Tooling</b>	Any tools that CapTech delivers that are not part of the runtime Modernized CSS Solution do not need to meet SLAs or performance requirements.
<b>Tooling</b>	CapTech is not responsible for functionality from third party software that CapTech did not customize, develop, or extend.
<b>Tooling</b>	CapTech asserts that all DMV locations that will use the new mySelect must have broadband access with reasonable/sufficient bandwidth to use the Modernized CSS Solution.
<b>Training</b>	CapTech will provide learning paths on only the relevant and new technologies utilized by the Modernized CSS Solution. DMV must identify personnel and ensure they complete the trainings in the allocated time.
<b>Training</b>	CapTech will provide training sessions for the DMV technical staff and provide two (2) train-

TYPE	ASSUMPTION
	the-trainer sessions for DMV technical trainer to train third party technical staff.
<b>Training</b>	DMV will be responsible for implementing the change management plan and communicating changes (e.g., awareness, implementation, and post-go live communications).
<b>Warranty</b>	Any changes to the code by DMV will void the warranty terms.
<b>Warranty</b>	Prior to submitting individual defects to CapTech, DMV will confirm the incorrect behavior by the application is not a result of bad data or user error.
<b>Warranty</b>	For each defect logged, DMV will indicate which requirement or design feature is not addressed by the application.
<b>Warranty</b>	After the initial site deployment, a small team of CapTech personnel will spend up to fifty-two (52) weeks resolving issues and conducting knowledge transfer and training to transition ownership of the Modernized CSS Solution to DMV. This time has been factored into the timeline and pricing presented in this proposal. CapTech will not develop any new features or capabilities or implement enhancements to existing features or capabilities as part of the warranty period. DMV must engage CapTech using a separate support contract for any ongoing feature and capability development or enhancement.
<b>Warranty</b>	CapTech will support production deployments and fix any issues that arise during deployment or the fifty-two (52) week warranty period. Development for these fixes will be performed during normal business hours. Any production issues not able to be resolved immediately will be prioritized for inclusion in the product backlog.
<b>Warranty</b>	CapTech asserts that performance and availability SLAs, including but not limited to RPO and RTO, will align to the capabilities of the technologies and services proposed. CapTech will architect the solution to meet DMV's performance requirements. However, CapTech is not responsible for Azure not meeting any SLAs and any related impacts to DMV will not be CapTech's liability.
<b>Warranty</b>	CapTech will incorporate all COV ITRM standards, policies, and requirements in its design of the Modernized CSS Solution. Any changes to COV ITRM standards, policies, and requirements after the design is approved will require CapTech to initiate the project change process to implement.
<b>Warranty</b>	If DMV chooses to use ADOT MAX, then CapTech and DMV agree to enter good faith negotiations to revise, in writing, the applicable project documentation including, but not limited to, the project schedule, deployment plan, training plan, and staffing plan in response to the decision. Cost impacts will need to be discussed during the negotiations, and DMV understands CapTech will need at least another six (6) months to perform Stage 1

TYPE	ASSUMPTION
	activities again using the ADOT MAX solution.
<b>Warranty</b>	If DMV chooses to use ADOT MAX, then CapTech can no longer be held responsible for meeting DMV requirements around SLAs, performance, accessibility, or completeness of functionality.
<b>Warranty</b>	CapTech will architect the Modernized CSS Solution to meet DMV's performance requirements and SLAs according to the EPD. However, CapTech is not responsible for Azure not meeting any SLAs and any related impacts to DMV will not be CapTech's liability.

*Table 18- Proposal Assumption Log*

## Part 14 – Identification of Proprietary Information

## Part 14: Identification of Proprietary Information

The redacted version of the proposal must have all proprietary information deleted that has been marked as proprietary as described in Section 2, Paragraph K. Section numbers that are redacted should be identified as indicated in the following example: "Section 5, Paragraph B: Redacted". The redacted version of the proposal must be carefully edited, altered, and refined by Supplier to protect and maintain complete confidentiality of protected information.

PAGE#	SECTION /PARAGRAPH	REASON FOR REDACTION
200-237	<b>Section 5, Part H, Paragraph 2.c.3</b>	Resumes contain confidential information and PII for our consultants.
239-249	<b>Section 5, Part H, Paragraph 2.c.4</b>	Resumes contain confidential information and PII for our consultants.
300-302	<b>Section 6, Part A, Paragraph 3</b>	CapTech is a privately held company and does not disclose our organization structure to the public as it contains proprietary information.
309	<b>Section 6, Part B, Paragraph 1</b>	CapTech is a privately held company and does not disclose financial information publicly.
314-331	<b>Section 6, Part D</b>	References contain PII on our clients. Additionally, CapTech Master Service Agreements (MSAs) contain publicity clauses around how their company's information and the work efforts CapTech engaged. Publicly sharing client information conflicts with our client MSAs.
341	<b>Section 7, Part A, Paragraph 2</b>	CapTech is a privately held company and does not publicly disclose financial information such as hourly rates.
387-393	<b>Appendix 3</b>	CapTech's Innovation Approach is proprietary information that if publicly released could have contractual and financial implications.
535-560	<b>Appendix 14</b>	CapTech is a privately held company and does not disclose financial information such as our Annual Reports publicly.

## Part 15 – Required Forms

**15.1 – Required Forms – Appendix D: State Corporation Commission Form**

## **Virginia State Corporation Commission (SCC) Registration Information**

### **The Supplier:**

is a corporation or other business entity with the following SCC identification number:  
04826939

**-OR-**

is not a corporation, limited liability company, limited partnership, registered limited liability partnership, or business trust

**-OR-**

is an out-of-state business entity that does not regularly and continuously maintain as part of its ordinary and customary business any employees, agents, offices, facilities, or inventories in Virginia (not counting any employees or agents in Virginia who merely solicit orders that require acceptance outside Virginia before they become contracts, and not counting any incidental presence of the Supplier in Virginia that is needed in order to assemble, maintain, and repair goods in accordance with the contracts by which such goods were sold and shipped into Virginia from Supplier's out-of-state location)

**-OR-**

is an out-of-state business entity that is including with this proposal an opinion of legal counsel that accurately and completely discloses the undersigned Supplier's current contacts with Virginia and describes why those contacts do not constitute the transaction of business in Virginia within the meaning of § 13.1-757 or other similar provisions in Titles 13.1 or 50 of the *Code of Virginia*.

**NOTE:** Check the following box if you have not completed any of the foregoing options but currently have pending before the SCC an application for authority to transact business in the Commonwealth of Virginia and wish to be considered for a waiver to allow you to submit the SCC identification number after the due date for proposals (the Commonwealth reserves the right to determine in its sole discretion whether to allow such waiver):

## 15.2 – Required Forms – Appendix E: Certification Regarding Lobbying

### **Certification Regarding Lobbying**

The undersigned certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee or an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and Contracts under grants, loans and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Signature: \_\_\_\_\_

Printed Name: Andy Sofish, Chief Executive Officer

Organization: CapTech Ventures, Inc.

Date: \_\_\_\_\_

## Appendix and Supplement Information

## Appendix 1: Appendix G: Contractor Performance Measures



The following is a summary of the performance standards, metrics, resolution time, and performance targets/service levels contained in the EPD. The Supplier shall complete the 3 far right columns: Contractor Measurement Method, Contractor Measurement Period/Frequency, and Contractor Escalation Procedures and submit this summary with their proposal. This summary will be finalized between DMV and the Contractor within 30 days after Contract signing and will be maintained and updated on an ongoing basis throughout the term of the Contract.

**PERFORMANCE STANDARDS, METRICS, METRICS, RESOLUTION TIME, PERFORMANCE TARGET / LEVEL**

#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
1	EPD 5.F.2.c	Solution Risk Assessment	An ongoing risk assessment of the Modernized CSS Solution shall be performed jointly by the Contractor and DMV during the project to identify how the security and privacy controls shall be met and remediate any deficiencies in the Solution design. The DMV CISO will provide a risk assessment workbook that will be used for tracking purposes and shall be maintained throughout the term of the Contract.	Risk Assessment Workbook jointly developed by CapTech and DMV, approved and accepted by DMV according to the acceptance procedures specified in this EPD.	After initial completion, review when there are changes to the design that impact security, or quarterly at minimum.	DMV to escalate according to the procedures specified in this EPD, up to the Executive Steering Committee.
2	EPD 5.F.2.d	Production Release	The Contractor and DMV staff will perform a risk assessment to evaluate compliance with baseline security requirements, identify threats and vulnerabilities, and assess alternatives for mitigating or accepting residual risks. As part of the production release the Contractor and DMV shall jointly support key aspects of service delivery for the Solution	Prior to production release, review and update the Risk Assessment Workbook per #1 above, and a Decision Log for alternatives and residual risk acceptance. Approved and accepted by DMV according to the acceptance procedures specified in this EPD.	Prior to the initial production release, every production release thereafter.	DMV to escalate according to the procedures specified in this EPD, up to the Executive Steering Committee.
3	EPD 5.F.7	Change Management Requirements	The objective of the DMV change management process is to ensure that standardized methods and procedures are used for efficient and prompt	Meeting agenda with link to all IT infrastructure changes provided in advance, meeting attendance report with	Quarterly	DMV to escalate according to the procedures specified in this EPD, up to the Executive Steering Committee.



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			<p>handling of all changes to IT infrastructure in a secure manor.</p> <p>a. The Contractor shall participate in the DMV change management process when applicable.</p> <p>b. The Contractor shall provide a copy of all artifacts generated during the testing of proposed changes to the Modernized CSS Solution for DMV review.</p> <p>c. The Contractor shall work with the DMV to mitigate or reduce any residual risk to an acceptable level.</p>	<p>Contractor and DMV personnel in attendance, and meeting decision log and action items for risk mitigation or reduction, for each meeting prior to production release.</p>		
4	EPD 5.F.8.1	Availability	<p>The Modernized CSS Solution shall provide greater than 99.9% up-time on a 24/7, 365 day per year basis (excluding planned system maintenance downtime).</p>	<p>System will provide 99.9% uptime, as measured by: # of seconds the Modernized CSS Solution is completely unavailable (i.e., no screens work in mySelect, and all API calls return errors) divided by total # of seconds in a year.</p> <p>Planned system maintenance downtime or issues caused by factors or actions outside of Contractor's control will not count towards the # of seconds the Modernized CSS Solution is unavailable.</p>	Annual	<p>Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have authority to commit resources to resolve legitimate and verifiable performance issues.</p>



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
5	EPD 5.F.8.6	Capacity	The Modernized CSS Solution shall support more than 300,000 customer transactions per day.	The system shall support more than 300,000 customer transactions, where transaction count is the total # of API calls across Experience APIs, externally exposed APIs, and microservices APIs across a typical pattern of usage.  Excludes any time periods where the system is performing a failover activity or is under a cybersecurity attack (e.g., a DDOS attack).	Daily	Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have authority to commit resources to resolve legitimate and verifiable performance issues.
6	EPD 5.F.8.13	Performance	The Modernized CSS Solution shall complete 95% of online transactions within three (3) seconds (real time) and 100% within ten (10) seconds (near real time).	System shall complete 95% of real time online transactions in 3 seconds, where a transaction is explicitly defined as a real time transaction. The number of real time transactions performed in 3 seconds or less divided by the total number of explicitly defined real-time transactions.  System shall complete 99% of transactions within 10 seconds where a	Quarterly	Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
				<p>transaction is explicitly defined as a near real time transaction. Number of near real time transactions completed in 10 seconds or less divided by the total number of near real time transactions.</p> <p>Both metrics exclude any transactions that occur during a high availability or disaster recovery failover event due to a cause outside the Contractor's control.</p>		authority to commit resources to resolve legitimate and verifiable performance issues.
7	EPD 5.F.8.14	Performance	The Modernized CSS Solution shall allow for up to 3,000 concurrent Application Users while meeting the response time and throughput requirements. Concurrent users are defined as Solution Application Users logged on and/or actively performing solution functions.	Solution shall allow for up to 3,000 concurrent Application Users, where a concurrent Application User is a person logged in and performing solution actions.	Daily	Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have authority to commit resources to resolve legitimate and verifiable performance issues.



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
8	EPD 5.H.2	Project Staffing	<p>The Contractor shall provide an appropriate level of Contractor project staffing necessary to complete all tasks and deliverables as defined and required in this EPD. Contractor staffing must include, but is not limited to:</p> <ul style="list-style-type: none"><li>• A Contractor Project Manager available on-site at DMV on a full-time, 5-days per week basis, throughout the duration of the project until Final Acceptance has been achieved.</li><li>• An appropriate level of Contractor technical and support staff necessary to complete all tasks and deliverables on schedule and satisfy the requirements of this project.</li></ul>	<p>The number of hours that a Contractor Project Manager or their acting alternate is on-site at DMV, with goal of 95% or higher.</p> <p>Count of hours of Contractor technical and support staff divided by the target staffing plan total hours (adjusted for changes within the quarter), with goal of 85% to plan or higher.</p>	Quarterly	Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have authority to commit resources to resolve legitimate and verifiable performance issues.
9	EPD 5.H.2.c	Project Staffing	<p>A proposed Contractor staffing matrix in detail which clearly identifies:</p> <ul style="list-style-type: none"><li>• All proposed Contractor staff identifying each individual proposed and their role on the project, their specific skills, expertise, and level of expertise they will bring to the project.</li><li>• The time frame for each individual assignment and availability of each project team member.</li><li>• Proposed percentage of time each staff person is assigned and available to the project.</li></ul>	<p>A Contractor Staffing Matrix approved and accepted by DMV according to the acceptance procedures specified in this EPD. Quarterly reviews relative to the plan and any updates to the Staffing Matrix in the interim.</p>	Quarterly	Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			<ul style="list-style-type: none"><li>Proposed percentage of time each staff person is working on-site at DMV in Richmond.</li><li>Proposed percentage of time each staff person is working off-site on project activities.</li></ul>			authority to commit resources to resolve legitimate and verifiable performance issues.
10	EPD 5.I.1	Testing and Acceptance	<p>System acceptance will be based on individual Modernized CSS Solution components that are built in an agile-based iterative/release approach. For each component being reviewed and tested for acceptance, the following levels of testing will occur:</p> <ol style="list-style-type: none"><li>Level 1 Testing: General unit testing performed during the development stage. Testing is performed in a development environment.</li><li>Level 2 Testing: System integration testing, to include regression testing, mock live testing, volume testing, security testing, and stress testing, prior to production implementation. Volume and stress testing must replicate anticipated volumes at all DMV service locations. Testing is performed in a test environment.</li><li>Level 3 Testing: User acceptance testing which involves coordination of business user approval, and regression testing. Testing is performed in a test environment.</li></ol>	<p>Level 1 Testing: Team Norms that all developed code has been unit tested by the developer. Automated unit test reports configured for each code repository.</p> <p>Level 2 Testing: Integration Test Plans and results. Exploratory manual testing and results. Automated integration tests for key business scenarios.</p> <p>Performance (stress and volume) testing in the "Stage environment" (pre-prod environment) in the second half of Stage 2.</p> <p>Level 3 Testing: User Acceptance Test plans and results, in the Stage environment.</p> <p>Level 4 Testing: Delivery to production-like environment at the end of each PI. DMV to evaluate</p>	<p>Level 1: Performed every commit, daily or multiple times per day.</p> <p>Level 2: Performed on releases to a Test environment. Typically, weekly, or multiple times per Sprint.</p> <p>Level 3 Testing: Typically, at the end of every 2 Sprints (halfway through the PI).</p> <p>Level 4 Testing: Every 12 weeks at the end of a PI.</p>	<p>During the testing process, CapTech will produce reports documenting test results for each Program Increment with quality metrics as defined in the Test Strategy completed in Stage 1, with review meetings at least weekly. Documentation of DMV UAT and Acceptance for each feature will be stored in Azure DevOps, these reports, and Program Increment review documents.</p>



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			d. Level 4 Testing: Component level acceptance review where system components are implemented and monitored for a minimum of 30 calendar days in a production environment. Upon successful review and monitoring, based on the sole judgement of DMV, the DMV Project Manager will issue a component level acceptance notice, in writing, to the Contractor.	and accept or not according to the terms in this EPD.		
11	EPD 5.I.2	Final Acceptance	After all components of the full Modernized CSS Solution have been built, deployed, and operational, DMV will conduct a review and monitoring period for a minimum of 30 calendar days. Upon successful review and monitoring, based on the sole judgement of DMV, the DMV Project Manager will issue a Final Acceptance notice, in writing, to the Contractor.	CapTech will be on site with DMV to monitor, support, troubleshoot, and remediate defects during the hypercare period.	Once, at cutover.	Because we are meeting weekly, DMV will be able to raise any concerns as they arise for prompt resolution. But during the Hypercare period, just after cutover, CapTech anticipates more frequent communications to enable all teams to understand any real or perceived issues in an expedited fashion. During the final acceptance period, CapTech will set up a war room at DMV Headquarters, Monday-Friday from 8am – 5pm to monitor and fix bugs and defects. We will have on-call resources available after hours for any critical defects. We will conduct a triage meeting each morning to review any filed



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
						<p>bugs, defects, or system aberrations and create a list to fix based on severity and priority.</p> <p>This would enable our teams to meet the 30-day review and monitoring period with frequent communication – and all stakeholders confident in the final acceptance of this solution for DMV.</p>
12	EPD 5.L.1	Account Management	The Contractor must appropriately manage the business and performance aspects of a resultant Contract to achieve maximum service and performance levels within a minimal amount of time during the project as well as during the life of the contract.	CapTech provided documentation, deliverables, and actions according to Section 9.1 of the RFP response (Account Management of the EPD), with DMV approval and acceptance according to the procedures specified in this response.	Documentation, deliverables, and actions specified in Part 9.1 Account Management of the EPD to be delivered according to the project schedule.	Throughout the duration of the contract, CapTech will allocate a Project Manager and at least one backup / alternative who will serve as the key points of contact and escalation point within CapTech for business and performance aspects of the contract. They will attend monthly service review meetings to review all business and performance aspects of the Contract with DMV staff and will have authority to commit resources to resolve legitimate and verifiable performance issues.
13	EPD 5.L.2.b	Service and Support	DMV must be self-sufficient to the fullest extent possible and transition	CapTech provided documentation and	Documentation, deliverables,	Throughout the contract, our developers will create



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			into full system support once acceptance is achieved for each Modernized CSS Solution component. The Supplier must provide a detailed narrative describing the proposed approach, to include training and coaching, that will facilitate and ensure self-sufficiency of DMV with respect to transitioning ongoing management and maintenance of the Modernized CSS Solution to DMV.	deliverables according to Section 8 and 9.3 of the RFP response, with DMV approval and acceptance according to the procedures specified in this response.	and training sessions specified in Part 8 of the EPD to be delivered according to the project schedule.	documentation for DMV developers and Super Users/Administrators to self-service to the extent possible in the new system.  Change Acceleration resources will create a full training plan to serve the needs of the myriad users interacting with DMV.

## Appendix 2: Appendix C: Small Business Contracting Form

## Small Business Subcontracting Plan

Supplier Name: CapTech Ventures, Inc.

Preparer Name: Adam Hofheimer Date: 04/08/2023

Who will be doing the work:  I plan to use subcontractors  I plan to complete all work

### **Instructions**

- A. If you are certified by the DSBSD as a micro/small business, complete only Section A of this form.
- B. If you are not a DSBSD-certified small business, complete Section B of this form.

### **Section A**

If your firm is certified by the DSBSD, provide your certification number and the date of certification.

Certification Number: \_\_\_\_\_ Certification Date: \_\_\_\_\_

### **Section B**

If the "I plan to use subcontractors box is checked," populate the requested information below, for each subcontractor, to indicate your firm's plan for utilizing DSBSD-certified small businesses in the performance of the Contract in relation to the Supplier's total price for the initial term of the Contract.

Supplier should include plans to utilize certified small businesses as part of joint ventures, partnerships, subcontractors, suppliers, etc. It is important to note that this proposed participation will be incorporated into any subsequent Contract and will be a requirement of the Contract. Failure to obtain the proposed participation dollar value or percentages may result in breach of the Contract.

### **Plan for Utilization of DSBSD-Certified Small Businesses for this Procurement**

#### **Subcontract #1**

Company Name: Astyra Corporation #7160 Small & Minority SBSD Cert #: DSBSD

Contact Name: Lee Rattigan SBSD Certification: DSBSD #7160 Small & Minority

Contact Phone: 804.433.1117 Contact Email: lrattigan@astyra.com

Value % or \$ (Initial Term): 10%. Contact Address: 11 E. Franklin Street, Suite 105, Richmond, VA 23219

Description of Work: Astyra will assist with supporting SOW project teams to include potential team positions supporting development, quality assurance, data migration, test automation, and security testing activities.

#### **Subcontract #2**

Company Name: \_\_\_\_\_ SBSD Cert #: \_\_\_\_\_

Contact Name: \_\_\_\_\_ SBSD Certification: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact Email: \_\_\_\_\_

Value % or \$ (Initial Term): \_\_\_\_\_ Contact Address: \_\_\_\_\_

Description of Work: \_\_\_\_\_

**Subcontract #3**

Company Name: \_\_\_\_\_ SBSD Cert #: \_\_\_\_\_

Contact Name: \_\_\_\_\_ SBSD Certification: \_\_\_\_\_

Contact Phone: \_\_\_\_\_ Contact Email: \_\_\_\_\_

Value % or \$ (Initial Term): \_\_\_\_\_ Contact Address: \_\_\_\_\_

Description of Work: \_\_\_\_\_

## Appendix 3: Innovation Approach

## Appendix 3 – Innovation Approach

### Appendix 3 - Innovation Approach

#### **How CapTech will use AI (Artificial Intelligence) and other innovative ideas and toolsets to modernize the DMV Program**

The primary objective is to support DMV in migrating off the mainframe as quickly and efficiently as possible, while creating quality and functionality in the new system. Prior to modern AI capabilities there were two approaches to large-scale legacy application migration:

- **Brute Force Discovery and Analysis.** This approach requires a considerable number of analysts and engineers to use discovery techniques to analyze the existing application to determine intent. In a system with 4 million lines of code and over a thousand batch processes, the analysis alone would take months, possibly to cover the entire application. This approach is inefficient and does not scale as the application grows.
- **Code Conversion Toolsets.** This approach leverages applications that convert legacy code from one language to another more modern language. While these tools can be effective to convert to a modern language, the structure and dependencies of the existing monolithic legacy application are retained. Therefore, you do not benefit from modern architecture even though you have a system written in a modern language.

Today, with AI driven by Large Language Models (LLMs), there is a third option for these modernization efforts. Harness AI to accelerate and scale the ability to understand the intent of the legacy system, so analysts and engineers can design a modern solution that meets the original intent of the system.

To achieve this, our approach leverages AI and other innovative ideas and toolsets to accelerate our discovery, analysis, and development processes. We will leverage the following capabilities to enhance our approach:

- Harness CapTech's LegacyLift AI to analyze existing codebase, test cases, the Code of Virginia, and other sources of embedded requirements to understand the intent of the system. This will help us to extract the business rules, logic, and workflows that are currently buried in the legacy code, and to identify any gaps, inconsistencies, or redundancies.
- Load all existing code assets into LegacyLift AI to provide a natural language-based chat interface into the code to ask questions throughout the modernization effort. This will enable us to interact with the code in a natural and intuitive way, and to get answers to specific queries about the functionality, dependencies, and performance of the existing system.
- Utilize GitHub Copilot as an enabler for faster feature development. This will allow us to generate

## Appendix 3 – Innovation Approach

high-quality code suggestions based on our context and specifications, and to save time and effort in coding, testing, and debugging. Based on our experience this approach will result in 15-25% greater developer productivity and support an easier transition and decrease the learning curve for DMV's development team.

- Use LegacyLift AI to analyze our newly created code to see if newly developed capabilities match the intent of the original system. This will help us to verify that the new system meets the requirements and expectations of the stakeholders, and to detect any errors, anomalies, or deviations from the original system. For DMV, this equates to more clearly understanding requirements while allowing our teams to conduct more comprehensive requirements to not miss components that are integral to DMV's operations.

### Levels of Code Abstraction

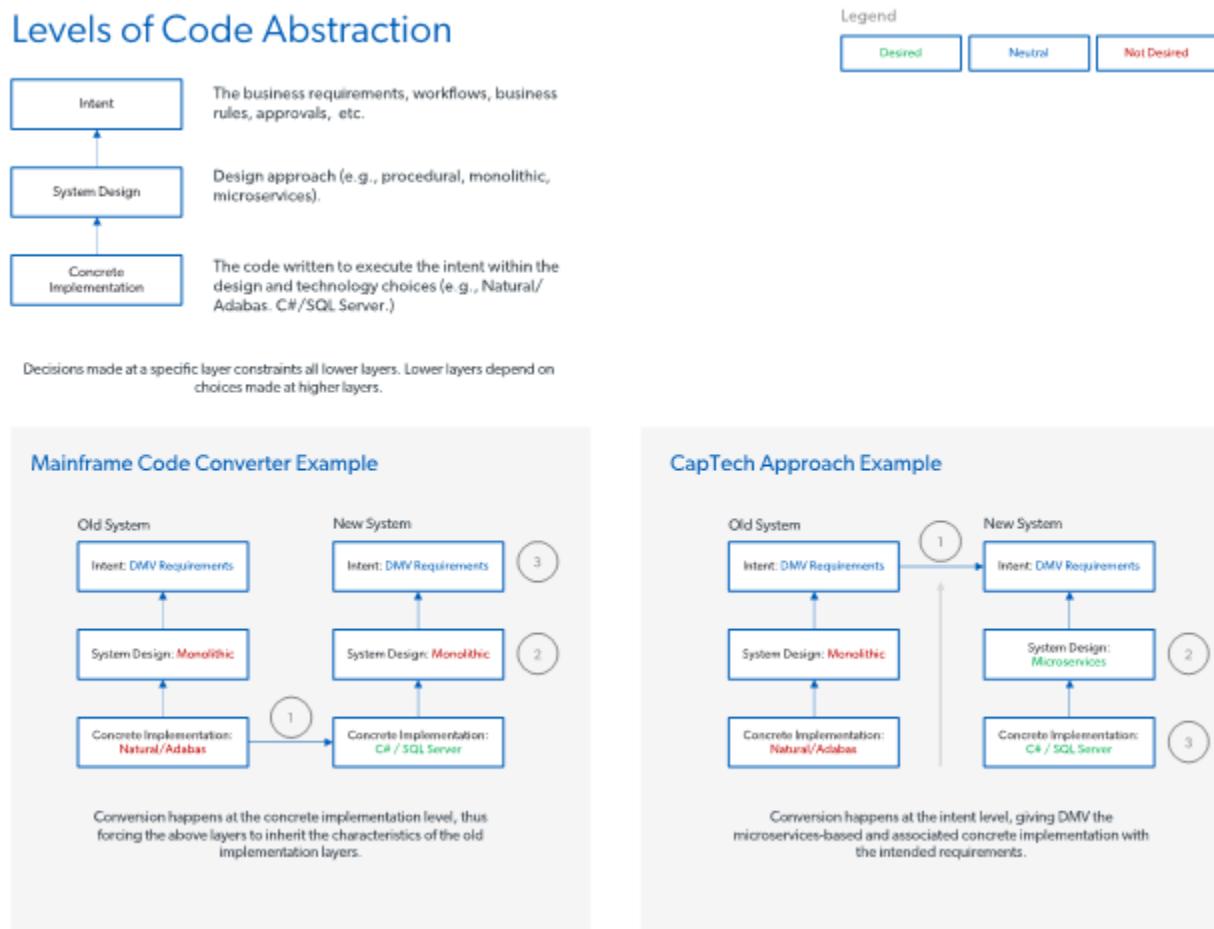


Figure 3.1a - Levels of Code Abstraction

The above capabilities will provide us with the following benefits:

- **Reduction of risk.** Our innovation examples above will reduce the risk of transforming a complex,

## Appendix 3 – Innovation Approach

legacy system by providing insight into the original system only achieved otherwise by time-consuming and expensive analysis. These toolsets will allow us to verify the functional equivalence and performance of the new system with the original system, and help us to detect and resolve any errors, anomalies, or deviations that may arise during the migration process.

- **Reduction of cost.** Similar results without using the LegacyLift AI toolsets above can only be achieved through exhaustive manual analysis of the existing system. Manual analysis would extend the timeline beyond the desired DMV timeline.
- **Enhanced productivity.** GitHub Copilot is an effective tool used to increase the productivity of engineers. Common patterns or approaches can be generated quickly, providing the opportunity for engineers to focus on creating business features rather than repeating necessary code and patterns throughout the system.
- **Duplicate code detection.** We will be able to reduce or ideally eliminate any duplicated or redundant code segments that may exist in the legacy system, and verify the new system is optimized and streamlined.
- **Understanding of complex legacy code.** We will be able to comprehend and document the intent of complex and obscure code that may have been written decades ago, and to translate that intent into modern and maintainable code.
- **Democratize system knowledge to everyone.** LegacyLift AI will provide insight into the existing system and enable this information to be available to all team members, current and future, regardless of their technical background.
- **Transform into a living system.** LegacyLift AI is a framework that provides for incremental additions to the knowledge base. It will be a tool that can be used beyond the initial implementation to provide insight into the modern system once launched.

## Innovation Approach

The below capabilities will provide us with the following benefits:



### Appendix 3 – Innovation Approach

However, we also recognize that these innovation capabilities will not solve everything. While advantageous, they are not a complete replacement for a proper analysis process, but rather an aide to accelerate requirements and validation of the legacy system. We will still conduct a thorough and rigorous analysis of the existing system, using various methods and tools, such as interviews, surveys, workshops, documentation reviews, reverse engineering, and prototyping. We will also engage with the stakeholders and users throughout the modernization effort to solidify we capture and address their needs, feedback, and concerns.

This approach to accelerate analysis and development enables the AI to have a “human in the loop” to interpret the information provided to them and make decisions and implement based on that information.

In addition to using AI toolsets to accelerate the modernization process, we will also identify opportunities where AI and other capabilities could be added to the new system, to enhance future functionality, usability, and value. We will do this by:

- Holding a quarterly planning workshop to intentionally discuss how "problems could be accomplished differently". We will brainstorm and explore various ideas and scenarios, such as how we can use AI to automate tasks, improve decision making, personalize services, or generate insights.
- Using an iterative process to continuously ask the following questions:
  - How can we make the experience better for citizens?
  - How can we improve the productivity of DMV employees?
  - How can we use DMV data to support future business opportunities?
- Evaluating emerging technology and exploring how emerging technology can be leveraged as part of the modern system. This is not to create a system that is dependent on unproven technology, but to create a system and culture that explores new technology as an opportunity to solve problems differently.

CapTech will use these questions to guide our design and development of the new system, while we establish that we are delivering value to the end users and the business. The modern system's foundation will be a modular and flexible architecture that will allow us to easily integrate new capabilities and features, as they become available or needed. This architecture will set the foundation for DMV to start the shift from an architecture that promotes batch driven processes to an architecture that promotes real-time updates based on an event-driven architecture.

## Appendix 3 – Innovation Approach

We will also use open standards and best practices, to directly support interoperability and compatibility with other systems and platforms. This will allow for DMV to maintain the application without having to rely on the vendor community. We will do all this without slowing progress or distracting delivery. We will prioritize and balance the innovation opportunities with the delivery objectives and verify that we do not compromise the new system's quality, performance, or security.

By following this approach, CapTech will be able to deliver a modern and innovative system, that will not only meet the current requirements and expectations, but also anticipate and accommodate the future needs and opportunities of the DMV and its customers.

### Aligning to Commonwealth of Virginia AI Standards

During the design of our approach, we assessed the [Commonwealth of Virginia AI Standards](#) to aligned our approach with the best practices and principles for the ethical and responsible use of AI. We believe our solution meets or exceeds all standards and does not pose any risks or harms to the citizens, the DMV, or the Commonwealth. In the case of the proposed AI solution by CapTech, several actions have been taken to address potential risks and ensure a successful outcome.

To de-risk the implementation process:

- CapTech analysts and DMV personnel will manually review 100% of the artifacts. This hands-on approach ensures that the AI system's outputs are thoroughly examined and validated, minimizing the chances of errors or inaccuracies.
- Data brought into the system will be controlled within Azure, a secure and reliable cloud platform. This ensures that data privacy and security measures are in place, mitigating the risks associated with unauthorized access or data breaches.
- Proposed AI system is designed as a closed-loop system that operates solely within the DMV's environment. This means that data never leaves the DMV's premises, reducing the risk of external exposure or potential data leaks.
- Proposed AI system's primary focus is on internal data analysis and surfacing requirements that may have been overlooked due to the age of the mainframe and institutional knowledge. This approach ensures that the system remains internally focused and does not generate citizen-facing content, minimizing potential risks associated with public-facing AI applications.

CapTech's AI solution presents a higher chance of success than non-AI approaches like code replicators. AI's ability to analyze data, identify patterns, and provide valuable insights surpasses traditional methods. While CapTech has taken measures to de-risk the implementation, regular monitoring and

### Appendix 3 – Innovation Approach

validation are necessary for accuracy, fairness, and compliance. Overall, the proposed AI solution offers the DMV a greater opportunity for success, but ongoing evaluation is crucial for effectiveness and compliance.

**Appendix 4: Initial Set of Project Plan Documents (Agile-Based Project Work Plan, Milestone/Deliverable Plan, Iterative Release Cycle, and Resource/Staffing Plan)**

→ APRIL 2024

# Agile Work Plan, Iterative Release Cycle Plan, and Milestone Delivery Plan

Prepared for DMV

# Agile Project Plan Documentation



## Agile Work Plan

During the Initiation stage, the work plan will be finalized and include project goals, objectives, metrics, roles, budget, milestones, and timelines. The roadmap provides a visual of key DMV deliveries throughout the lifespan of the project, including Stage 1 POC and Stage 2. Sample components of the project work plan are provided to DMV and will be finalized during this stage.



## Iterative Deployment/Release Cycle Plan

The plan provides a visual of the continuous deployment and feedback review cycles throughout the Planning Intervals (PI). Epics will be deployed to a Prod-like environment and regression tested for completeness.



## Milestone Delivery Plan

The tables provide a visual of key milestones delivered throughout the Planning Interval (PI), including the milestone event, deliverable, timing, and functionality. During the Initiation stage, Epics will be refined and broken down into Features, prioritized, and worked by the Project Teams.

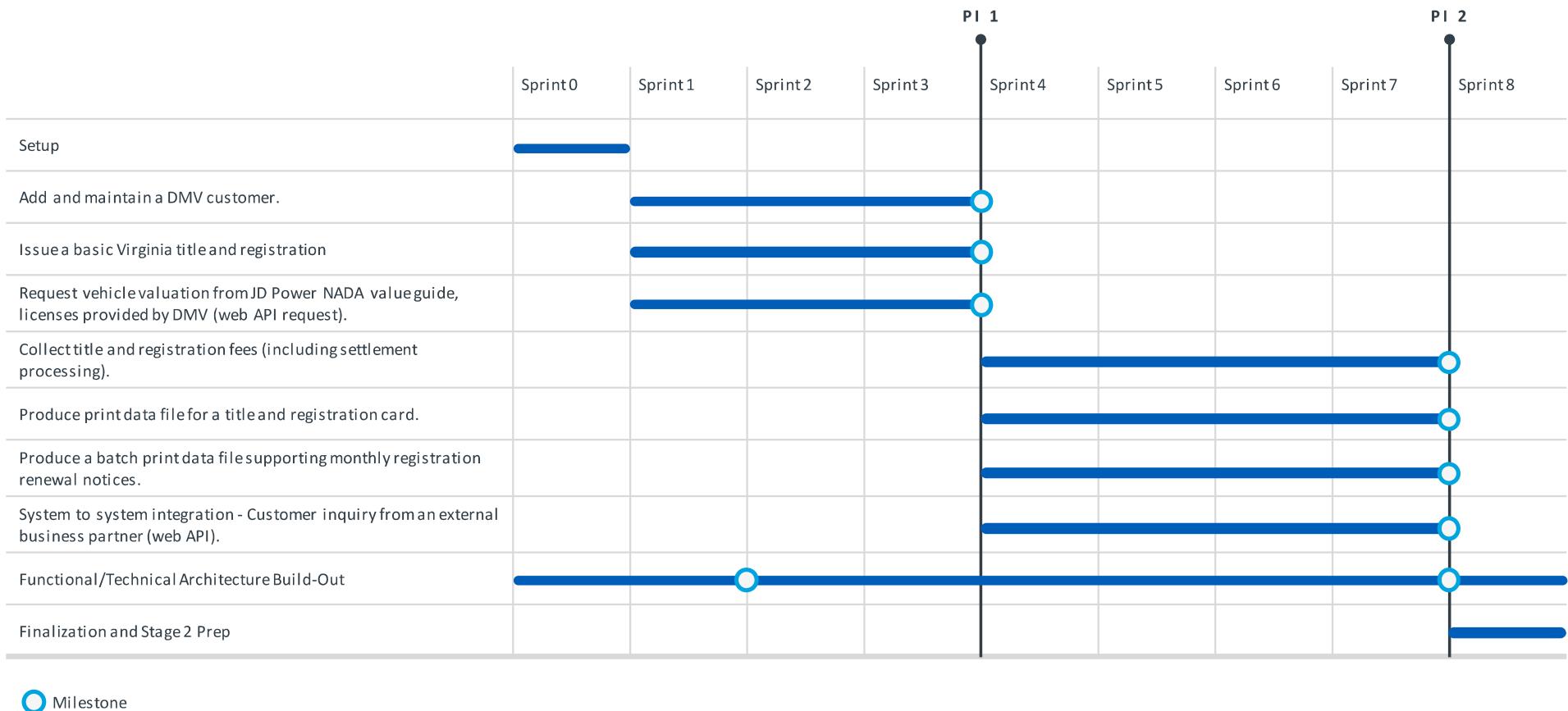
Note: Project Plan documentation will be created, reviewed, and finalized during the Initiation phase of Stage 1

# Agile Work Plan

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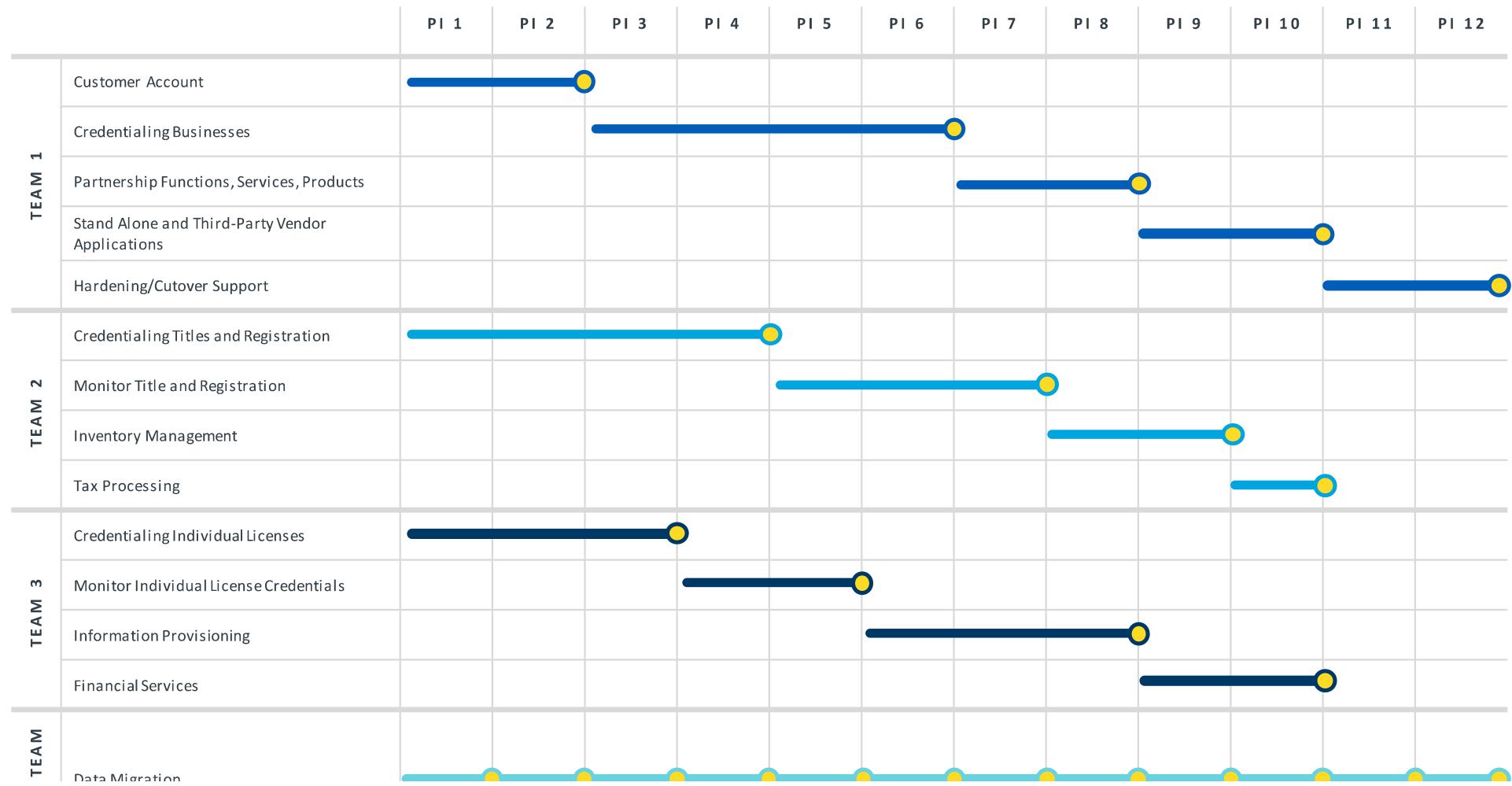
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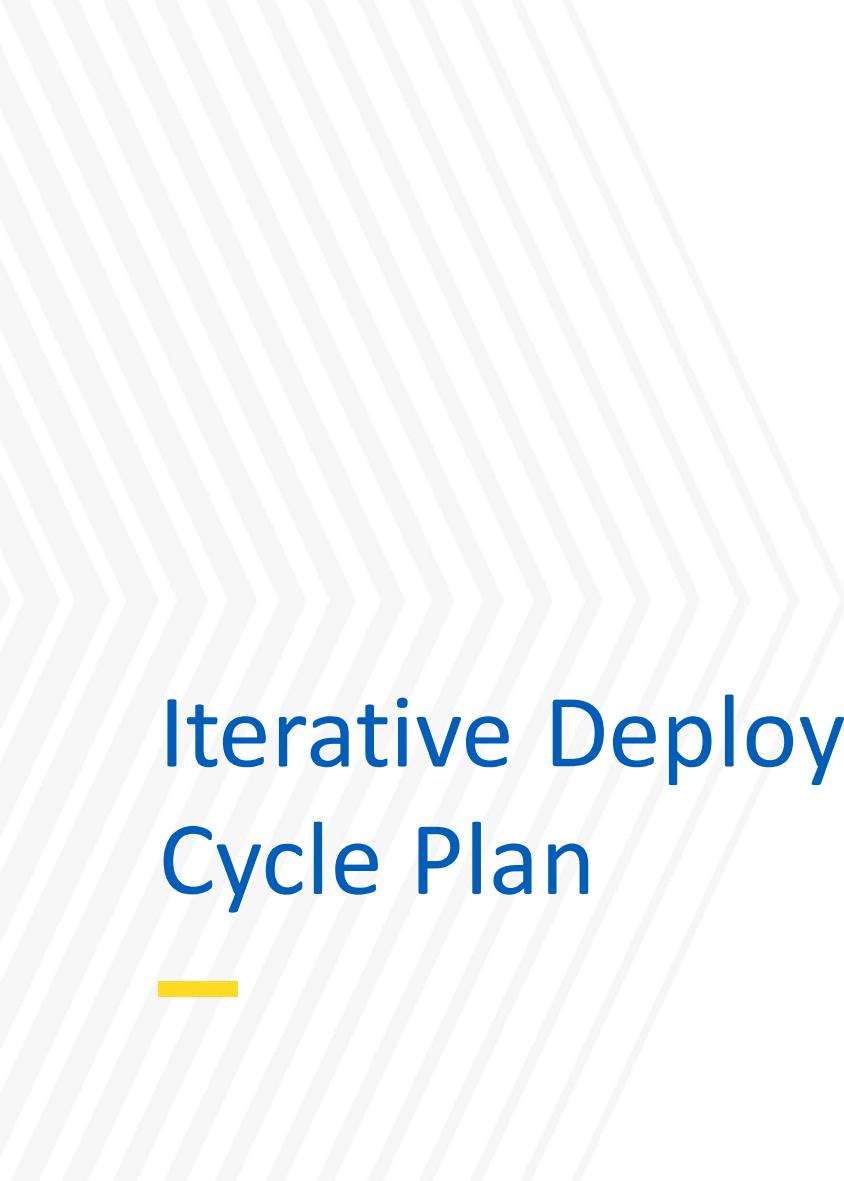
## Stage 1 – Agile Work Plan



○ Milestone

## Stage 2 – Agile Work Plan



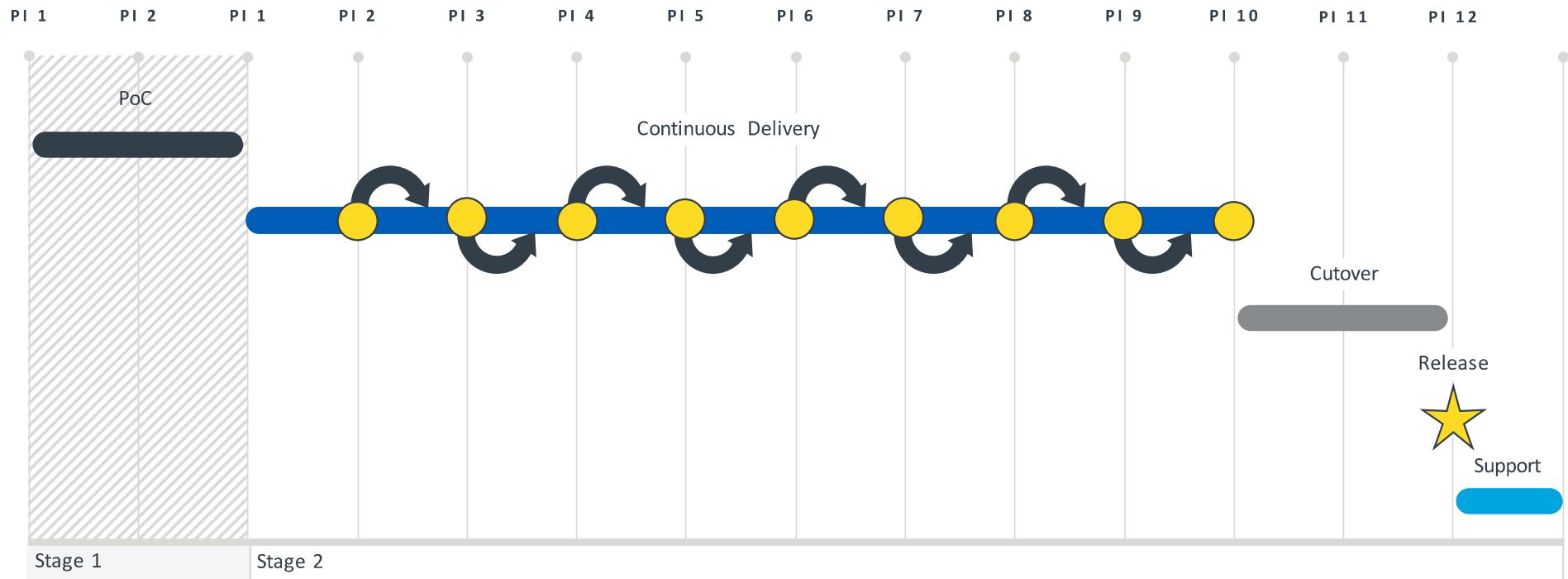


# Iterative Deployment/Release Cycle Plan

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# Deployment / Release Cycle Plan



● Quarterly Planning Interval (PI) Demonstration

↷ Feedback Incorporated

★ Production Release

# Milestone and Deliverable Plan

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## Stage 1 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Stage 1: Project Initiation and Planning	<ul style="list-style-type: none"> <li>• Project Kickoff Presentation</li> <li>• Stage 1 Agile-based Project Work Plan</li> <li>• Stage 1 Milestones Deliverable Plan</li> <li>• Stage 1 Initial Product Backlog</li> <li>• Stage 1 Iterative Release Cycle Plan</li> <li>• Stage 1 Staffing Plan</li> <li>• VITA Initiation Documentation</li> <li>• Azure DevOps Work Management Structure</li> <li>• PoC Vision / Scope</li> </ul>	POC PI 1	<ul style="list-style-type: none"> <li>• Setup</li> <li>• Add and maintain a DMV Customer</li> <li>• Issue a basic Virginia title and registration</li> <li>• Request vehicle validation from JD Power NADA value guide</li> </ul>
Stage 1: POC Architecture and Requirements	<ul style="list-style-type: none"> <li>• Business Processes and Rules</li> <li>• Established Dev Environment</li> <li>• Provisioned Azure Instance and Infrastructure</li> <li>• Repos to Deploy Code</li> <li>• Third Party Tools Installed</li> <li>• UX Flows for new mySelect</li> <li>• Initial Wireframes</li> <li>• Design System Foundation</li> <li>• Security Architecture</li> </ul>	POC PI 1	<ul style="list-style-type: none"> <li>• Functional/Technical Architecture built out</li> </ul>

## Stage 1 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Stage 1: POC Demonstration and Go-Forward Plan	<ul style="list-style-type: none"><li>• Demonstration of working functionality of the POC sample system components</li><li>• Stage 2 Agile-based Project Work Plan</li><li>• Stage 2 Milestones Deliverable Plan</li><li>• Stage 2 Product Backlog</li><li>• Stage 2 Iterative Release Cycle Plan</li><li>• Stage 2 Staffing Plan</li><li>• Go-Forward Plan</li><li>• Executive Steering Committee Presentation</li></ul>	POC PI 2	<ul style="list-style-type: none"><li>• Collect title and registration fees</li><li>• Produce print data file for title and registration card</li><li>• Produce a batch print data file for monthly registration renewal notices</li><li>• System to system integration</li><li>• Functional/Technical Architecture</li></ul>

## Stage 2 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Stage 2: Architecture and Requirements	<ul style="list-style-type: none"><li>• Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li><li>• Updated project documentation</li></ul>	PI 1	Architecture Setup
Stage 2: Architecture and Acceptance #1	<ul style="list-style-type: none"><li>• Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li><li>• Updated project documentation</li></ul>	PI 2	Customer Account
Stage 2: Iterative Deployment / Component Acceptance #2	<ul style="list-style-type: none"><li>• Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li><li>• Updated project documentation</li></ul>	PI 3	Credentialing Individual Licenses

## Stage 2 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Stage 2: Iterative Deployment / Component Acceptance #3	<ul style="list-style-type: none"><li>• Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li><li>• Updated project documentation</li></ul>	PI 4	Credentialing Titles and Registration
Stage 2: Iterative Deployment / Component Acceptance #4	<ul style="list-style-type: none"><li>• Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li><li>• Updated project documentation</li></ul>	PI 5	Monitor Individual License Credentials
Stage 2: Iterative Deployment / Component Acceptance #5	<ul style="list-style-type: none"><li>• Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li><li>• Updated project documentation</li></ul>	PI 6	Credentialing Businesses

## Stage 2 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Stage 2: Iterative Deployment / Component Acceptance #6	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> <li>Updated project documentation</li> </ul>	PI 7	Monitor Title and Registration
Stage 2: Iterative Deployment / Component Acceptance #7	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> <li>Updated project documentation</li> </ul>	PI 8	<ul style="list-style-type: none"> <li>Partnership Functions, Services, Products</li> <li>Information Provisioning</li> </ul>
Stage 2: Iterative Deployment / Component Acceptance #8	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> <li>Updated project documentation</li> </ul>	PI 9	Inventory Management

## Stage 2 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Stage 2: Iterative Deployment / Component Acceptance #9	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> <li>Updated project documentation</li> </ul>	PI 10	<ul style="list-style-type: none"> <li>Stand-Alone and Third-Party Vendor Applications</li> <li>Tax Processing</li> <li>Financial Services</li> </ul>
Stage 2: Iterative Deployment / Component Acceptance #10	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> <li>Updated project documentation</li> </ul>	PI 11	Component Optimization and Improvements Mock cutover and conversion results Disaster Recovery test results Updates to processes and deliverables
Stage 2: Iterative Deployment / Component Acceptance #11	<ul style="list-style-type: none"> <li>Demonstration of working Modernized CSS Solution components in the production-like environment as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements.</li> <li>Updated project documentation</li> </ul>	PI 12	Mock cutover and conversion results Updates to processes and deliverables Hardening/Cutover Support

## Stage 2 – Milestone/Deliverable Plan

MILESTONE EVENT	MILESTONE DELIVERABLE	COMPLETION	PLANNED FUNCTIONALITY
Final Acceptance	<p>Final versions of the following deliverables and documentation as mutually agreed upon during quarterly planning and subsequent joint reprioritization agreements:</p> <ul style="list-style-type: none"><li>• Project planning documentation, including Agile-based Project Work Plan, Product Backlog, Staffing Plan, and Iterative Release Cycle Plan</li><li>• Architecture documentation – business, functional, CX, technical, security, and data</li><li>• Testing documentation – test plans, test results, and bugs</li><li>• Training plans and documentation</li><li>• Project management and compliance documentation</li><li>• Deployment Plan</li><li>• Status reports and key decisions from Executive Steering Committee</li></ul>	PI 12	Modernized CSS Solution production release, cutover, and data migration.



# Agile Work Plan- Work Breakdown

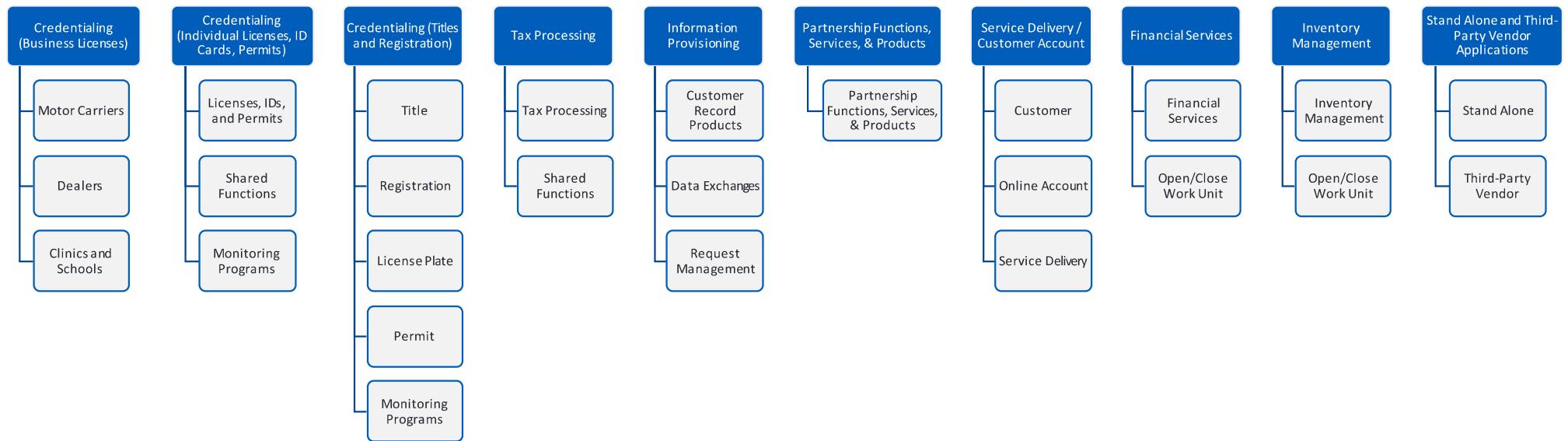
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## Theme/Epic Breakdown

# FEATURES / THEME	% FEATURES BY THEME	THEME	EPIC	# FEATURES / EPIC
20	9%	Credentialing (Business Licenses)	Motor Carriers Dealers Clinics and Schools	10 3 6
29	13%	Credentialing (Individual Licenses, ID Cards, Permits)	License, ID, and Permit Features Shared Features Monitoring Program Features	9 11 9
39	18%	Credentialing (Titles and Registration)	Title Registration License Plan Permit Monitoring Programs	13 12 6 3 5
15	7%	Tax Processing	Tax Processing Shared	11 4
50	23%	Information Provisioning	Customer Record Products Data Exchanges Shared Features	7 35 8
6	3%	Partnership Functions, Services, & Products	Features	6
25	11%	Service Delivery / Customer Account	Customer Features Online Account Service Delivery Features	12 4 9
22	10%	Financial Services	Financial Services Open/Close Work Unit	12 10
4	2%	Inventory Management	Inventory Management	4
11	5%	Stand-Alone and Third-Party Vendor Applications	Stand-Alone Third-Party Vendor	8 3
<b>10 Themes</b>			<b>24 Epics</b>	<b>221 Features</b>

## Theme/Epic Breakdown



## Credentialing (Business Licenses)

### Motor Carriers

- Motor Carrier Operating Authority
- Transportation Broker Operating Authority
- IRP Applications
- IFTA Licenses and Decals
- Agent / Carrier Agreements
- Fuels Tax License
- Escort Vehicle Driver Certification
- Escort Driver Training Site & Instructor Applications
- IFTA Monitoring Program
- IRP Monitoring Program

### Dealers

- Dealer Recertification
- Salesperson Qualification Testing and Dealer Location Information
- Manage Temporary Dealer Tags

### Clinics and Schools

- Driver Improvement Clinic Instructor License
- Driver Training School Licensing for Class A, Entry-Level Class A, Class B, and Online Training Schools
- Driver Training School Curriculum Vendors
- Driver Training School Instructor Licenses, Renewals, and Audits
- Third-party Tester Certifications for Class A Driver Training Schools
- Third-party Tester Examiner Authorization & Annual Fees

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- License & ID Card Work Center
- Driver Training Work Center
- Motor Carrier Services
- Dealer Services

### Key Access Channels

- mySelect
- dmv.virginia.gov
- Virginia MCS
- VAETS

### Key Integrations

- Motor Vehicle Dealer Board
- State Corporation Commission
- Motor Carrier Management Information System
- SecuriTest
- Secure Credential Solution / DLCI
- Elavon

## Credentialing (Individual Licenses, ID Cards, Permits)

### Licenses, IDs, & Permits

- Drivers License & Learners Permit, including Real ID
- Motorcycle Classification & Learners Permit
- Commercial Drivers License & Learners Permit, Including Real ID
- Driver Privilege Card
- Disabled Parking Placard
- Adult & Juvenile ID Card
- License Exchange for ID
- Special ID
- Veteran Indicator & ID Card

### Shared Functions

- Knowledge & Skills Testing
- Document Scanning & Verification
- Photo Image
- Printing
- Compliance, Orders, and Events
- Vision Screening
- Track License / ID Delivery Status
- Process NDR Match
- Audits, Sanctions, Hearings
- Start Anywhere
- Collection of Fees

### Monitoring Program Features

- Crashes
- Convictions (including DUI and Uninsured Motor Vehicle)
- Driver Improvement Program (Demerit points and applying Safe Driving points).
- Insurance Monitoring
- Medical Review
- Judgments
- Youthful driver program
- Child Support Enforcement – Issuance of suspension notices
- Ignition Interlock and Virginia Alcohol Safety Action Program

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- License & ID Card Work Center
- CDL/NDR Work Center
- Medical Review Services
- Driver Training Work Center

### Key Access Channels

- mySelect
- dmv.virginia.gov

### Key Integrations

- SecuriTest
- Secure Credential Solution / DLCI
- AAMVA, EVVE, SSA, USPVS, SAVE, SSA
- VSP VCIN
- Crash Data
- Insurance Companies
- Department of Social Services
- Department for the Blind and Vision Impaired
- Elavon

## Credentialing (Titles and Registration)

Title	<ul style="list-style-type: none"><li>• Original Title</li><li>• Electronic Title</li><li>• Replacement Title</li><li>• Substitute Title</li><li>• Sales and Use Tax Adjustment</li><li>• Manage Liens and Lienholders</li><li>• VIN Issue and Maintenance</li><li>• Review Title Activity and Verify Validity</li><li>• Casual Sales</li><li>• Report a Lost or Stolen Vehicle</li><li>• Abandoned Vehicles</li><li>• Mechanical / Storage Lien Process</li><li>• Motor Vehicle Sales and Use Tax</li></ul>
Registration	<ul style="list-style-type: none"><li>• Original Registration</li><li>• Reactive, Reissue, Renewal, Surrender, Transfer Registration</li><li>• Registration Renewal Notices</li><li>• Fleet Registration</li><li>• Heavy Vehicle Use Tax</li><li>• Change Vehicle Weight</li><li>• Add or Change Vehicle Insurance</li><li>• Casual Sales</li><li>• Emissions Information</li><li>• Decal Issuance</li><li>• IRP, including Transmittal Process</li><li>• Highway Use Fee and Mileage Choice</li></ul>
License Plate	<ul style="list-style-type: none"><li>• Plate Purchase</li><li>• Plate Deactivation, Reactivation, and Surrender</li><li>• Reserve Plates</li><li>• Souvenir Plate Purchase</li><li>• Order Sample Plates</li><li>• Personalized Message Review</li></ul>
Permit	<ul style="list-style-type: none"><li>• Overload Permits</li><li>• Hauling Permits</li><li>• Trip Permits</li></ul>

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- Titles and Registration Work Center
- Dealer Services
- Motor Carrier Services
- Insurance Services Work Center

### Key Access Channels

- mySelect / DMV Select
- dmv.virginia.gov
- Virginia MCS
- EZ Haul
- EZ Reg
- EZ Fleet

### Key Integrations

- Online Dealers
- Temporary Tag Print
- Print Sub System
- NADA
- NCIC
- VIN Decode
- Dept. of Environmental Quality
- Elavon
- NVMTIS

### Monitoring Program

- International Registration Plan (IRP)
- Citation Tracking
- Insurance Monitoring
- Vehicle Registration Withholding
- Emissions

## Tax Processing

### Tax Processing

- Calculate IFTA Tax Report
- Mail Quarterly IFTA Tax Returns
- Receive and Process IFTA filings
- IFTA Transmittals
- Fuels Tax Payment
- Fuels Tax Refunds
- Diesel Vehicle Fuel Refunds
- Heavy Vehicle Use Tax
- Motor Fuels Tax
- Motor Vehicle Fuels Sales Tax
- Virginia Road Tax Fee

### Shared Functions

- Associated Audits
- Associated Appeals
- Inspections and Investigations
- Tracking and cross-matching

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- Motor Carrier Services
- Tax Services

### Key Access Channels / Integrations

- mySelect
- VAETS
- Virginia MCS
- PRISM
- Oracle e-Business Suite

## Information Provisioning

### Customer Record Products

- Customer Transcripts
- Vehicle Transcripts
- Vehicle History Reports

- Prospective Purchaser Inquiry
- Compliance Summaries
- Digitized Photographs
- Crash Reports

### Data Exchanges

- Virginia State Police
- Department of Elections
- Donate Life – Organ Donation Information
- Department of Wildlife Resources
- Department of Social Services
- VEC Verification of Customer
- Virginia Tax Verification of Customer
- DEQ Emissions Data
- DWR Verification of Customer
- Department for the Blind and Vision Impaired
- State Compensation Board
- Virginia Retirement Systems
- State Corporation Commission
- State Courts
- Virginia State Police
- Virginia Highway Safety Office
- Commissioners of Revenue and Treasurers
- Locality of Virginia Beach
- Local Courts
- DoD Selective Service
- Federal Courts
- Federal Motor Carrier Safety Administration
- Insurance Companies (e.g. Youthful Driver)
- Driver Alert
- Motor Vehicle Dealers
- Service Companies
- Private Security Companies
- Attorneys
- Etc.

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- Data Integrity Work Center
- Vehicle Records Work Center
- Driver Records Work Center

### Key Access Channels

- mySelect
- dmv.virginia.gov
- Phone
- Email

### Request Management

- Processing ad hoc requests
- Authenticating requestors
- Formatting data
- Recording information releases
- Managing subscription services
- Calculating fees
- Billing invoices
- Information Use Agreements
- Extranet Transaction Access

## Partnership Functions, Services, & Products

### Partnership Functions, Services, & Products

- VDH Birth Certificates
- VDH Vital Records (Marriage, Divorce, and Death) Certificates
- VDOT EZPass
- Department of Elections Voter Registration
- DCJS Private Security Licenses
- DGIF Licenses

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- Partner Agencies

### Key Access Channels

- mySelect / DMV Select

## Stand-Alone and Third-Party Vendor Applications

### Stand-Alone Applications

- Transactions (dmv.virginia.gov) Integration Support
- VAETS Integration Support
- Mileage Choice Integration Support
- Virginia MCS Integration Support
- EZHaul Integration Support
- EZFleet Integration Support
- EZReg Integration Support
- Oracle EBS Integration Support

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- DMV IT Support Teams
- Vendor Application Support Teams
- Other Application Support Teams

### Third-Party Applications

- Online Dealer Integration Support (4)
- Temp Tag Print Integration Support (5)
- Fuels Tax Refund Integration Support

## Service Delivery / Customer Account

### Customer

- Create Customer
- Customer Console
- Customer Inquiries
- Customer Alerts
- Email & Text Preferences
- Change Name
- Change Address
- Change Sex Designation
- Update Emergency Contact
- Deceased Customer
- Administrative Proceedings / Hearings
- Law Enforcement Investigation Requests

### Online Account

- Create PIN
- Forgot Password
- Request Temporary PIN
- PIN Maintenance
- What Have I Done Online?

### Service Delivery

- Transaction History
- Store Applications
- Store Contracts
- Store Correspondence
- Store User Reports
- Workflow Solutions
- Q-Flow Integration
- Store User Agreements
- Manage DMV Selects

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- DMV Direct Contact Center
- Online Dealer Services
- Motor Carrier Services

### Key Access Channels

- mySelect / DMV Select / DMV Direct
- dmv.virginia.gov

### Key Integrations

- AAMVA, EVVE, SSA, USPVS, SAVE, SSA
- Onbase
- Q-Flow
- Address Verification
- Hearing Office Scheduling System (HOSS)

## Financial Services

### Financial Services

- Abandoned Vehicles Disbursements
- ACH
- Deposit Transactions
- Finance Utilities
- Invoice Payments
- Licensed Agents
- Over / Shortage Payments
- Payment Plan Program
- Refunds
- Reinstatement Fee Application
- Returned Checks
- Revenue Collections and Corrections
- Settlements

### Open/Close Work Unit

- Distribute Petty Cash (Cash Drawer)
- Resolve Incomplete Transactions
- Close Cash Drawer
- Deposit of Daily Receipts
- Reconciliation of Daily Receipts
- Record Revenue Collections
- Print Daily Reports

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- Financial Services
- Dealer Services

### Key Access Channels

- mySelect / DMV Select
- dmv.virginia.gov

### Key Integrations

- Point-of-Sale Applications (Elavon)
- Oracle e-Business Suite
- Online Dealer

## Inventory Management

### Inventory Management

- Daily Usage of Secured Inventory
- Receipt of Inventory

- Transfer of Inventory
- Reorder Inventory

### Open/Close Work Unit

- Assign Secured Inventory Items
- Record Inventory Usage

- Return Secured Inventory
- Print Daily Reports

### DMV Stakeholders / Business SMEs

- Customer Service Representatives
- Titles and Registrations Work Center
- DMV Warehouse
- Dealer Services

### Key Access Channels

- mySelect / DMV Select
- dmv.virginia.gov

### Key Integrations

- Oracle Inventory
- Online Dealer
- Virginia Correctional Enterprises

### Key Integrations

- Oracle Inventory
- Online Dealer
- Virginia Correctional Enterprises

## Appendix 5: Project Organization Plan Sample

# Project Organizational Plan & Functional Team Structure

## Purpose:

A project organization plan defines and establishes the structure, roles, responsibilities, and reporting relationships within a project team. It outlines how the project will be organized and managed so there is effective communication, coordination, and collaboration among team members.

The key objectives of a project organization plan include:

1. Clarifying Roles and Responsibilities: The plan defines the roles and responsibilities of each team member involved in the project. This helps to avoid confusion, and duplication of efforts, so that everyone understands their specific contributions and tasks.
2. Establishing Reporting Relationships: The plan outlines the reporting relationships within the project team, including who reports to whom. This facilitates clear lines of communication, decision-making, and accountability.
3. Promoting Effective Communication: By defining the project team's structure, the plan promotes effective communication channels and mechanisms. Information needs to flow smoothly between team members, stakeholders, and project managers. Refer to the Communication Plan sample for additional details.
4. Enhancing Coordination and Collaboration: The organization plan identifies the interfaces and dependencies between different roles and teams involved in the project. This helps to coordinate activities, resolve conflicts, and foster collaboration among team members.
5. Supporting Resource Allocation: The plan helps in allocating resources effectively by identifying the required skills, expertise, and capacities for each role. Resources should be allocated appropriately to meet project objectives.

Overall, a project organization plan plays a crucial role in establishing a clear and structured framework for the project team, enabling efficient project execution and successful delivery.

## Stage 1 Overview

Stage 1 will consist of an Agile team to deliver the scope of the POC as well as a system team to provide the technical runway needed to design, develop, and deliver the POC. During Stage 1, the Project Leadership Team and the Executive Steering Committee will be formed, and necessary documentation will be created outlining expectations, roles and responsibilities, deliverables, and key outcomes from

Sample Project Organizational Plan and Functional Team Structure

each group. A sample of the Executive Steering Committee, Project Leadership Team, and a Team level outline is shown below. For more information, refer to Part 4 of the CapTech proposal.

### Executive Steering Committee

Role	Description
<b>DMV Executive Sponsor</b>	A senior executive from the DMV has the authority to make decisions, allocate resources, and champion the project within their organization.
<b>CapTech Executive Sponsor</b>	A senior executive from CapTech who provides oversight, guidance, and support from the service provider's perspective
<b>DMV Project Sponsor</b>	An individual who serves as the primary advocate for the project, responsible for securing funding, resolving high-level issues, and ensuring alignment with strategic objectives.
<b>Accountable Business Owners</b>	Responsible for accepting Epics and Features based on PI demos.
<b>DMV Project Manager</b>	Responsible for day-to-day management of the DMV project stakeholders and resources, including planning, execution, monitoring, and controlling. They serve as the primary point of contact for project-related communication.
<b>CapTech Project Manager</b>	Responsible for day-to-day management of the CapTech project stakeholders and resources, including planning, execution, monitoring, and controlling. They serve as the primary point of contact for project-related communication.
<b>CapTech Technical Leads/Architects</b>	Provides technical expertise and guidance, ensuring that the solution aligns with best practices, scalability, security, and performance requirements.
<b>DMV Enterprise Architect(s)</b>	Provides critical knowledge of DMV architecture and technical dependencies and is responsible for providing key feedback and approvals for technical deliverables.
<b>DMV Information Security Officer</b>	Provides critical knowledge of DMV and VITA security policies and standards and is responsible for providing key feedback and approvals for technical and security deliverables.
<b>CapTech Quality Management Lead</b>	Oversees the quality management process, including testing strategies, defect management, and ensuring that the final deliverables meet the required quality standards.
<b>CapTech Change Management Lead</b>	Manages the organizational change associated with the transition from mainframe to cloud-based solutions, ensuring end-user training is planned and completed to avoid disruption to business operations.

Sample Project Organizational Plan and Functional Team Structure

<b>Key Stakeholder(s) (optional)</b>	Representatives from various departments or business units within both organizations have a vested interest in the project's success. This may include individuals from communications, training, operations, finance, and customer service.
<b>Subject Matter Experts (SMEs) (optional)</b>	Experts in specific domains relevant to the project, such as mainframe systems, cloud infrastructure, security, compliance, etc. They provide valuable insights and guidance on the project's success.

**Project Leadership Team**

<b>Role</b>	<b>Description</b>
<b>DMV Project Manager</b>	This individual is responsible for managing the DMV team along with collaborating and facilitating the project's overall timeline, budget, and scope within the Agile framework with CapTech Project Manager.
<b>CapTech Project Manager</b>	In Agile projects, the role of the traditional project manager may be adapted to an Agile Project Manager. This individual is responsible for managing the project's overall timeline, budget, and scope within the Agile framework. They collaborate with the DMV Project Manager, Product Owners, and Scrum Masters achieving successful project delivery.
<b>Technical Leads/Architects</b>	The Technical Architect provides technical leadership and guidance, ensuring that the project's architecture aligns with the organization's technology strategy. They collaborate with the development team to define the technical vision, make architectural decisions, and support the scalability and maintainability of the solution.
<b>Agile Coach</b>	An Agile Coach is an experienced professional who guides the team in adopting and implementing Agile practices effectively. They provide guidance on Agile principles, facilitate Agile ceremonies, and help the team continuously improve their Agile processes.
<b>DMV Accountable Business Owner(s)</b>	Approve that the Epic and Feature correctly specify all requirements and accepts completed Features and Epics, ensuring a review has been performed and all functionality meets the requirements.
<b>Quality Management Lead</b>	The Quality Management Lead is responsible for ensuring the quality of the project deliverables. They define the testing strategy, coordinate

Sample Project Organizational Plan and Functional Team Structure

	testing efforts, and work closely with the development teams to identify and resolve any quality issues.
<b>Development Team Lead</b>	The Development Team Lead is responsible for leading the development team, coordinating their work, and ensuring the successful delivery of the project. They provide technical guidance, mentorship, and support to the development team members.
<b>Scrum Master</b>	The Scrum Master is a facilitator and servant-leader who work with Teams to adhere to Agile principles and practices. They help the team understand and implement Agile methodologies, remove obstacles, and foster a collaborative and self-organizing environment.
<b>CapTech Product Owner</b>	The Product Owner represents the client or business stakeholders and is responsible for defining and prioritizing the project's requirements and deliverables. They work closely with the development team to meet the client's needs and provide business value.
<b>DMV Product Owner(s)</b>	Approve that the User Story correctly specifies all requirements and accepts User Stories during Sprints to validate requirements that have been met.

**Team Roles**

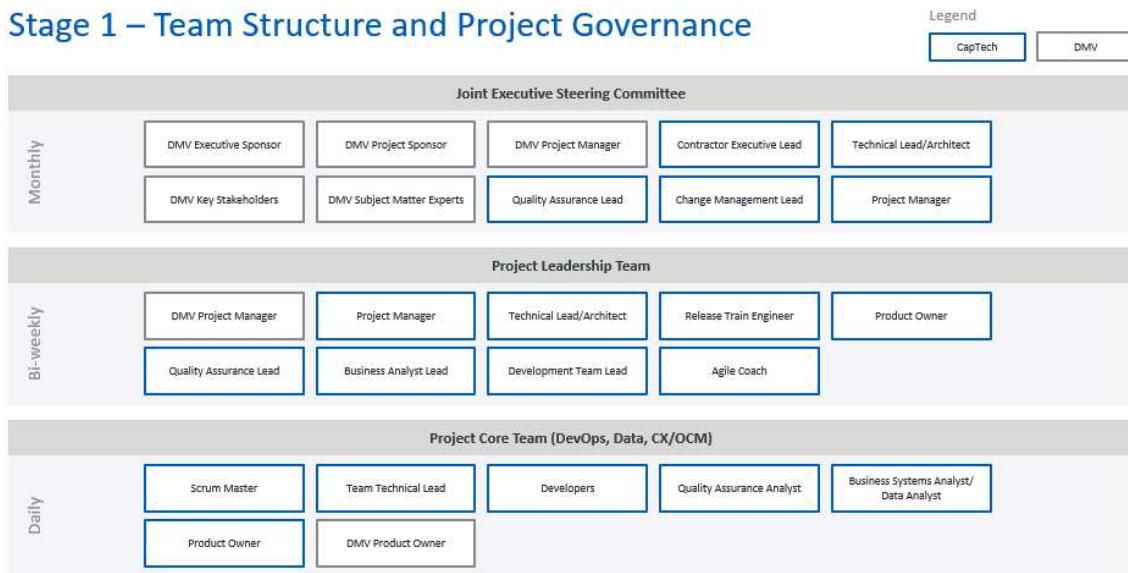
Role	Function
Scrum Master	Servant leader and coach for an Agile team who facilitates team events and processes and supports teams in delivering value. This person encourages continuous improvement and educates the team in agile framework best practices and approaches. They optimize flow by identifying and removing impediments for the team and guiding the resolution of team issues.
Engineers	Cross-functional team members are responsible for the delivery of work items that meet the Definition of Done, including unit testing. Provide development and collaboration strategies (paired programming, test-driven development, etc.) to optimize delivery and improve the flow of work. This role may include a variety of engineers (software, data, DevOps, etc.)
DMV Product Owner	Approve that the User Story correctly specifies all requirements and accepts User Stories during Sprints to validate requirements that have been met.
CapTech Product Owner	Responsible for maximizing the value delivered by the team, ensuring the team backlog is aligned with customer and stakeholder objectives. This person is closely aligned with the business and technology strategy.
Quality Assurance Analyst	Support testing initiatives following the Quality Management plan of the functionality of work items.
Business System Analyst	Understand and translate technical requirements into User Stories and partner with the Product Owner making sure the product backlog is

## Sample Project Organizational Plan and Functional Team Structure

	robust, defined, and prioritized. This role will support the Feature regression testing so disparate team code is functional when merged.
Team Technical Lead	Provides technical direction to the team developers and facilitates best practices. Works with the Lead Architect to align technical strategies and cascades this information to the team. Supports breaking down Features into User Stories for the team's product backlog.

The below graphics show the proposed organizational plan for both Stage 1 and Stage 2, including the functional team structure for Project Teams, the Project Leadership Team, and the Executive Steering Committee. With appropriate governance, this scaled agile approach will align team members, reduce workflow disruption, and increase productivity by focusing on delivering against key objectives and with measurable goals and metrics.

### Stage 1 – Team Structure and Project Governance



## Stage 2 Overview

Stage 2 will include two additional Agile teams focused on quarterly planning and delivering in parallel with one another. In this stage, the Project Leadership Team and Executive Steering Committees are stood up and fully functional, executing against the agreed-upon documentation for their purpose in Stage 1.

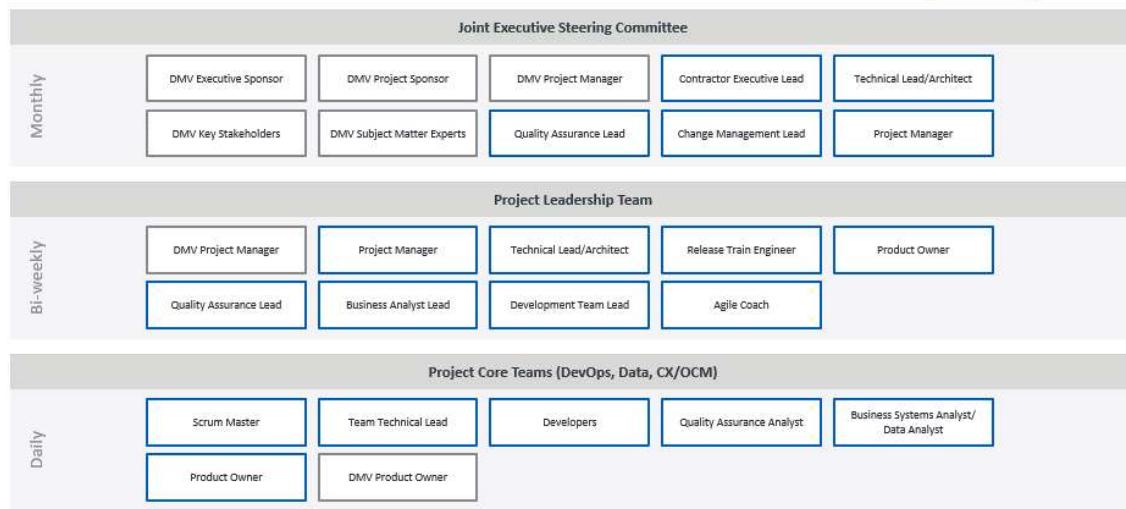
**Sample Project Organizational Plan and Functional Team Structure**

**Stage 2 – Team Structure and Project Governance**

Legend

CapTech

DMV



## Appendix 6: Roles and Responsibilities Sample

# Roles and Responsibilities

## Roles and Responsibilities

During the Project Initiation phase, roles and responsibilities will be outlined and documented for CapTech and DMV project resources. This will support in staffing the Teams appropriately, identify any gaps in roles or skills, improve productivity, and increase operational efficiency. Having well-defined roles and responsibilities will allow for greater cooperation when there is conflict over responsibility.

### Role Outline

<b>Job Title</b>	CapTech Project Manager	<b>Position Type</b>	Full-Time (on-site)
<b>Department</b>	Project Leadership Team	<b>Direct Supervisor</b>	CapTech Project Supervisor

#### Job Summary

In Agile projects, the role of the traditional project manager may be adapted to an Agile Project Manager. This individual is responsible for managing the project's overall timeline, budget, and scope within the Agile framework. They collaborate with the DMV Project Manager, Product Owner, and Scrum Master to ensure successful project delivery.

## Responsibilities

### 1. Resource Management:

- Ensure that the contracting party has adequate resources allocated to the project, including personnel, equipment, and materials and support onboarding/offboarding activities for CapTech staff.
- Coordinate with the DMV Project Manager to schedule resource deployment according to project requirements and timelines.
- Collaborate with Scrum Masters to ensure the skills and strengths of team members are optimized.

### 2. Quality Management:

- Monitor and collaborate with Scrum Masters and Technical team members to ensure built-in quality.
- Collaborate with Scrum Masters to identify and reduce recurring quality issues.

### 3. Communication:

- Owns communication between the CapTech team and other project stakeholders, including the DMV and internal team members.
- Owns communication with the Project Leadership Team and Executive Steering Committee members.

### 4. Risk Management:

- Support the development of risk mitigation plans.
- Monitor identified risks per Planning Interval (PI) and report in status reports.

### 5. Budget and Cost Control:

- Manage CapTech's budget and expenses, ensuring that expenditures are within the agreed-upon budget and aligned with project objectives.
- Monitor costs associated with CapTech activities and identify opportunities for cost optimization or efficiency improvements.

### 6. Schedule Management:

- Develop and maintain the agile-based project work plan and milestone deliverable plan that align with overall project timelines.
- Monitor CapTech team progress against the work plan, identifying any delays or deviations and taking corrective action as necessary.

### 7. Performance Evaluation:

- Conduct regular performance evaluations of the CapTech team, providing feedback on strengths and supporting continuous improvement.

### 8. Contract Compliance:

- Ensure that CapTech complies with all contractual obligations, including deliverable deadlines, quality standards, and reporting requirements.
- Monitor compliance with legal, regulatory, and industry standards applicable to the project and CapTech's activities.

## Roles and Responsibilities

### RACI

Additionally, a RACI matrix will be established to outline who is responsible, accountable, consulted, and informed for specific responsibilities and decisions.

- Responsible: The person who does the work
- Accountable: The person who delegates and reviews the work
- Consulted: The person who provides input and feedback
- Informed: The person who needs to be kept in the loop

Task	Role 1	Role 2	Role 3	Role 4
Task 1	C	A	I	R
Task 2	A/R	I	C	I

## Appendix 7: Project Communication Plan Sample

# Project Communications Plan

The Communications Management Plan is intended to plan for all project stakeholders to be kept informed of project status, action items, and key objectives/milestones in a timely and effective manner.

## Project Meetings

The project meetings overview describes the types of meetings, and purposes of the meeting, identifies the designated facilitator/meeting invitees, and outlines the frequency of convening meetings. Meetings are scheduled per the project's demands and regularly scheduled with the technical and Project team to discuss all phases of the project. Other meetings are informational or pertain to specific project activities; these are convened less frequently or as needed.

### Executive Steering Committee

Event	Cadence	Description	Attendees
<b>Executive Steering Committee Meeting</b>	Monthly (and ad hoc as needed)	Review of progress against objectives, status of Epics, review of prioritization and funding/budget	DMV Executive Sponsor, DMV Project Sponsor, Contractor Executive Lead, DMV Project Manager, Technical Lead/Architect, Contractor Project Manager, Change Management Lead, Quality Assurance Lead, SMEs (optional), Key Stakeholders (Optional)

### Project Leadership Team

Event	Cadence	Description	Attendees
<b>Epic and Feature Refinement</b>	Monthly	Determine the priority of Epics in the Solution backlog and provide high-level refinement of the scope. Prioritized Epics should be broken into manageable Features to be reviewed with Teams.	Technical Architects, RTE, Agile Coach, SMEs (as needed), Product Owners, Scrum Masters, DMV Project Manager, Contractor Project Manager
<b>PI (Planning Interval) Planning</b>	Once per PI	One to two days during the Innovation and Planning Sprint	Everyone
<b>Mid-PI Demo</b>	Once per PI	Interim completed features demoed for feedback	Everyone

## Communications Plan

<b>PI System Demo</b>	Once per PI	Formal demo of Features that will be deployed into pre-production	Everyone
<b>PI Retrospective and Problem-Solving Workshop</b>	Once per PI	Discuss what went well and areas for improvement learnings from the PI.  NOTE: this can be combined with the PI System Demo for efficiency	Everyone

### Delivery Team

Team Event	Cadence	Description	Attendees
<b>Sprint Backlog Refinement</b>	Weekly	Break down Features into user stories, and review prioritized user stories to understand	Scrum Team, Tech Leads
<b>Sprint Planning</b>	Beginning of each sprint	Determine how much of the team backlog the team can deliver during an upcoming iteration and summarize those stories into a set of iteration goals.	Scrum Team
<b>Team Sync</b>	Daily	Inspect progress toward the iteration goal, communicate, and adjust upcoming planned work	Scrum Team
<b>Sprint Review</b>	End of each sprint	Inspect iteration outcomes, present the results of their work to key stakeholders, and assess progress toward the iteration goal and PI objectives.	Scrum Team, Key Stakeholder, Project Managers
<b>Sprint Retrospective</b>	End of each Sprint	Reflect on the iteration and derive new ideas to improve its process and the solution.	Scrum Team

### Communication Tooling and Correspondence

#### Communication Methods

Communication Tool	Description
<b>Microsoft (MS) Teams</b>	MS Teams channels will be set up for each Team and separate channels for the Project Leadership Team and Executive Steering Committee.
<b>Microsoft Outlook</b>	Email distribution groups will be set up for each Team, the Project Leadership Team, and the Executive Steering Committee.
<b>Microsoft Forms</b>	Project surveys, etc.
<b>Sharepoint</b>	Document repository
<b>Azure DevOps (ADO)</b>	Project management tool to track work items (Epic, Feature, User Stories) and provide visual dashboards for project oversight.

## Communications Plan

### Project Reporting and Correspondence

DMV Stakeholders will be provided with clear and frequent communication that highlights project progress. The CapTech Project Manager works with the DMV Project Manager to manage the reporting process and engage project stakeholders if more detail is required. The CapTech Project Manager is available for ad hoc status reporting and responsive to other additional reporting and meeting requirements put forward by DMV. We use the following channels to report status.

Title	Communicator	Recipients	Delivery Vehicle	Frequency
<b>Project Work Plan Updates</b>	CapTech Project Manager	All Project Team Members	Email	As Needed
<b>Weekly Status Reports</b>	Project Managers	Project Leadership Team	Email	Weekly
<b>Monthly Status Report</b>	Project Managers	Executive Steering Committee	Email	Monthly
<b>Project Announcements</b>	Project Managers	Project Teams	MS Teams	As Needed
<b>Project Work Item Repository (Epics, Features, Stories, Bugs)</b>	Project Team Members, Scrum Masters	Project Sponsors	Azure DevOps	Available 24/7; updated weekly as part of project operations

### Communication Plan Update and Refinement

As the project evolves and moves forward, project management stakeholders may change, preferred communication methods may need to be updated, or more effective communication channels may be identified. The Contractor Project Management Team will meet quarterly with the DMV Project Manager Team to review the Project Management tools and processes, including the Communication Management Plan, and identify what is working well and what is not. If agreed and if necessary, the Communications Management Plan will be updated, and those changes will be communicated to any impacted stakeholders.

## Appendix 8: Risk Management Plan Sample

# Risk Management Plan

## Introduction and Purpose

The Risk Management plan outlines the people, process, and technology requirements needed to support a successful Risk Management function within the DMV Project. The scope of the Risk Management Plan is limited to the DMV Project and does not extend to other DMV initiatives. The Risk Management function of the Project Leadership Team will leverage best practices to ensure the DMV Project successfully meets its objectives.

The Project Leadership Team seeks to create and implement a risk management culture that is rooted in all DMV project participants feeling safe to raise risks and issues. Through this culture, risk management will help the DMV project achieve the following strategic results:

- Preparation for anticipated bad occurrences so that they do not turn into costly surprises.
- Risks are appropriately mitigated and do not require reactive responses.
- Focus on the most important work, not just the most pressing.

This document outlines the governance procedures for the following Risk Management areas:

- Risk Management
- Issue Management

To summarize, this Risk Management Plan process:

- Defines the DMV risk management culture that offers a safe place for all DMV participants to raise and manage issues and risks.
- Can be used as a framework to onboard and train DMV employees on risk management governance practices.
- Provides a consistent methodology for identifying, reporting, and managing risks and issues.
- Establishes a formalized approach to escalate project related risks into program related risks.
- Recommends the review cadences to evaluate risks regularly.
- Provides an approach to identify and manage issues. Additionally, it provides clarity on how risks can manifest into issues.
- Clearly defines roles and responsibilities to support Risk Management tasks throughout the DMV Project.
- Highlights the tools used to log issues and risks in a centralized repository.
- Highlights the program processes and artifacts used to effectively report risks.

## Risk Management Approach

Risk Management is extremely important to ensure a successful and healthy DMV project. All members within the DMV Project are responsible for identifying and escalating risks that could negatively impact the DMV Project objectives. The Project Leadership Team seeks to develop a culture within the DMV Project that provides a safe place for raising risks, is collaborative, and transparent. Additionally, the Project Leadership Team will provide the process, tools, and training to empower all program participants to effectively raise and mitigate risks. This is summarized within the following Risk Culture Objectives:

- Promote a safe environment where everyone is comfortable to proactively address and discuss risks.
- Create a culture of learning where all members of the DMV Project understand the benefits of risk management and understand how they can participate.
- Make risk decisions at the appropriate level.

Most risks and issues are recorded and managed in the DMV Project SharePoint; however, there are some DMV areas that may maintain project-level risk logs. In those cases where the area has an independent risk log, there is an escalation process to escalate risks that require management and visibility at the DMV Project level.

The following summarizes the key terms within Risk Management.

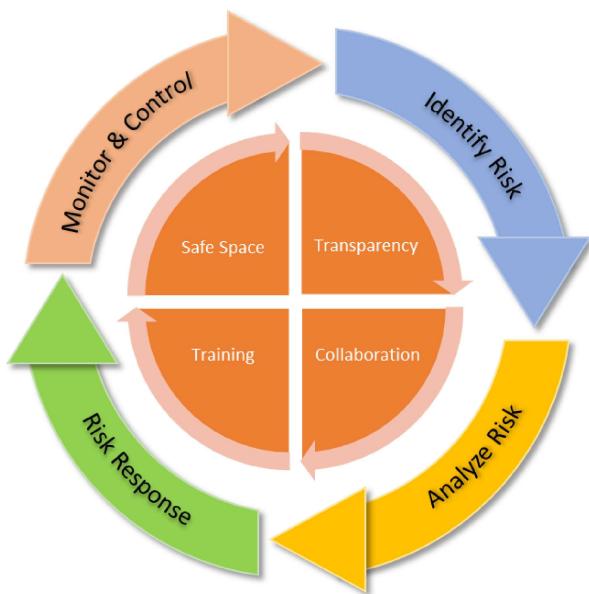
Why is Risk Management important?	<ul style="list-style-type: none"><li>• Risk Management can help the DMV Project increase the likelihood of achieving objectives, improve the identification of opportunities and threats and effectively allocate and use resources for risk treatment (accept, mitigate, monitor, or transfer).</li></ul>
What is Risk Management?	<ul style="list-style-type: none"><li>• Identification, evaluations, and prioritization of risks followed by deliberate actions to <u>either</u> reduce the probability of the risk occurring <u>or</u> to accept the risk to meet a desired outcome. Additionally, Risk Management provides program training to ensure effectiveness.</li></ul>
What is a Risk? What is an Issue?	<ul style="list-style-type: none"><li>• <b>Risk</b> – an uncertain event or condition <u>with some probability of occurring</u>, which could impact a project's objective(s), budget, resources, schedule, and/or quality.</li><li>• <b>Issue</b> – a current event which <u>has occurred</u> because of a previously unidentified or ineffectively mitigated risk.</li></ul>
Who is responsible for Risk Management?	<ul style="list-style-type: none"><li>• Anyone and everyone should be proactively aware of what risks are in the DMV Project or areas and should suggest mitigating actions.</li></ul>

### *Risk Lifecycle*

Effective risk and issue management requires participation, engagement, and communication by everyone. The Risk Management function seeks to establish a program-wide culture that encourages anyone and everyone within the program to feel comfortable to proactively raise risks, suggest mitigating actions, and be aware of what risks are in the DMV Project or areas.

## Sample Risk Management Plan

To enable this risk-focused culture, the following processes and procedures are in place.



### Risk Identification and Management

Risks can be identified through a variety of different methods. Typically project related risks are identified within each project team during PI Planning. The risks will be reviewed, and a ROAM approach will be taken where risks are Resolved, Owned, Accepted, and Mitigated. It is encouraged that project teams do the following:

- Log all project related risks.
- The Project Leadership Team will meet regularly to discuss the risks identified, any new risks, the priority of risks, and risks that should be escalated to the Executive Steering Committee.

In addition to program risks being identified during PI Planning, day-to-day project activities will uncover other risks such as strategic risks, reputational risks, and operational risks. The Project Leadership Team will support the overall DMV Project by managing these risks through intentional use case activities that encourage leaders to think beyond the project to identify risks that can impact the overall project.

### Analyze Risk

The Project Leadership Team will be responsible for reviewing new risks and issues, confirming the completeness of the fields entered, and completing the mitigation fields where risk is likely to occur. This is a collaborative undertaking between the Project Managers and the Risk owners. As needed, additional stakeholders may be involved in the risk analysis phase.

### Risk Response

Once a risk has been created and properly vetted for clarity, the next key step in the process is to formulate a response. If a risk is determined to be in Active status, an appropriate risk treatment strategy must be determined. Both the Risk Owner and Risk Manager are expected to be actively engaged in identifying a risk response.

### Monitor Risk

## Sample Risk Management Plan

The risk management process does not end with risk identification and formulating a response. A healthy risk culture proactively monitors risk status and actively updates risk treatment strategy. This occurs through one-on-one discussions with risk owners to confirm risk status. Another avenue for such discussions is weekly and bi-weekly meetings with the Project Leadership Team. Risks that have manifested are treated as issues and acted upon accordingly.

### *Identify Risks*

#### **Create a Risk**

A risk is something that (if it manifests) could impact the project, depending on the severity of the risk. It is everyone's responsibility to identify and raise risks within the DMV Project. This will enable improved communication and greater collaboration through thoughtful discussions on how risks can positively or negatively impact the DMV Project.

Below are some best practices related to identifying and managing risks.

- Understand the drivers (Scope, Budget, and Schedule) of your project
- Review/update risk log daily
- Ask yourself what strategic, reputational, operational, and program risks could impact the project?
- Ask others (team members/clients) what strategic, reputational, operational, and program risks could impact the project?
- When writing a risk, it is recommended that the risk title is concise and clearly states the concern and the impact of the concern
- Rinse and Repeat!

The following are the data fields used for logging a risk in the DMV risk log:

Field Name	Description
Workstream	<ul style="list-style-type: none"><li>• Overall DMV</li><li>• OCM</li><li>• QA Services Procurement</li><li>• Resource Planning</li><li>• Secure Customer Portal</li><li>• System Integration</li><li>• Infrastructure</li></ul>
Type	Categorization of the risk to allow for sorting, grouping, etc.
Theme	High Eight (Agency Readiness, Product, System Integration, Data Conversion, Budget, Vendor Management, Governance, Customer Readiness)
Risk Status	The status of the risk: Active: Actively being managed Monitored: No active mitigation or contingency plan taking place Closed

## Sample Risk Management Plan

Field Name	Description
	Future: Don't need mitigation or monitoring now
Description	A detailed description of the risk. Should clearly and concisely communicate what the risk is.
Consequence	Description of the known and perceived consequence(s) of the risk, if the risk occurs and is not properly mitigated.
Identified Date	The date the risk was identified.
Identified By	The name of the individual who originally identified the risk. Do not use a team name, a single point of contact must be agreed to and entered. The point of contact should be aware that they are listed.
Probability	Likelihood of the risk occurring, on a scale of 1-4 1) Unlikely – chances are extremely low that this would occur 2) Possible – it is possible but not likely that this would occur 3) Likely – chances are high that this will occur 4) Almost Certain – the risk will be realized if it is not mitigated
Impact	Impact of the risk if occurred, on a scale of 1-4 1) Insignificant 2) Minor 3) Moderate 4) Major
Date of Last Review	The date on which the risk was most recently reviewed.
Treatment Chosen	The current approach addresses the risk of being employed by the owner of the risk (when active). Accept: Risks that you accept but can or choose to do nothing about. Mitigate: Risks that require action plans (this will be most of the risks) Monitor: Risks that have been downgraded and require only monitoring (can also be emerging risks that are not clearly understood). Transfer: Risks that have been transferred to a third party and can be closed (this treatment is not commonly used. Most risk treatment strategies are either Accept, Mitigate, or Monitor).
Actions Suggestions Take	Detailed description of strategy and plan to address the risk. Content should be edited/amended as risk is managed throughout workstream. Start your entry with the date first so that the oldest entry appears at the bottom.
Owner	The person responsible for overall risk planning, execution, and monitoring. It should not be a group name but can be 2 names when risk

## Sample Risk Management Plan

Field Name	Description
	crosses multiple areas. Owner should be aware/agree to be the owner before name is entered. Assign to self if unsure/owner has not been agreed to.
Additional Comments	Additional comments and context on the risk are not summarized in the preceding columns. This can also hold a reason for a downgrade in score or a closure.
Program Manager Attention	Please check this box to bring this risk to the attention of the Program Manager.
Risk Category	<p><b>Program:</b> Risks impacting the DMV Project's and underlying project's ability to successfully achieve the stated scope, schedule, and budget. <b>These risks are typically identified and managed within the program and are not dependent on external environments.</b></p> <p><b>Strategic:</b> Emerges from external environment that will impact you, force a change to the strategic direction. For example, a strategic risk is the aging workforce, the gap is 70% of the workforce is retiring in the next 5 years, and opportunity exists in doing succession planning.</p> <p><b>Reputational:</b> Risk of loss resulting from damage to reputation, in lost revenue; increased operating, capital or regulatory costs. For example, a reputational risk is a security incident in which an attacker publishes our customer's confidential information such as name, address, and credit card details.</p> <p><b>Operational:</b> Internal or external to LNI that will impact your ability to achieve the current strategies. For example, an operational risk is high employee turnover because it impacts our ability to do the job.</p>

### Evaluate A Risk

The DMV Risk Management program categorizes all risks into four (4) distinct categories. The main purpose of risk categorization is to proactively avoid surprises that can negatively impact the DMV Project by providing management with a methodology to identify a wide variety of risks that may not be apparent when dealing with day-to-day project tasks.

### Risk Impact Analysis

The Risk Matrix is an essential tool that helps rank the significance of risks amongst others. There are two risk attributes, Probability, and Impact, that are measured on a scale of 1 to 4 based on the respective certainty and significance. The multiple of Probability and Impact is used to identify those risks that are most likely to become an issue.

### How are these scores used in risk analysis?

## Sample Risk Management Plan

Typically, those risks categorized as 'red' are revisited more frequently with the risk owners than those classified as 'yellow' or 'red'. In addition, active risks that are 'red' are listed in detail in the monthly DMV Project Health Dashboard report and discussed during the DMV Project Executive Steering Committee Meetings.

The following provides guidance related to the frequency a risk should be evaluated by the risk owner based on the risk matrix score:

- Red – Review at least once every 2 weeks
- Yellow – Review at least once every month
- Green – Review at least every quarter

The following matrix provides a visual of the risk matrix. The risks in 'red' are typically the risks that need the most immediate attention. The risks in 'yellow' and 'green' need to continue to be monitored and mitigated but have less probability of becoming an issue.

Risk Matrix		Impact			
Probability	Almost Certain (4)	Insignificant (1)	Moderate (2)	Major (3)	Significant (4)
		4	8	12	16
	Likely (3)	3	6	9	12
	Possible (2)	2	4	6	8
	Unlikely (1)	1	2	3	4

### Risk Response

Risk response is the process of controlling identified risks. It is a basic step in any risk management process. Risk response is a planning and decision-making process whereby stakeholders decide how to deal with each risk. When the Risk Status is 'active' the risk owner and risk manager are responsible for determining which of the following risk treatment categories:

- **Accept:** Risks that you accept but can or choose to do nothing about. All strategies and plans involve some level of risk. Risk also has a relationship with reward whereby reducing risk toward zero can also reduce potential payback.
- **Mitigate:** Risks that require action plans (this will be most of the risks). For example, enhance work procedures and controls, and make plans to handle the risk if it occurs.
- **Monitor:** Risks that have been downgraded and require only monitoring (can also be emerging risks that are not clearly understood).
- **Transfer:** Risks that have been transferred to a third party and can be closed (this treatment is not commonly used. Most risk treatment strategies are either Accept, Mitigate, or Monitor).

### Monitor And Control Risks

Effective Risk Management is a continuous process that requires training, risk identification, monitoring, mitigation, communication, and closure. The following section outlines some recommendations to monitor and control risks that have been identified.

## Sample Risk Management Plan

### **Communication, Connections, and Cadence**

To enable a risk management culture and timely reporting of risks, the Risk team employs various risk gathering techniques including 1 on 1s with Program leads and Project managers. The following matrix highlights the program ceremonies where risks are discussed at the Program level.

Meeting Name	Purpose	Cadence	Attendees
DMV External Steering Committee Meeting	<p>Governance discussions; updates on progress, impediments, and risks; decisions made and pending; budget discussions; team successes.</p> <p>Active risks that have a high impact and probability are raised as appropriate during this meeting.</p>	Monthly (first of month)	DMV Executive Steering Committee; DMV Steering Committee Support Team (Program Management Leadership Team); External Representatives (e.g., QA, Legal); and Others invited as appropriate
DMV Internal Steering Committee Meeting	<p>Governance discussions; updates on progress, impediments, and risks; decisions made and pending; budget discussions; team successes</p> <p>*Potentially sensitive in nature</p> <p>Active risks that have a high impact and probability are raised as appropriate during this meeting.</p>	Monthly (end of month)	DMV Executive Steering Committee; and DMV Steering Committee Support Team (Program Management Leadership Team)
DMV Strategic Planning Huddle	Discuss strategy and approach to DMV work and ensure a consolidated message prior to QA conversations. Keep in alignment on deliverables. Discuss risks and issues as appropriate. Highlight any public facing work/decisions.	Within the first seven days of each month	DMV Executive Sponsor; DMV IT Lead; Project Managers
DMV Executive Steering Committee Agenda Review Meetings	Review Agenda items recommended by the Executive Steering Committee Support team	1 to 2 days after Executive Steering Committee Support team meeting	Executive Sponsor; Project Managers; other program team members

## Sample Risk Management Plan

Meeting Name	Purpose	Cadence	Attendees
DMV Executive Steering Committee Support Team Prep Meeting	Assemble and review agenda items for Executive Steering Committee.; agree on risks, issues, and decisions to be presented	Bi-weekly (3-4 days prior to Executive Steering Committee Meeting)	DMV Executive Steering Committee Support Team (Program Management Leadership Team)
DMV Project Governance Meeting	Review program health in light of each project; make decisions and decide on escalations; discuss impediments and change control (adjustments to roadmap); share knowledge; discuss dependencies	Weekly	Leads from DMV Project Management Team and Project Managers; QA
DMV Project Management Leads Meeting	Leads from each program area and project team meet to discuss updates and new work within their area. Opportunity to bring up risks, issues, and any assistance needed.	Weekly	Leads from DMV Management Team; Project Managers
Risk and Issues Meeting	Review risk log: identify new risks & categorize; determine which risks needs to be raised to Executive Steering Co. level	As Needed	DMV Project Management Leadership Team (4); Risk Lead; Project Managers & Coordinators

### Reporting Cadence

Most Risks and Issues are recorded and managed in the DMV Project SharePoint; however, there are some DMV projects (e.g., OCM, Quality Assurance, etc.) that maintain project level risk logs. In those cases where the project has an independent risk log, there is an escalation process to escalate risks that require management and visibility at the DMV Project level. The DMV risk log should be the source of record for all DMV Project risks' status.

The DMV Program Health Dashboard is created monthly to share the status of risks to various DMV stakeholders:

**DMV Project Health Dashboard (PHD)** – Risk Management is included in this monthly project status report and is highlighted in the following sections:

- Summary – The top 3 issues / risks are highlighted.
- Risk Management – An extract from the DMV Project risk log is represented by a visual that appears as a bullseye. The risks denoted closer to the center of the bullseye represent those risks that are

## Sample Risk Management Plan

'red risks'. The bullseye is divided into four quadrants that represent risks categorized as strategic, reputational, operational, and program.

- QA Report – An executive summary of the most recent QA report and DMV responses to the QA report's recommendations
- Appendix – More specifics on the 'red' risks that are active.

### Issue Management Approach

#### *Identify Issues*

#### **Create an Issue**

An issue is a current event which has occurred because of a previously unidentified or ineffectively mitigated risk. It is the Project Manager's responsibility to respond to events and ensure that their impact on the success of the project is minimized. Issues require immediate attention and action in real-time and may be a result of risks you identified at the start of the project, or they may have come from an unseen area.

The following are the data fields used for logging an issue in the DMV issue log:

Field Name	Description
<b>Workstream</b>	The name of the workstream which the issue is associated.
<b>Related Risks</b>	The ID of a related risk or risks whose occurrence led to the issue being logged.
<b>Issue Category</b>	Categorization of the issue to allow for sorting, grouping, etc.
<b>Issue Priority</b>	The priority of the issue is selected subjectively from a list of options.
<b>Issue Status</b>	Selection of the most recently updated status of the issue.
<b>Issue Name</b>	A short, but descriptive, name for the issue.
<b>Issue Description</b>	A detailed description of the issue.
<b>Identified Date</b>	The date that the issue was originally identified and logged
<b>Identified By</b>	The name of the individual who first identified the issue. If the "enterer" is not the person who identified the issue, ensure the identifier is aware. Do not use a team name, a single point of contact must be agreed to and entered.
<b>Action / Resolution</b>	Detailed description of the action plan to be executed in order to resolve the issue
<b>Owner</b>	The named individual who is responsible for overall issue planning, execution, and monitoring.

## Sample Risk Management Plan

Field Name	Description
<b>Closure Reason</b>	For an issue that is closed, this column captures a description of the reasoning or circumstances that led to its closure.
<b>Additional Comments</b>	Additional comments and context on the issue that are not summarized in the preceding columns. This can also hold a reason for a downgrade in score for closure.
<b>Project Manager Attention</b>	Please check this box to bring this issue to the attention of the Project Manager.

### *Monitor And Control Issues*

#### **Issue Management Best Practices**

Below are some best practices related to identifying and managing issues.

1. In some cases, issues that arise during the project may be unforeseen. To minimize the effect the issues have on the project, an action plan must be established quickly to get the issue resolved before it grows into a serious problem.
2. Once an issue is identified, the first step is to understand what happened and its impact. If the issue was previously identified as a risk, it is good practice to understand what has already been done to try and mitigate the impact of the issue.
3. Delegate ownership of the action plan to a person who can ensure it is actioned by the action plan.
4. Communicate the issue and the action plan to the appropriate stakeholders to let them know of the problem and the expected timing of the solution.
5. Once you have managed the issue and your plan has been carried out, you simply cannot just forget about it and move on. You must go back to the person, team, or process which had been impacted to see whether your plan of action has been successful in resolving the issue. If it has been resolved, it is also important to understand the ensuing effects in case they pose a further risk to the project. Circling back and re-examining the issue and how you resolved it also gives you information for future risk management strategies to avoid similar events in future projects.

## Appendix 9: Change Management Plan Sample

# Project Change Process

## Summary

The Project Change Process describes managing significant changes to the project scope leveraging a controlled, well-defined process.

## Project Change Process

Change Requests represent significant impacts to the project introduced starting in Project Initiation throughout the remainder of the project. The Change Requests represent significant changes to scope, timeline, budget, or other factors impacting the projects that were not defined in the Project Scope and Charter. It is understood that it is common for new requirements to be identified during a project, especially when a project spans multiple years with potential changes coming from sources such as economic disturbances, technology advancements, or regulatory updates. The team will manage change requests using an approach that is thorough, but easy to use, facilitates prioritization discussions, and minimizes contracting activity.

The team will manage changes as in SharePoint. To initiate a change request, the CapTech team will log a change request (based on an email request or informal communication) and provide a detailed description of the change, statements on organizational impact or need, workload estimate, and recommendations. Upon submission, the PMO team will evaluate the Change Request and decide. If approved, CapTech will document the decision, update project documentation in SharePoint and Azure DevOps (ADO) and add the new scope item to an implementation cycle.

At the end of the Analysis Phase, the CapTech Project Management Team will confirm that all scope is incorporated into SharePoint with full traceability and review with the Client Project Management Team and Business Requirements Reviewers and Approvers. The scope will then be baselined, and the backlog will reflect all requirements as part of the contract unless otherwise changed.

As new requirements are identified beyond the agreed-upon baseline scope, the team will add these requirements to the backlog. The Client will always have the opportunity as part of each story slotting exercise to reprioritize the backlog and replace an in-scope user story with a higher priority user story at no additional cost.

The following describes when required updates to the project charter/scope will be performed. Detailed program scope is set following program plan development and will be formally revisited throughout the program's life. This will apply to new functionality or changes in scope and will not include modifications and/or improvements to existing functionality within scope.

1. The Client Stakeholder identifies a new feature/requirement/piece of functionality to add to the backlog.

## Change Management Plan

2. CapTech creates a user story at a high level with a description, high-level estimate, and high-level impact.
3. If a Client Stakeholder indicates a wish to prioritize a user story(s) beyond the baseline scope, the Client and/or CapTech Project Management Team is notified informally (by email) of a change prioritization.
4. In the Daily Executive Meeting, the Project Management Team reviews the informal new scope with the CapTech Business Analysis Lead, Technical Architect, and any other relevant stakeholders, and determines if the new scope requires more detail and prioritization; If this is a minor change, then it will be fast-tracked past detailed analysis (Step 5) towards the Client Approval Process. **If the Client / CapTech agrees that this should be approved or explored, a Change Request record will be logged and tracked in SharePoint.**
5. If approved by the Client Daily Executive to move forward for more detail, CapTech will develop a detailed description of the proposed change including budget, resource, Client's Department of Technology Impact / LOE, and schedule impact as well as identification of key risk mitigation and/or issue resolution. If Client's Department of Technology will be impacted, they will be asked to attend that CR's Daily Executive Review. The team will mutually agree on a reasonable amount of time and effort to develop this estimate and understand if/what current schedule, cost, or risks will be impacted by this estimate.
6. The Daily Executive meets to review the detailed analysis, approve the CR, and determine with the CapTech Engagement Manager / Program Manager whether this will be approved as new scope and will replace an existing requirement (no cost change request) or require additional funding (Cost Change Request)
7. If approved, the Client commences the internal Client Approval Process for Scope Replacing or additional funding for new functionality or scope. The Client PM will be responsible for seeing change requests through for approvals. The Client Approval Process may be found in the Appendix of the Project Management Plan.
8. If approved, CapTech and the Client complete and sign the formal Change Request Form from the RFP (Appendix H signed by the Program Director and CapTech Engagement Manager)

All change requests will be tracked in SharePoint. The Project Scope and Charter will be revisited and updated if there is any scope change impacting the project direction requiring charter review and updates. In addition, changes to project and workstream scope can be identified by Project Managers or Program Leadership on an ongoing basis.

## Change Control Roles and Responsibilities

Roles and Responsibilities for Project Management Processes can be found in the project's Roles and Responsibilities Matrix.

## Sample Change Request Form

<b>Project Name:</b>		
<b>Prepared by:</b>		
<b>Date:</b>		
<b>Person(s) Requesting Change:</b>		
<b>Change Number:</b>		
<b>Type of Change Requested:</b>		
<input type="checkbox"/> Project Scope Change <input type="checkbox"/> Project Budget Change <input type="checkbox"/> Project Schedule Change		
Project Procurement/Contract Change                Other (specify)		
<b>Detailed Description of Change:</b>		
<b>Reason for Change Requested:</b>		
<b>Effect on Project Cost:</b>		
<input type="checkbox"/> <b>Projected Cost Overrun</b> of approximately %		
<input type="checkbox"/> <b>Estimated Cost Reduction</b> of approximately %		
<b>Effect on Schedule:</b>		
<input type="checkbox"/> <b>Planned Project Completion Date:</b>		
<input type="checkbox"/> <b>New Project Completion Date:</b>		
<b>Additional Remarks:</b>		
<b>Approval</b>	<b>Client Executive Sponsor</b>	<b>Date</b>
<b>Approval</b>	<b>Client Project Sponsor</b>	<b>Date</b>
<b>Approval</b>	<b>CapTech Executive Lead</b>	<b>Date</b>

## Project Change Process Tools

**SharePoint** is used to capture requirements because it can attach all deliverables, documents, artifacts, designs, and other information in one location. The tool also enables the project to connect various

## Change Management Plan

stories and higher-level processes in one location where the project members can click through to view requirements information.

**Azure DevOps (ADO)** is used to plan, track, and manage the iterative process. The tool enables the team to create project workflows, facilitate collaboration in planning, and monitor that the project is running smoothly and predictably. Both tools allow for automatic notification of stakeholders or groups affected by requirements changes, increasing the ability to collaborate on such changes.

## Appendix 10: Configuration Management Plan Sample

# Configuration Management Plan

## DOCUMENT REVISION HISTORY

Date	Version	Editor/Author	Notes
March 2024	1.0		Initial draft

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## 1 Purpose

This document provides the stakeholders of the Client and State Office of Information Technology Service (ITS) with a detailed plan for configuration management.

The scope of this document is limited to describing application configuration items and how they will be managed. Specifics of version control and release management as well as cloud configuration will be included in a separate document. This document is intended primarily for project stakeholders and members of the Client and ITS tasked with the design, development, and management of the project.

## 2 Overview

Configuration Management is the continuous process of identifying and managing changes to the new application and infrastructure through the development process. The Configuration Management Plan defines, documents, controls, implements, accounts for, and audits changes to the various components of this project. The Configuration Management Plan is complementary to the Version Control and Release Management Plan, which defines the methodology for configuration identification and control of releases and changes to configuration items.

## 3 Assumptions

This document is meant to provide structure and context. This document was assessed and updated upon implementation. This is consistent with the Implementation Rollout Plan.

All configurations will be done by CapTech. The configuration will be handed off to the Client before the end of the project.

## 4 Application Configuration Items

The Application Configuration Items include properties files and environment variables that control the behavior of the application.

## 4.1 Internal and External Web Applications

The Internal and External Web Applications will be implemented using the Angular JavaScript Framework. Angular is a JavaScript-based open-source front-end web framework mainly maintained by Google and by a community of individuals and corporations to address many of the challenges encountered in developing single-page applications.

The applications are deployed to Docker containers that are running the Nginx web server.

### 4.1.1 Dependencies

The Angular framework uses npm for dependency management. npm (originally short for Node package manager) is a package manager for the JavaScript programming language. It consists of a command line Client, also called npm, and an online database of public and paid-for private packages, called the npm Registry. The Registry is accessed via the Client, and the available packages can be browsed and searched via the npm website. The package manager is managed by npm, Inc. The Registry instance is managed by ITS in the form of the Enterprise Artifactory instance. Artifactory provides the ability to scan dependent libraries for known vulnerabilities.

The file package.json defines the npm packages required by the application. It is stored in source code control along with the application code.

### 4.1.2 Application Settings

The Internal and External Web Applications require configuration for items such as instrumentation keys and Okta Configuration. As mentioned, the applications run within Docker containers. Kubernetes is a cluster management and orchestration technology and is used to manage the Docker containers.

Configuration is provided to the applications using Kubernetes environment variables, and Kubernetes shared secrets.

Field	Description
the applicationVersion	The version of the application deployed.
...	...
...	...
...	...

### 4.1.3 Docker File

At the time of this document the base Docker image that is used is “nginx:1.17.8”. No other software other than the Angular code is installed on the Docker image.

## 4.2 APIs

The Application Programming Interface (APIs) are implemented in “.NET Core”. .NET Core is a free and open-

source, managed computer software framework for Windows, Linux, and macOS operating systems. It is a cross-platform successor to .NET Framework. The project is primarily developed by Microsoft and released under the MIT License.

The API Service processes run in Docker containers orchestrated by Kubernetes.

### **4.2.1 Dependencies**

NuGet is used to manage dependencies for the .NET Core based API Service. NuGet is a free and open-source package manager designed for the Microsoft development platform (formerly known as NuPack). The package manager is provided by Microsoft. The registry is managed by Artifactory in the form of the Enterprise Artifactory instance. Artifactory provides the ability to scan the depended libraries for known vulnerabilities.

The Visual Studio project file, <ProjectName>.csproj defines the dependencies used by the service. This file is checked into source code control along with the application code.

### **4.2.2 Application Settings**

The APIs need several items configured. These will take the form of Kubernetes environment variables and Kubernetes shared secrets.

Field	Description
ApiKey	The API key which the delivery report callback must provide with each call.
...	...
...	...
...	...

### **4.2.3 Document Templates**

Document Templates are tokenized Microsoft Word Documents stored in the Git repository along with the API that utilizes them.

Maintenance of these files is a shared responsibility between Development and Non-Development personnel. At the time of this document the process to make modifications to these templates is still to be determined. For additional detail, please see Deliverable 52: System Administrators' Manual, Section 3.8.1: Documents Templates.

### **4.2.4 Docker File**

At the time of this document, the base Docker image that is used is "mcr.microsoft.com/dotnet/core/aspnet:3.1". No other software other than the API Service .NET executables are installed on the Docker image.

## 4.3 Database

### 4.3.1 Schema Objects

The Database Schema Model will be represented by a DACPAC. DACPAC (Data Tier Application Package) is a single file which contains a database model (i.e., all files represent database objects). It is a binary representation of a database project compatible with SQL Server Data Tools.

Schema objects are defined in SQL files in the bis-db git repository. A Visual Studio project is maintained that takes the SQL files and creates a DACPAC. This DACPAC is versioned and stored in an artifact repository. The artifact repository will be a container on an Azure storage account.

When a new version of the database model is needed, the automated process to deploy the code will execute SQL Server Data Tools (SSDT) with the DACPAC against the database. SSDT calculates the deltas between the database and what is defined in the DACPAC. The needed changes will be applied to the database to bring it in line with what is represented in the DACPAC.

### 4.3.2 Lookup Data

The details for how lookup data are maintained can be found in Section 3.3.1 of Deliverable 52 – System Administrator Manual.

## 5 Infrastructure Configuration Items

### 5.1 Layered Approach

See section 5.1 of the Deliverable 31: Version Control and Release Management Plan for details of the layered approach to the cloud infrastructure.

The configuration parameters for each environment for that layer are checked into the Git repository in which the Layer is defined. The path is: `/config/<env>`. The files are used by Terraform and come in the form of TVAR or JSON files.

### 5.2 Common Layer Configuration

#### 5.2.1 Terraform State

These are the fields that are needed by Terraform to store the state of the layer.

Field	Description
subscription_id	The subscription ID is a GUID that uniquely identifies your subscription to use Azure services.
resource_group_name	Resources groups are logical containers for a collection of resources that can be treated as one logical instance.

environment	The Azure environment. For the purposes of BIS this is always usgovernment.
storage_account_name	The name of the Azure storage account that contains the Terraform state.
container_name	The name of the container in the storage account that contains the Terraform state.

## 5.2.2 Azure Connection Information

Each pipeline that is responsible for deploying a Layer requires an Azure DevOps Pipeline Service Connection. This service connection uses the credentials from the Azure account to connect to Azure to create, update, and read cloud resources.

The naming convention for the Service Connections is '*Bis\$(environment)Automation*', where \$(environment) is one of the defined layer Os (prod, dev, qa1, qa2, preprod).

## 5.3 Layer 0 Configuration

### 5.3.1 Network Configuration

Layer 0 is responsible for configuring the Azure Virtual Networks. For each Azure Region that is configured for Layer 0, there is an address space that is specified.

There is also a "*public\_address\_access*" value that determines what IP address range can access the Azure Virtual Networks. This value is the IP address of the VPN that is used by development and operations to access the cloud resources.

### 5.3.2 Kubernetes Scaling Parameters

Layer 0 is responsible for configuring and deploying the Kubernetes cluster. The number of nodes and the Virtual Machine type in which each of the nodes runs are configured here.

## 5.4 Layer 0b Configuration

Layer 0b is responsible for deploying Azure Data Factory (ADF) and the virtual machine (VM) for the self-hosted integration runtime (IR) and configures the Sybase ODBC driver on the VM. Steps for configuring IR and key vault access are manual and completed outside of Layer 0b. Additional configuration will be part of the bis-adf-migration-deploy pipeline, which is also source controlled.

## 5.5 Layer 1 Configuration

Layer 1 only requires the configuration to point to the state of Layer 0. Layer 0 contains outputs that are read by Layer 1 and used in the execution of the Layer 1 terraform script.

## 5.6 Layer 2 Configuration

Layer 2 requires the configuration to point to the state of Layer 1. Layer 1 contains outputs that are read

by Layer 2 and used in the execution of the Layer 2 terraform script.

### 5.6.1 Component Versions

The file *image-versions.json* in the Layer 2 Git repository contains a map of component to version identifiers. The components are each of the API services, the Internal and External Web Apps, and the Database configuration. The Layer 2 deployment uses these values to configure the appropriate version of that component.

## 6 Change Process

All configurations discussed in this document are checked into source code control and are versioned. Any developer with access can branch and make changes. However, a Pull Request is required to merge those changes into the main development branch which will be deployed through the software development lifecycle.

The Pull Requests require at least two individuals to approve. One of those approvers needs to be a lead.

More details on this process are provided in Deliverable 31: Version Control and Release Management Plan – Section 4: Version Control.

## 7 Change Visibility

This section will reference the Version Control and Release Management document, how deployment events will be logged, and how each component can be interrogated to determine the current version deployed.

### 7.1 Application Insights

The Application will utilize Azure's Application Insights. Events are thrown from the application and are collected by Application Insights for visibility. For more detail on how the Application Insights are used, see Deliverable 23: Technical Solution Architecture, Section 4.5: Logging and Monitoring.

The deployment pipelines will update configuration settings to add version metadata to Application Insight events.

### 7.2 Version Status Endpoint

The version status of all the components of the system will be stored in an Azure Storage Account for the environment. A file for the deployment will contain the name of the component (DB, Internal Web Application, External Web Application, APIs, Cloud Layers) and the version identifier for that component.

## 8 Inputs and Outputs / References

The following deliverable documents are directly related to the Configuration Management Plan:

- Deliverable 11: Implementation Rollout Plan
- Deliverable 23: Technical Solution Architecture
- Deliverable 31: Version Control and Release Management Plan

## Appendix 11: Quality Management Plan Sample

# Quality Management Plan

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## Purpose

This document represents the master QA test plan for the [Client] project. It outlines a detailed test strategy that specifies the goals, general test approach, test tools, test metrics, deliverables and the QA team structure. It serves as the basis of detailed test planning to ensure requirements of the system are met to fruition based on the size and complexity of the project.

## Overview

The main quality objective of testing shall be to assure that the system meets the requirements and quality specifications as defined in this test plan. Ultimately, QA Testing shall be considered a success when all exit criteria are satisfied.

### Primary Objective

To ensure that the application and ancillary systems or components including internal and external interfaces all function according to the designed solution and meet business requirements. The QA testing team, in collaboration with [Client], shall work together to execute the test strategy to reduce the risk of defects moving to production, and [Client] is confident in the successful operation of the platform.

### Other Objectives

Additional objectives are:

- Define the activities required to prepare for and conduct Functional, Regression, User Acceptance and other types of Testing.
- Communicate to stakeholders the Test Strategy, Testing Process, and Defect Management Process.
- Define the Test Deliverables and responsible parties.
- Confirm that the system works as expected.
- Find defects early and minimize post-production issues which saves costs.
- Provide information about quality and progress on testing.
- Gain confidence that business requirements are met.
- Thoroughly test the system effectively and efficiently.
- Optimize the Testing process where possible.

## Requirement Process Flow

The fundamental foundation for most Quality Assurance activities is the movement of a Requirement from Inception to completion. This process flow and the accompanying description chart provides a perspective of that foundation.

To achieve the quality and completeness objectives of the project, quality Requirements are fundamental. Throughout the Requirement process, it is the responsibility of all performers to improve

## Sample Quality Management Plan

and ensure the quality and completeness of each individual Requirement. The earlier issues and ambiguity are identified and eliminated, the lower cost of the resolution.

[Diagram Redacted]

Step	Name	Azure DevOps (ADO) Status	Performer	Cycle Week(s)	Description
1	Create Requirement; trace to User Story & HLBR	In Progress; Internal Review; IR Follow Up	BSA Team	1-4	The BSA Team creates Requirements based on the High-Level Business Requirements and User Stories. This is performed in collaboration with the Client Analysts and SMEs. When initial collaboration is complete, the BSA Team performs internal reviews to confirm the quality and completeness of each Requirement. Upon completion of internal review, the Requirement advances to external review by the CLIENT Analysts and SMEs.
1.1	Collaborate to create Requirement	In Progress	Client Analysts & SMEs	1-4	CLIENT Analysts and SMEs attend meetings, answer questions, and provide insight to the BSA Team as Requirements are being created and documented.
2	Review & approve Requirement	External Review	CLIENT Analysts & SMEs	5-6	Upon completion of Requirement documentation, the CLIENT Analysts and SMEs review the Requirements and approve when the group is satisfied the Requirements are complete and accurate.
2.1	Collaborate to update Requirement & achieve approval	External Review	BSA Team	5-6	Throughout CLIENT Analyst and SME review, the BSA Team conducts review meetings, answers questions, and updates Requirements.
MS	Milestone: Requirements Complete	Ready for Dev	BSA Team	End of 6	When each Requirement is complete and approved, it is marked Ready for Dev. All Requirements should be approved by the end of Cycle week 6.
3	Develop application code to satisfy Requirement	In Progress Dev; Ready for Demo	Development Team	7-10	The Development Team builds and unit tests application code for each Requirement. When the code for a Requirement is initially complete, it is made available for demonstration to stakeholders.

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					<p>A key feature of this step are functionality previews to the BSAs and CLIENT Analysts and SMEs. Because this is the first opportunity for these stakeholders to view the system, it is likely Refinements will be generated.</p> <p>The Development also resolves Defects and Refinements as bandwidth allows, which is not represented in this process flow.</p>
4.1	Smoke Test application code	Ready for QA	QA Team	7-10	Upon the Developer(s) being satisfied with code quality, the code is made available to QA for Smoke Testing, informal validation of the code without formal Test Case execution.
MS	Development Complete	Ready for QA	Development Team	End of 10	When the application code for each Requirement is complete, it is marked Ready for QA. All development should be approved by the end of Cycle week 10.
5	Create Functional Test Cases based on Requirement	N/A	QA Team	7-10	<p>The QA Team begins creating Functional Test Cases when Requirements are complete and approved. All Test Cases should be complete by the end of Cycle week 10.</p> <p>QA is responsible for validating the completeness of Requirements while creating Test Cases. If a Requirement lacks clarity, QA engages the BSA Team to address the issue. Minor issues can be addressed with Requirement changes when approved by the Analyst and SME. Significant issues generate a Refinement. These steps are not represented in this process flow.</p>
6	Execute Functional Test Cases	In Progress QA	QA Team	11	The QA Team executes functional Test Cases on the code during week 11.
6.1	Report issues	In Progress QA	QA Team	11	As issues – defects, refinements, or enhancements – are identified, the QA Team reports them.
6.2	Resolve issues	In Progress QA	Development Team	11	As issues, primarily Defects, are reported, the Development Team is primarily responsible for resolution. The rest of the broad team is engaged as

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					needed. Refinements are addressed based on Priority and available bandwidth.
6.3	Collaborate to resolve issues; retest	In Progress QA	QA Team	11	The QA Team collaborates with the Development Team and other performers to resolve issues. Upon completion of development resolution, QA retests the Test Case and Requirement.
6.4	Collaborate to resolve issues; clarify Requirements	In Progress QA	BSA Team	11	The BSA Team collaborates with the Development Team and other performers to clarify Requirements and resolve issues. BSAs lead resolution of Refinements.
6.5	Collaborate to resolve issues; clarify need	In Progress QA	CLIENT Analysts & SMEs	11	The CLIENT Analysts and SMEs collaborate with the BSA and other performers to clarify business needs and resolve issues. If Refinements are resolved, CLIENT must review and approve Requirements modifications.
MS	Functional Testing Complete	Ready for UAT	QA Team	End of 11	When all Functional Test Cases for each Requirement are validated, the Requirement is marked Ready for UAT. All Functional Test Cases should pass by the end of Cycle week 11.
7	Create User Acceptance Test Cases	N/A	UAT Team	7-11	<p>The UAT Team begins creating User Acceptance Test Cases when Requirements are complete and approved. All Test Cases should be complete by Wednesday of Cycle week 11.</p> <p>UAT is responsible for validating the completeness of Requirements while creating Test Cases. If a Requirement lacks clarity, UAT engages the BSA Team to address the issue. Minor issues can be addressed with Requirement changes when approved by the Analyst and SME. Significant issues generate a Refinement. These steps are not represented in this process flow.</p>
8	Execute User Acceptance Test Cases	In Progress UAT	UAT Team	12	The UAT Team executes User Acceptance Test Cases on the code during week 12.

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8.1	Report issues	In Progress UAT	UAT Team	12	As issues – defects, refinements, or enhancements – are identified, the UAT Team reports them.
8.2	Triage issues; collaborate to resolve issues	In Progress UAT	QA Team	12	As each issue is reported, the QA Team leads Triage, determining the root cause and initiating resolution. This requires collaboration of the entire, broad team.  The Triage Process Flow (section 4.3) describes the initial part of this step in more detail.
8.3	Resolve issues	In Progress UAT	Development Team	12	As issues, primarily Defects, are reported, the Development Team is primarily responsible for resolution. The rest of the broad team is engaged as needed. Refinements are addressed based on Priority and available bandwidth.
8.4	Collaborate to resolve issues	In Progress UAT	UAT Team	12	The UAT Team collaborates with the QA Team and other performers to resolve issues. Upon completion of development resolution, UAT retests the Test Case and Requirement.
8.5	Collaborate to resolve issues; clarify Requirements	In Progress UAT	BSA Team	12	The BSA Team collaborates with the Development Team and other performers to clarify Requirements and resolve issues. BSAs lead resolution of Refinements.
8.6	Collaborate to resolve issues; clarify need	In Progress UAT	CLIENT Analysts & SMEs	12	The CLIENT Analysts and SMEs collaborate with the BSA and other performers to clarify business needs and resolve issues. If Refinements are resolved, CLIENT must review and approve Requirements modifications.
MS	UAT Complete	Accepted	UAT Team	End of 12	When all User Acceptance Test Cases for each Requirement are validated, the Requirement is marked Accepted. All User Acceptance Test Cases should pass by the end of Cycle week 12.

This process flow addresses the steps necessary to define and satisfy functional Requirements. Data Requirements are satisfied using the same process. The performing teams change as follows:

Functional	Data
CLIENT Analysts & SMEs	CLIENT Data Team, supported by CLIENT Analysts & SMEs

## Sample Quality Management Plan

CapTech BSA Team	CapTech Data Team Analysts
CapTech Development Team	CapTech Data Team ETL Developers
CapTech QA Team	CapTech Data QA Team
CLIENT UAT Team	CLIENT Data Team

## QA Process and Methodology

QA team activities carried out during different phases of a cycle are described below:

Pre-Testing	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Post-Cycle
Test Preparation	Sprint 1 Unit Testing		Sprint 2 Unit Testing		Functional Testing	User Acceptance Testing	Test Closure
Test Planning			Test Development		Test Execution		Test Automation
Requirements Review & Analysis	Test Strategy & Scenarios	Draft Test Cases/Scripts	Refine Test Cases/Scripts		Test Results Analysis, Validation & Reporting		
High Level Functional Testing			Defect Management		Regression and Re-testing		Regression Testing
Test Setup/Staging Data			Test Support				

Testing Phase	Main QA Task	Description
Requirements Analysis	Understand Requirements	Test basis (various requirements documentation and user stories) collection, review and analysis to understand them.
Test Planning	Create a Test Plan	Test plan creation and updates outlining the testing scope and strategy that will be carried out during testing cycles.
Test Reviews	Review Work Products	Execution of peer, supervisory, technical and audit types of reviews on various work products like Test Plans, Test Specifications, Test Scenarios, Test Cases, Test Reports etc.
Test Development	Create Test Scripts	Translation of business requirements within user stories into test procedures, test scenarios, test cases, test datasets, test scripts that will be used.
Test Environment Setup	Configure Test Environment	Ensure that all systems under the test and components are properly set up for the testing to begin.
Test Execution	Execute Test Scripts	Test scripts are executed at different levels of testing.
Defect Management	Manage Defects	Monitoring, Reporting and Tracking of defects found during testing
Test Results Analysis	Generate Test Reports	Once testing is completed, testers generate metrics and make final reports of their test effort and assess whether the tested system/functionality meets quality objectives.
Test Support	UAT assistance	Teach process, define objectives, answer questions, provide support, help to quickly resolve issues, help with facilitation and

Testing Phase	Main QA Task	Description
		coordination, triaging and reviewing UAT defects, capture and prioritize feedback for potential system improvements.
Test Closure	Perform Test Closing Activities	Once the test meets the QA exit and acceptance criteria, the activities such as identifying suitable Regression Tests, updating test cases, gathering test artifacts, capturing the key outputs, lessons learned, results, logs, documents related to the project are archived and used as a reference for the next cycle.

## Test Approach

Test Level	Test Environment	Responsible Team
Unit Testing	Dev	CapTech Dev
Functional Testing	QA #1	CapTech QA
Data Validation, Conversion, & Performance Testing (Cycles, Regression)	QA #2	CapTech Data QA CapTech QA CapTech Dev CLIENT Testers
Regression Testing	QA/Test Automation	CapTech QA Automation
User Acceptance Testing (Cycles, Manual Regression)	QA #1 (Cycle 1&2) Pre-Prod (Cycle 3+)	CLIENT Testers
Other Levels of Testing (Accessibility, Compatibility, SIT)	QA #1	CapTech QA CapTech QA Automation CapTech Dev
Other Levels of Testing (Performance, Security, Accessibility, Compatibility, SIT, Internationalization, UAT End-to-End)	Pre-Prod	CapTech Dev CLIENT Testers
Post Implementation Validation (EDI, Data Conversion & Migration)	Prod	CapTech Dev CapTech QA Trading Partners CLIENT ITS and CLIENT end-users

[ADDITIONAL DIAGRAM REDACTED]

*Note: The Test Levels described in this section are fundamental to achieve quality assurance of 2.0. Most of these tests will also be performed to achieve quality assurance of the two earlier implementations, 1.0 and EDI 3.1. Additional environments are being implemented to support QA and post-implementation validations. Concurrent testing will be performed by different test teams in different environments. For example, in October/November 2020, one test team will continue testing Cycles 8 and 9 while another*

*test team will perform End-to-End Testing for 1.0. The details regarding each 1.0 and EDI 3.1 environments and test plans are documented in this document and other deliverables. CLIENT testing of legacy system changes in support of 1.0 will also be executed in the final Cycle of 1.0 development. Testing of system changes in late summer/early fall 2020 to support the initial release of EDI 3.1 will also be executed in the final cycles of EDI 3.1 development. Defects for these CLIENT-owned User Stories will follow the same process as those for CapTech developed functionality.*

## Unit Testing

The system shall be unit tested by the CapTech Development team during the development phase of a cycle. Unit Testing is the first level of testing that occurs in a development environment where individual units or components of the system are tested by a developer to ensure that new and/or changed code is functioning correctly as specified by the requirements. This effort is an undocumented informal process but is necessary in order to increase the initial quality of the system by saving the costs of defects through early detection. Once development is complete and developers are satisfied with Unit Test results, the system build shall be deployed to the test environment for the next level of testing, and the status of the user stories in scope for testing is changed to “Ready for QA.”

## Functional Testing

This level of testing is managed and performed by the CapTech QA team for a week to verify that each function of the system is operating in conformance with requirement specifications documented in the user stories. Functional Testing includes other types of tests performed separately or in conjunction to fully and properly validate functionality. There are three primary types of tests performed as part of Functional testing that are:

### *Integration Testing*

Integration testing is performed to validate that individual modules of the system work correctly when combined and tested as a group. This type of testing focuses mainly on the interfaces and flow of data between the different modules, sub-systems, or external systems implemented in a given cycle. The inputs used to test the interfaces between the modules is shared data and functionality is validated by checking the outputs and system response as that data moves through all applicable modules. The test scenarios are executed to simulate valid and invalid processes across modules to verify that the system functionality is designed to work in correct cohesion with acceptable results while uncovering any issues that may otherwise not be found from just testing the modules separately.

### *System Testing*

System testing is performed to verify the deployed system meets the specified requirements in the associated user stories for a given cycle. This testing is based on requirements and functionality in scope for a cycle that is tested by providing appropriate inputs then verifying the outputs by comparing the expected results to actual results. The inputs used for testing functionality may be valid inputs that represent positive test scenarios or invalid inputs that represent negative test scenarios. The tester checks for desired or acceptable outputs and identifies any problems by executing formal documented test procedures with the selected inputs created as a test case. The inputs may cause the system to malfunction or return unacceptable information that need to be fixed by the development team then re-tested. When results are deemed acceptable then that validates that functionality is working as intended.

#### *Data Validation, Conversion and Report Testing*

Data Validation and testing for migration/conversion shall be performed in QA2 and legacy source systems to validate the accuracy and quality of data conform to business rules and specified mapping requirements. Migration/conversion ELT (extract-load-transform; see details in the Conversion Plan deliverable 12) processes run to move data from legacy source systems to the target database. Schemas, database tables, columns, and associated data fields deployed during this process are validated with written structured query language (SQL) concepts, test queries, and verification between source and target systems. Operational report testing shall be performed in front-end Pentaho business intelligent application. Reports are tested to validate layouts, formatting, calculations, data and other attributes based on business requirements.

This initial conversion data validation is led by the CLIENT Data Team during Cycle Week 12, during which the data is Read-Only. Defects discovered and logged during Week 12 are included in the current cycle and UAT Exit Criteria. This is the first of three types of migration/conversion validation.

#### *Functional Testing using Converted Data*

During Week 12 conversion data validation, the second type of migration/conversion validation is performed. CLIENT testers compare conversion data using the application to the legacy applications, identifying unexplainable differences between the legacy data and the conversion/migration results. This testing may continue into the following week; if this validation continues into the following week, defects discovered the following week apply to the next Cycle.

Following Week 12, the third type of migration/conversion validation is performed and may continue until the conversion in the environment is overwritten by conversion execution for the next cycle. This is execution of functional UAT cases in the environment containing converted data. Defects discovered and logged during these tests are not included in the cycle that closed In Week 12; they are included in the following cycle. Static snapshots of legacy systems for verification of migration will be fully available as soon as Cycle 8.

#### *EDI Testing*

Information exchanged between the system and Electronic Data Interchange (EDI) sources shall also be validated. EDI is a process that involves exchanging business documents/data between external entities or trading partners. Testing shall be performed with State Insurance Fund (SIF) to validate the integration of existing eClaims data, and to validate the upgrade of CLIENT's existing IAIABC Claims EDI 3.0 platform to the 3.1 version CLIENT Trading Partners shall also be onboarded to test and confirm that the transmittal of data is working appropriately.

#### *Mobile Testing (Manual)*

CapTech will deliver and test mobile-friendly design for pages of 60 User Stories, for testing on up to four devices (e.g., iPad Pro running the current iOS version, Samsung Galaxy 7 running the current Android version). The entire system will be responsive, but CapTech will limit testing for mobile platforms for 60 User Stories / pages that will be most used in a mobile scenario; these User Stories will be primarily, probably entirely, external functions. The four devices will be determined by agreement between the CLIENT Project Director and the CapTech Program Manager two months prior to Mobile Testing execution. Mobile Testing execution will be performed during Functional Testing of the Cycles for which the 60 User Stories are slotted. CLIENT is expected to perform similar testing during UAT of those Cycles,

Regression Testing, Compatibility Testing, and End-to-End Testing. Slotting will likely place these User Stories equally distributed across three to five consecutive Cycles.

## Regression Testing

CapTech and CLIENT will maintain a suite of manual and automated Regression Tests that verify expected behavior of previously deployed functionality following the deployment of new code to the test environment until final implementation. These Regression Tests will be transitioned to CLIENT after the System goes live in Production.

Regression testing is performed on the system to ensure that existing features that have already been validated in previous cycles have not been adversely affected by newly developed features and functionality or by other changes like defect fixes. This effort is performed by selecting and re-executing test cases that have been prioritized to cover critical and frequently used functionality including areas of high business impact.

Regression Tests shall be executed regularly, and ideally, at the end of every cycle when modifications have been made to the system. If defects have been introduced or uncovered due to Regression Testing, the functionality shall be re-tested after the issue is fixed by the development team. A final Regression test will also occur prior to production release, verifying the expected functionality of the system following any code review changes implemented at the end of the development cycle.

Compatibility testing to ensure the system works as designed on other browsers shall be incorporated as much as possible into Regression Testing for automation. After every cycle close, specific functional test cases shall be identified as suitable for Regression Testing and then added to a Regression test suite. Defects and Refinements recorded during Regression Testing are applied to the next Cycle. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability. All Exit Criteria and Quality Objectives apply to those Defects and Refinements for that Cycle.

### *Automated Regression Testing*

The Regression test cases shall be automated wherever possible to make the test execution effort efficient, reliable and consistent while saving time and cost. The QA team will identify the Regression test cases to be automated at the end of each testing cycle. The automation framework will follow a Page Object Design for ease of maintenance and reusability. The Automation tests will be integrated with the build deployment process and will be part of the cloud service or Azure pipeline used in the Development build process. When a build is deployed, a subset of the Automation scripts will run to smoke test the build before releasing it for manual testing. The Automation scripts will also be executed during the regression phase of test execution as part of the QA process. The Automation Testing Tool (Protractor) supports cross browser testing and automation scripts will be executed in the browsers below to support compatibility testing:

1. Chrome (latest version)
2. Edge (chromium engine version)
3. Firefox (latest version)

#### 4. Safari (latest version)

A detailed Automation Test Results report will be provided to the QA Test Team/Lead. Automation test results shall be populated in AZURE DEVOPS (ADO) and test script failures will also be logged and tracked in AZURE DEVOPS (ADO) as issues. These issues will be vetted by the Automation team who check for failures due to data, functionality, environment or test script issue. If it is determined that the issue is a valid defect, it will follow the defect triage and defect management process. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability.

Test Cases implemented for automation are communicated to the CLIENT UAT team to facilitate identification of overlap between Automated Regression tests and UAT Regression tests.

#### *CLIENT Functional Regression Testing*

CLIENT Functional Regression Testing will be performed by the CLIENT Test Team following each Cycle UAT. This testing may continue until the next Cycle's UAT. UAT Regression Testing will utilize prior Cycles' UAT cases. CLIENT Functional Regression Tests are executed in the Pre-Prod environment. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability.

CLIENT UAT coordinators identify Test Cases based on business criticality to automate for regression testing through ITS QA staff using Microfocus UFT.

Regression Testing will be coordinated between the CapTech QA Team and the CLIENT UAT Team to realize efficiencies.

## User Acceptance Testing

User Acceptance Testing (UAT) is the last level of testing of the system that shall be performed by suitable Client Testers identified by CLIENT that shall include Business Testers, External Users, Business Analysts, and CLIENT ITS Subject Matter Experts and Testers. CLIENT's UAT Team will be responsible for developing and executing UAT activities and providing objective feedback on the system's functionality, based on functional requirements. UAT shall confirm that the system, in scope of testing, satisfies and supports user needs, requirements and desired business processes. The selected personnel shall define end user real-world test scenarios and cases for a UAT plan to be executed during the test cycles (and eventually during End-to-End testing) to validate all business flows and processes including verifying the performance of critical business functions implemented in the system. CLIENT testers shall also confirm the correctness and integrity of business data within the system and focus on identifying test cases centered around business process activities to make sure the system will work in context of the organizations business needs. The UAT test cases and final outcomes from testing shall be documented and shared with or accessible to CapTech's QA team. UAT shall be led and facilitated by CLIENT, however, CapTech's QA team shall be available for assistance and support, and to monitor the progress of test execution and statuses of defects for reporting.

## Other Levels of Testing

In conjunction with the primary test levels defined above, the following types of tests shall also be executed at various points during the testing schedule. The timing of these tests is defined in the master

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Workplan; a user-defined field allows the viewer to filter the Workplan for only the test activities. Defects and Refinements recorded during Other Levels of Testing are applied to the next Cycle. All Exit Criteria and Quality Objectives apply to those Defects and Refinements for that Cycle.

### *High-Level Functional Testing (Smoke Testing)*

Prior to Functional Testing commencing in a cycle, two development sprints shall occur that will each last two weeks. The BSA and QA team smoke test the system to ensure that what was built is functional and meets the specifications described in the user stories. The goal of smoke testing is to quickly check for any immediate and apparent defects by trying to ‘break’ the system by randomly testing the system’s critical functionality and to make sure it is ready for formal major testing. This method is ad-hoc in nature and helps give a quick indication of whether the building is successful and ready, or if there are any imminent major issues. A small subset of Automated Regression Tests is also run to smoke test the system and validate basic functionality like login, page loads, etc. Smoke testing helps reject a badly broken system so that the QA team does not waste time performing exhaustive and rigorous tests on an unstable system allowing the development team to quickly resolve those issues. Once the BSA’s verify that the designed functionality aligns with their requirements with no major issues, the applicable user stories are assigned to the QA Lead/Tester and the status is changed to “In Progress QA.”

### *Performance Testing*

CapTech’s implementation team shall conduct performance testing throughout the project. Performance testing ensures the system will perform well under its expected workload with the goal of eliminating any performance bottlenecks with a focus on speed, stability and scalability. During the different cycles, performance tests shall be performed on specific components of the system. When most components are in place, a full performance test shall be performed on the system. This testing shall include integration of the system with third party components. See the Performance Specification Deliverable for more information.

CLIENT will also execute Performance Testing for critical business functionality, both internal and external, prior to major releases using MicroFocus LoadRunner.

*Note: As of March, the Performance Specification DED is complete. The Performance Specification Deliverable is pending completion and approval this month.*

### *Security Testing*

The CLIENT team, CLIENT ITS, and CapTech shall organize security testing; CLIENT and ITS, possibly engaging a third-party, will execute security testing that includes validation of security design, security verification and penetration testing. CapTech’s implementation team shall provide code, documentation and support as needed; and recommends that CLIENT engage with an independent third party for the execution of penetration testing. Security testing ensures that the system is free from any vulnerabilities, threats, and risks that may cause a big loss or disruption to system functionality or data. After core functionality is in place and throughout the project’s life, security scans shall be run periodically until near the end of implementation when a full security test shall be executed. The goal of this testing is to identify all possible vulnerabilities in the system and to measure its potential susceptibilities, so the system is not exploited and doesn’t stop functioning. It also allows developers to fix possible security risks detected in the system through coding. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability.

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Two Security Tests are scheduled. An initial Security Test will be performed at the end of Cycle 5. A final security test shall be performed when the system is considered code-complete, and the majority components must be in place to warrant a valid test.

CLIENT plans to execute security testing at the following times (See [Project Workplan](#) for specific dates of testing.):

- End of Cycle 6
- End of Cycle 9
- During end-to end

### *Usability Testing*

Usability testing shall also be performed on the system prototypes by internal and external system users to validate that the prototype meets user expectations through appropriately spaced rounds of iterative tests. These tests will measure user success, task duration and overall system usability. The Experience Design Team shall lead the effort and provide a test plan document that details the planned activities. This test schedule must be determined. See the User Experience Design Plan Deliverable for more information.

### *Accessibility Testing*

To ensure that the system has conformance with the requirements of Titles II and III of the Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act of 1973, accessibility (A11y) testing shall be performed. This testing shall be performed by CapTech QA and a CLIENT Accessibility SME using automated and manual testing methods to verify compliance. Manual testing methods such as the use of screen readers, keyboard-only navigation, and NonVisual desktop Access (NVDA) or VoiceOver in Google Chrome or Safari shall be used to validate that web user interfaces are navigable and meet accessibility standards. Automated testing tools used for A11y testing are defined in the testing tools section. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability.

Accessibility Testing is scheduled at the following times (See [Project Workplan](#) for specific dates of testing.):

- End of Cycle 3
- End of Cycle 6
- End of Cycle 9
- End of Cycle 12
- End of Cycle 15
- End of Cycle 18

### *Internationalization Testing*

The system shall be designed to support the translation of these top eight non-English languages spoken by individuals with Limited English Proficiency (LEP) in the state of to be in adherence with CLIENT Language Access Policy –

1. Spanish

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2. Chinese
3. Russian
4. Polish
5. Italian
6. Haitian-Creole
7. Bengali
8. Korean

CapTech shall integrate this content into the application and, as part of normal Functional Testing, will validate the application supports the general business need. Internationalization (i18n) testing, validating the eight languages are supported and the translations are appropriate, shall be performed by CLIENT to confirm that the system successfully adapts to the chosen users desired language for content that has been identified and built for multilingual translation. i18n testing ensures that the systems functionality is not broken, and applicable feature messages or document content are properly externalized when used in different languages and locale without any changes. Internationalization Testing will be scheduled following (a) User Story fulfillment and (b) the availability of external functionality for review by an external vendor that supports CLIENT with translation. This testing will be performed every 3-6 cycles starting when (a) and (b) in the prior sentence are fulfilled. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability.

### *Compatibility Testing*

Compatibility Testing shall be performed by CapTech's QA team to check whether the system can run on different applicable hardware like desktops, laptops, tablets and mobile smartphones, and applicable operating systems and web-browsers in CLIENT's network environment. End-users should be able to access and easily navigate the system using identified hardware devices, applications and operating systems including touch-screen optimized devices that apply. Specifically, the system shall be tested on all web-browsers that comprise 2% or more of the user base according to CLIENT website analytics. These supported browsers are assumed to include the following:

1. Chrome
2. Edge (chromium engine version)
3. Safari
4. Firefox
5. Internet Explorer 11 (for OnBoard 1.0 only)

CLIENT users will also perform compatibility testing using Apple devices, possibly using BrowserStack to facilitate testing. Like regression testing efforts, Functional Test Scripts of core functionality for internal and external users will be selected for Compatibility Testing. Severity and Priority standards are used to address any issues during testing. Triage and resolution begin immediately according to standards and resource availability.

**NOTE:** Only current compatibility shall be in scope and tested. Backwards compatibility is considered out of scope for testing.

#### *End-to-End Testing*

End-to-End Testing shall be executed after all Cycle Functional Testing and UAT have been completed. The purpose of end-to-end Test is to exercise a complete production-like scenarios by using production like data in a test environment that mirrors and simulates real-time settings. End-to-End Testing shall occur in two phases and be performed in parallel by CapTech and CLIENT as defined below:

##### *A) System Integration Testing (End-to-End)*

System Integration Testing (SIT) shall be performed by CapTech's QA team after completing all test cycles successfully to verify End-to-End business functions for the comprehensive system including co-existing with other systems available in the test environment. The system shall be evaluated for compliance with all specified requirements up to this point, and Automated Regression Testing shall be performed to re-verify functionality already tested during the test cycles. This testing shall also validate that all system module dependencies are functionally correct, and that data integrity is maintained between separate modules for the entire solution including backend systems. In addition, SIT shall provide information to stakeholders about overall system quality and the risks, if any, of releasing the system into production. High level requirements/tests based on complexity and risk assessments shall be validated manually and via automation. The modules in the system shall be tested individually first, then combined to validate interactions between the modules and sub-systems. A final Regression Test shall be performed as the last test in the test approach process after all other tests have been executed to satisfaction.

##### *B) User Acceptance (End-to-End) Testing*

After completing all test cycles and as part of UAT, End-to End (E2E) Testing of the complete system shall be performed by CLIENT Testers who use the system in an environment that mirrors production to mimic real-world use and scenarios with realistic data and interactions with other applicable sub-systems. End-to-End Testing is performed to validate the system and to also check its integration with external interfaces. By verifying the complete system flow and increasing test coverage of various interconnected sub-systems, issues may be detected and resolved which increases confidence in the overall product delivered.

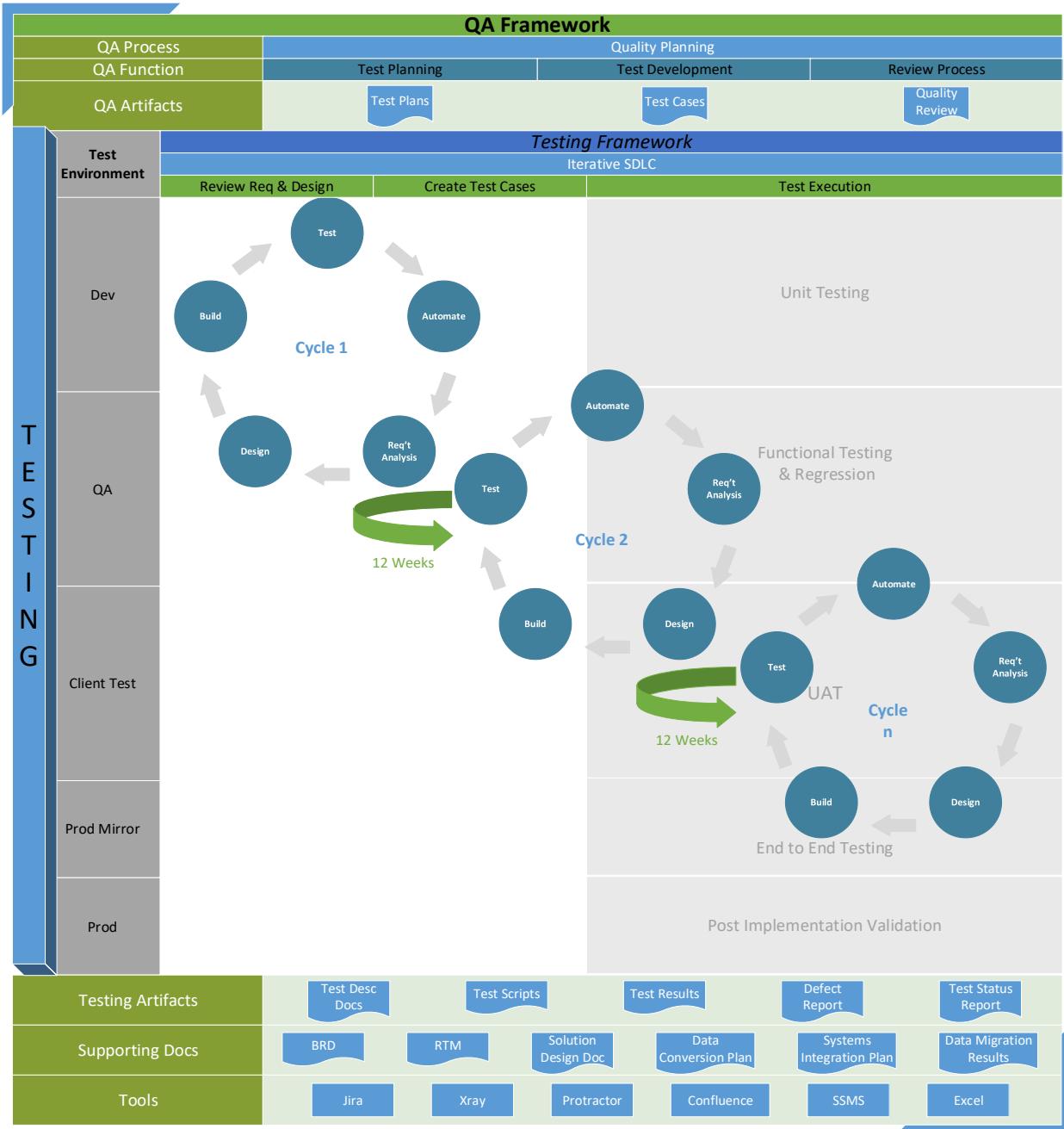
#### *Post Implementation Validation*

In this test level, a select number of testers from QA and Development, CLIENT Testers and Business Users of the system work together to validate that the system was successfully deployed to the production environment by executing smoke tests that are non-intrusive to live data and allows the ability to ensure the new system has been applied appropriately and is functioning as expected.

## **Test Plan Execution**

The diagram below describes the testing process. This process is an iterative SDLC approach with a consistent cycle schedule until End-to-End Testing that occurs before production implementation.

## Sample Quality Management Plan



## Test Components

Testing components of the system shall be documented, managed and tracked using SharePoint and Azure DevOps (ADO). The primary test components are:

- ❖ **User Stories:** Requirements shall be grouped as user stories created in Azure DevOps (ADO) and slotted into test cycle. Once development is complete, user stories shall be assigned to the QA team to test and validate the applicable functionality of the system. User stories shall be linked to Test Cases that represent the tests performed to verify those requirements, and any defects detected during testing shall also be linked to the applicable user story.

- ❖ **Test Cases:** Test Case Scripts shall be developed, managed and executed in Azure DevOps (ADO) against user stories for every given test cycle. A Test Case represents a set of actions executed to verify test scenarios (functionality or feature of the system that can be tested). Ideally, Test Cases shall have a set test data, precondition, expected and actual results developed for specific test scenarios to verify any requirement linked to user stories.
- ❖ **Defect:** A Defect shall be defined as a problem, error, or flaw in the functionality being tested that does not meet the requirement as written and/or fails the test case as written to validate the requirement resulting in the system not working as documented. A Defect is NOT a project Risk, Issue or system/requirement question. During the triage process, a Defect may be changed to a Refinement or Enhancement or Defect-Legacy (see below) based on research and discussion regarding the context of the Defect related to the requirement as written. Defects shall be logged in Azure DevOps (ADO) with an issue type of "Bug" and linked to both the related test case and user story.

Note: Defect and Bug can be used interchangeably. The term 'defect' is used throughout this document; Bug is an issue type within Azure DevOps (ADO).

- ❖ **Defect-Legacy:** A Defect-Legacy is a problem, error, or flaw in the functionality of a legacy system (most are managed by ITS but some upstream systems may be managed by another department) upon which the system is dependent, causing the functionality being tested to not meet the requirement as written and/or fail the test case as written to validate the requirement resulting in the system not working as documented. A Legacy Defect may be found through Quality Assurance or externally to this program. A Legacy Defect is associated with Test Case. It is possible the defect is associated with a legacy application requirement managed outside Azure DevOps (ADO). If discovered during testing, the defect is also associated with a User Story / Requirement in Azure DevOps (ADO).

Critical and High Severity Legacy Defects are included in the metrics used in the Cycle Exit Criteria thresholds. Medium and Low are not. If all UAT cases are executed, there are one or more open Critical/High Legacy Defects, and all other UAT Exit Criteria is satisfied, UAT and the Cycle remain 'open.' Subsequent issues unrelated to that legacy system are logged to the next Cycle. UAT and the current Cycle are complete when the Critical/High Severity Legacy Defects are resolved. Because the developers supporting the legacy systems may not be able to address the Legacy Defect immediately, it may be necessary to close the cycle and defer resolution to the next cycle.

Note: If only Legacy Defects are preventing UAT Exit Criteria and Cycle Exit Criteria from being achieved, and a CapTech invoice/payment is scheduled, the Invoice/payment is allowed to proceed.

For query and reporting purposes, there are options to include only Defects, only Defects-Legacy, or both.

Functional Testing and UAT will likely test all legacy functionality. It is possible a child test plan could be deemed out-of-scope, and another group would test.

Defect-Legacy Severity and Priority definitions and practices follow those described in this document for Defect Severity and Priority in section 4.1.2. They also follow the same Triage process flow described in section 4.3.1. Azure DevOps (ADO) includes an Owner field to identify the development team responsible for Defect-Legacy resolution.

Note: In Azure DevOps (ADO), this may be referred to as 'Bug-Legacy.'

- ❖ **Refinement:** A Refinement shall be a test result that is determined to meet the documented expectations of the User Story/Requirement but does not meet the business need. Refinements may result from misaligned expectations, misaligned assumptions among the teams defining the User Stories / Requirements, or a lack of detail in the Requirements documentation. A Refinement could also be related to usability, terminology or cosmetic items not specified in the documented requirements. A Refinement usually requires an update to the requirement or additional documentation for the change. Refinements are typically resolved with less than two hours of development effort; if significantly more than two hours' development is necessary, the issue type is changed to Enhancement.

During Triage, Refinements are reviewed by both CLIENT and CapTech to determine the level of effort and Priority (see section 4.1.3) and then added to the backlog. CapTech will resolve Critical Priority Refinements within the cycle during which the Refinement is recorded.

Thresholds for the total development effort of non-Critical Refinements is defined in the Quality Objectives chart (see section 4.4). During a cycle, if time allows, developers will pull from that backlog to add the Refinement to that cycle's functionality. Refinements will be worked, in priority order, when time during a cycle allows. Not all Refinements will be completed during the life of the project. If CLIENT requests a non-Critical Priority Refinement be prioritized during a cycle and it cannot fit in the cycle's current capacity, it can be swapped for planned functionality.

Note: All performers share responsibility for Requirements quality. CapTech BSAs and CLIENT Analysts and SMEs document Requirements. Developers and the QA team validate Requirement completeness and validity as they perform their duties.

- ❖ **Enhancement:** An Enhancement shall be defined as new functionality that is needed; a new User Story is defined. An Enhancement may originate as a Defect or Refinement but upon further research and discussion, it is determined that the requirements do not address the request. Enhancements are prioritized and put in a backlog. At any point in the project, it may be determined that some functionality as defined through User Stories is no longer needed; based

## Sample Quality Management Plan

on relative need/priority, Enhancement-driven User Stories may be “swapped” for User Stories that are being removed from scope. Once the new User Story is created, the Enhancement is closed, and all subsequent action and communication are performed based on the User Story. Enhancements are NOT considered Defects and are not considered in the metrics used in the Cycle Exit Criteria thresholds.

- ❖ **Test Artifacts:** All other test outputs because of QA activities like word files, spreadsheets, screenshots, evidence, deliverables, reports, flow diagrams/charts etc. shall be stored in SharePoint.

Testing components will be linked to one another within Azure DevOps (ADO) and SharePoint. Each user story will have criteria statements and individual test cases. Test cases will be documented individually and linked to their parent user story. Test cycles are created as logical groupings of test cases. Each test cycle is linked to the test cases that make it up. Additionally, as system functionality is tested, defects will be created for test cases that do not pass. Defects are documented with a link to its associated test case & cycle, which can be tied back to the associated user story. The first diagram below is an example of how a Test Case is linked to a User Story and Defect in Azure DevOps (ADO). Note that the traceability is shown under ‘Issue Links’ in a Test where Defects appear as ‘created’ and Stories appear as ‘tests’ which means that defect was created from that test case, and that user story is tested by that test. The second diagram shows how we link to requirements tested in a User Story - this is a manual effort. The requirements from a user story are added to the data column next to the test step, then a csv file could be exported showing a list of all the requirements in the test case.

[IMAGE REDACTED]

Traceability of Requirements documented in the Test case -

[IMAGE REDACTED]

## Test Schedule

During the Implementation Phase, testing activities will always be in progress. In each cycle, CapTech QA resources will begin writing test cases once that cycle’s requirements are finalized. After writing test cases, they will begin testing application components as soon as they are moved into the Test environment. After Development is complete, QA resources will conduct formal Functional Testing over the course of one week. Following successful Functional Testing, CapTech QA will be available to support the CLIENT UAT team while they execute User Acceptance Testing the following week. The schedule for End-to-End Testing efforts shall be reflected in the Project Plan. The first diagram below shows the schedule for Cycle Testing and how they occur concurrently. The second diagram gives an overview of End-to-End Testing that occurs post Cycle Testing.

[GANTT CHART REDACTED]

## Test Data Management

Test Data shall be created by the QA team in the test environment before and during test execution. Test data represents any kind of input given to the system under test to ensure wide coverage of different scenarios, which improves the system's quality. Test data in the Data Repositories or current production environment shall be re-created or mimicked in the test environment using business flow processes to simulate test scenarios for user story validation; particularly during UAT. Existent data in databases and other external data sources that undergo Data Conversion/Migration shall be used in testing the system too where possible/applicable. Specific data may be used depending on the test item and its requirements. Data may be modified, or new data may be created as found necessary. The exact data or type of data used may also be noted in the related test case/result for that item. The test data management process that occurs during a cycle is described in the Test Data Management Process.

*Note: CLIENT requests 'anytime' regression testing with migrated data. This can be supported with a dedicated environment, which will likely be added following approval of this Deliverable.*

## Testing Scope

As a minimum, in scope items shall be tested to issue validation of newly designed functionality, resolved changes and/or defects. Items noted as out-of-scope shall not be tested unless otherwise noted elsewhere in this test plan or other related test document. Where applicable, risks from out-of-scope items shall be noted under the risk analysis and mitigation section in the test plan document.

### Test Items

In scope of testing shall be functions, features, components, interfaces, systems of business processes and areas affected by new development or changes related to this project. As needed, other unaffected components and systems may also be included in the scope of testing to ensure that changes related to this project had no impact on them. A Child Test Plan shall be created as a QA deliverable at the beginning of a cycle and shall list the test items / user stories that represent functionality of the system that are in scope or out of scope for that test cycle. This information may be presented in a format that could be likened to the example below:

***In Scope: (Features/Items to be tested)***

- Main System
  - ❖ Home page
  - ❖ Processing page
    - Search page
  - ❖ Exit page
- Module 2
- Module 3

<b><i>Business Process Activity</i></b>	<b><i>Test Entity/Item/Module</i></b>	<b><i>System Feature</i></b>
Submit a claim	Module #1	Main system
Adjudicate a claim	Adjudication	

<i>Authorize Medical Service Providers</i>	<i>Medical</i>	
<i>Assemble Claims</i>	<i>Claims Processing &amp; Tracking</i>	<i>eClaims</i>

***Out of Scope:* (Items that shall not be tested)**

- *Outside applications*
- *... etc.*

## Test Assumptions, Constraints and Dependencies

### Assumptions

To reinforce the foundation of the testing scope, the following shall be assumed:

- Adequate test resources are available to cover all aspects of the project and system under test.
- All project documentation needed as a test basis is available to the test team and is up to date.
- All critical and high severity defects shall receive immediate attention from the development team.
- All defects found in a cycle release of the system will be fixed and Unit tested by the development team before the next version is released to the QA environment for testing.
- All user story functionality and items scoped to be tested in a cycle are delivered on time and on schedule to the test environment at the start of the testing week
- Subject Matter Experts (SMEs) are available for input during Test Planning and UAT to ensure complete test coverage and effectiveness during test execution.

### Constraints

In anticipation of suggested entry criteria, constraints particular to this test program are:

- 1) Limited time for test execution due to complexity and/or size of a release in a cycle
- 2) Test Resource unavailability for unforeseeable reasons
- 3) Limited time to plan for the next testing cycle due to unresolved defects and continued testing in the previous cycle
- 4) Lack of documentation or information to test any test item or requirement
- 5) Late entry solutions during test execution
- 6) Major defects found on the last day of a test cycle impeding test closure on time

### Dependencies

This section lists any dependencies that impact the effectiveness and timely completion of QA activities, including UAT.

- User Story Requirements, applicable solution documents, and developed Test Items for a test cycle are in place before QA Testing is to commence

- The QA Test Environments are ready when scheduled testing is to commence
- Any Critical Defects found during testing are fixed and released to the QA environments before testing can continue
- Testing with Trading Partners or External Parties has little or no impact on test execution progress or the test timeline.

## Cycle Entry Criteria for Test Execution

The Cycle Entry Criteria are the required conditions and standards that must be present or met prior to the start of a testing phase, and to permit going forward from one testing level to the next. The purpose of entry criteria is to prevent a testing task from starting before prerequisites are met and avoid wasted time and resources. The Cycle Entry Criteria for testing defines when to start QA testing, such as at the beginning of a test phase, test level or when a set of tests are ready for execution. Each test cycle shall have the following Entry Criteria:

- ✓ User Stories with project documentation needed for testing like requirements, solutions, designs, architecture and low-level workflows are available and approved; this includes both functional and data validation
- ✓ There are no open/unresolved critical/high defects remaining from the prior test cycle or level
- ✓ There are no open/unresolved critical refinements remaining from the prior test cycle or level
- ✓ Testing environment is setup and ready prior to the test execution phase including the preparation of test data needed for test execution
- ✓ The correct versioning of system components is moved into the appropriate test environment
- ✓ Applicable system configurations are in place prior to start of the test execution
- ✓ Unit Testing and Smoke Testing were performed and passed successfully
- ✓ Applicable user stories in a test cycle are “Ready for QA” before the testing phase.

When Cycle Entry Criteria for Text Execution is defined, Cycle Exit Criteria regarding Other Levels of Testing (section 3.7.2), and any unique testing needs required during the Cycle, are also documented.

## Cycle Exit Criteria for QA Execution

The Exit Criteria for QA Execution defines conditions that need to be satisfied so that the testing is considered complete at the end of a cycle. The Exit Criteria ensures that the tested modules or system is ready to serve its purpose.

### Functional Testing

- ✓ Functional Testing, UAT, and Data Validation are successfully completed - when Quality Objectives as defined in the Defect Management section have been fulfilled at the end of the testing cycle
- ✓ Triaged Non-deferred Defects and issues have been successfully tested, validated and addressed
- ✓ Acknowledgement of Test Results and Defect Status by CLIENT (Project Team Lead, Project Manager, Project Director, or Project Sponsor) and CapTech (PMO, Project Team and QA Test

- Lead) acquired
- ✓ Acknowledgement of 'Quality Objectives' Status by CLIENT (Project Team Lead, Project Manager, Project Director, or Project Sponsor) and CapTech (PMO, Project Team and QA Test Lead) acquired
- ✓ The Project Team acknowledges that Testing is complete, and CLIENT approves Test Execution Sign-off

**NOTE 1:** It is the expectation/goal that all tests created for a cycle are executed during the testing week. It is strongly recommended that Test Teams identify, prioritize and run tests based on the order of priority to ensure all higher priority test cases can be completed within the UAT timeframe. Section 3.8 UAT Cycle Test Execution & Completion Quality / Schedule, will guide the completion of the UAT.

**NOTE 2:** The System shall not go live in production until all tests created during the cycles have been executed. The test approach is iterative in nature and at the end of a cycle, new modules are developed and/or existing modules are enhanced in the system for the next cycle. Then all modules developed up to that point are integrated to be tested all together; so, there is always opportunity to revisit a previous test and re-test modules as needed. The testing time required in successive cycles can be reduced based on the experience gained from previous cycles.

Example: The Quality Objectives are fulfilled at the end of UAT week; however, there is an open defect (medium or low severity) to be fixed in the next cycle. This also means there is at least one failed Test in that cycle. The Test should be re-executed in the later cycle when the defect has been fixed. This means there are Tests that may not have passing results in a cycle, but they wouldn't necessarily hinder cycle sign-off.

## Other Levels of Testing

The exit criteria for other types of testing performed between or outside the standard cycles shall include a summary report providing the scope of testing, the quality objectives for the test, and the performance against those objectives.

### *Regression Testing*

This testing activity comprises of Manual Regression Testing performed after a cycle and Automated Regression Testing performed during a cycle. Defects found during this testing activity are logged in Azure DevOps (ADO) (using the Defect Management process) and rolled into the current round of QA Testing (Functional and UAT) of the cycle. The defects will be included in the total count of defects found during the next cycle (for manual regression) or current cycle (for automated regression) and follow the thresholds defined in the Quality Objectives section. This testing will therefore follow the exit criteria for Functional Testing herein for the given cycle.

### *Compatibility Testing*

Defects found during this testing activity are logged in Azure DevOps (ADO) (using the Defect Management process) and rolled into the next round of QA Testing (Functional and UAT) that follows it. The defects will be included in the total count of defects found during the next cycle and follow the

thresholds defined in the Quality Objectives section. This testing will therefore follow the exit criteria for Functional Testing herein for the given cycle.

#### *Accessibility Testing*

Defects found during this testing activity are logged in Azure DevOps (ADO) (using the Defect Management process) and rolled into the next round of QA Testing (Functional and UAT) that follows it. The defects will be included in the total count of defects found during the next cycle and follow the thresholds defined in the Quality Objectives section. This testing will therefore follow the exit criteria for Functional Testing herein for the given cycle.

#### *Internationalization Testing*

This testing activity shall occur during Functional Testing because Foreign Language is associated with User Stories and shall be validated during a regular cycle QA testing. Therefore, it shall follow the same test and defect process including the exit criteria for Functional Testing herein for the given cycle.

#### *End to End Testing*

The Quality Objectives for this testing activity and the Exit Criteria shall be defined in the Defect Tracking and Resolution Report DED (Deliverable 37).

#### *Performance Testing*

This testing activity shall be executed once every four cycles based on performance specifications defined in the Performance Spec Plan, the System Integration Plan and individual User Stories. Performance issue remediation will not be part of exit criteria for the cycle where performance testing is performed. Remediation often involves further testing and may result in re-architecting the application or infrastructure. The retest and remediation cycle are involved processes. Our commitment is to release a final application that meets performance specs. Performance issues discovered on specific operations during testing shall be remediated prior to those operations being used in production. A results report on the performance of the system shall be provided as part of the exit criteria when performance tests are executed and shall include notes on any issues undergoing remediation.

#### *Security Testing*

The security scanning and static code analysis tool used for this testing activity shall generate reports that group issues into similar severity level categories as defined in the Defect Management section. The output of that report shall be used as a guide to log issues into Azure DevOps (ADO) based on the defect management process after confirmation that they are indeed defects and can be classified that way. These defects shall be rolled into the next round of QA Testing (Functional and UAT) that follows the testing activity. The defects will be included in the total count of defects found during the next cycle and follow the thresholds defined in the Quality Objectives section. This testing will therefore follow the exit criteria for Functional Testing herein for the given cycle.

## **UAT Cycle Test Execution & Completion Quality / Schedule**

As stated in the Purpose (section 1), the goal of Quality Assurance is to implement a high-quality system that meets the Requirements. Building and implementing the system within the defined schedule is a secondary purpose. To maintain momentum of the Cycles, UAT is limited to five days in each

Cycle. Resources must consistently progress from one Cycle to the next because, once the program falls behind schedule with one Cycle completing late, there are limited strategies to regain that time. These two imperatives, to validate quality through UAT and to complete UAT within five days to remain on schedule, deem it necessary to address three situations.

- UAT test case volume and complexity indicate UAT will not complete within the allocated five days.
- UAT test execution requires more than five days to complete due to an unexpected event.
- UAT test execution requires more than five days to complete due to test case execution not progressing at the planned pace.

## Excess Volume and Complexity

The slotting of User Stories for each Cycle is done to require an equivalent level of work within each Cycle. If User Stories are slotted proportionately across the Cycles, each Cycle, and each 'phase' within the Cycle, should complete on time using the allotted resources. UAT case preparation completes the Wednesday prior to UAT week. On that Wednesday, CLIENT management plans the UAT schedule. If, upon scheduling, CLIENT management determines it is likely case volume and complexity will not allow testing to be complete in the allotted five days, the Issue is logged as a program Issue and immediately escalated to the CLIENT Program Director and the CapTech Account Executive.

The two leaders, with support from the joint team, assess the Issue and determine the optimum response. Options to resolve the Issue include:

- Extend UAT week - Additional time may be allowed for UAT if necessary. This should not be more than two days into the following week.
- Identify Test Cases duplicated between UAT and CapTech's Functional Testing then defer to Functional Test Case Results for Acceptance.
- Brainstorm other opportunities to complete UAT on schedule. This may include exploring application of additional resources to UAT test execution (e.g. CLIENT SMEs from other groups, non-program CLIENT resources with adequate expertise and testing knowledge, CapTech BSAs, or CapTech Testers).

Prior Cycle phases are monitored as indicators that the risk is heightened. If Requirements, Development, or Functional Testing require additional time or resources, it is a higher probability that the UAT execution schedule may be at risk.

## Unexpected Event

It is likely an unexpected event will delay UAT test execution during the program. This may include a Critical Defect that ceases UAT progression, a weather shutdown of the CLIENT office, or a system environment or access issue. When such an event occurs, the CLIENT QA PM or CapTech QA PM logs a program issue and immediately notifies program leadership of the delay. The joint leadership team works to resolve the issue if possible. Upon issue resolution, program leadership determines the impact to the UAT schedule and, if necessary, extends UAT into the following week while establishing and communicating a revised completion date and time. Unless extreme circumstances exist, the extended

## Sample Quality Management Plan

time period should not exceed the delay period. The delay must be approved by the CLIENT Program Director and the CapTech Account Executive. Management may apply additional resources or plan testing during non-standard work hours to UAT to reduce the Impact.

### Execution Pace

It is possible that UAT test execution; including the time to triage, resolve, and retest issues; does not progress at the planned pace. The progression of UAT test case execution against the planned schedule should be monitored constantly by the joint management team, and briefly assessed during the Daily Defect Meeting. If UAT test execution falls behind pace by more than 10% or if scheduled completion is at risk, the CLIENT QA PM or CapTech QA PM logs a program Issue and Immediately notifies program leadership of the delay. The joint leadership team works to resolve the issue if possible and updates the Program Director and the CapTech Account Executive at Noon and 5pm each day. Upon issue resolution, program leadership determines the impact to the UAT schedule and, if necessary, extends UAT into the following week while establishing and communicating a revised completion date and time. The delay must be approved by the CLIENT Program Director and the CapTech Account Executive. Management may apply additional resources or plan testing during non-standard work hours to UAT to reduce the impact.

### Risk Analysis and Mitigation

To effectively address future events or outcomes that may result in loss of time or product quality, a risk assessment is necessary. This assessment will help provide suggested actions to avoid or reduce the magnitude of associated loss. The table below defines unforeseen events that might negatively impact the normal course and outcome of QA activities in a test cycle or during the project. It also specifies possible control actions to mitigate the risk. Each risk is rated on a three-point scale based on its likelihood of occurrence and impact. Risk priority is calculated as given below. Events with the highest priority value have the highest risk.

**NOTE:** These are static QA risks, and not the same as the on-going Project risks tracked in Azure DevOps (ADO).

Risk Scale	
1	Low
2	^
3	I
4	I
5	I
6	I
7	v
8	v
9	High

Risk	Priority	Likelihood	Impact	Mitigation Plan
	Likelihood * Impact	Low = 1, Medium = 2, High = 3		
Late delivery of developed system/product	3	1	3	Create Project risk in Azure DevOps (ADO) to determine if the Testing phase should be Extended
Limited time for testing	9	3	3	Create Project risk in Azure DevOps (ADO) to determine if the Testing phase should be Extended. Identify and Focus on high priority Tests to start testing.

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Risk	Priority	Likelihood	Impact	Mitigation Plan
	Likelihood * Impact	Low = 1, Medium = 2, High = 3		
Defect / Refinement volume and required effort slows execution and delays completion	6	2	3	Invoke plan documented in section 3.8.3 Execution Pace
Lack of Requirements clarity	6	2	3	Gather required information via other means and sources by reaching out to BSA's and Developers.
Changes to original design/requirements	9	3	3	Create Project risk in Azure DevOps (ADO) to determine if new scope adversely affects the testing schedule.
Test Data Availability/Quality	6	3	3	Create Project risk in Azure DevOps (ADO) for any delays or when reduced efficiency occurs due to Test Data driven scenarios.
Inability to test all features in a week	6	2	3	Create Project risk in Azure DevOps (ADO) to determine if the Testing phase should be Extended and how to address.
Lack of QA personnel/resources when testing is to begin	3	1	3	Arrange for alternate test resources and create project risk in Azure DevOps (ADO).
UAT Resource demands over-allocated due to overlapping cycles. Ex. 3 concurrent cycles demanding the same SME resource to support multiple cycle activities	6	3	2	Stories shall be slotted in a way to not place the same UAT resource in back to bac cycles to avoid overlapping resource demands. However, if this happens, create project risk in Azure DevOps (ADO) to determine if the Testing phase In a given cycle should be extended and how to address the issue for other cycles.

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Risk	Priority	Likelihood	Impact	Mitigation Plan
	Likelihood * Impact	Low = 1, Medium = 2, High = 3		
If Cycles 4-7 demand too much attention/labor from the medical team, Requirements Definition and UAT could be delayed, or quality could be hurt	9	3	3	Slotting for Cycles will be managed to minimize the demand for the same resources. With four consecutive cycles addressing Medical, there will almost certainly be an impact. The CapTech team and Angela will plan the work and manage the teams in a manner to minimize the impact.
Lack of communication among team members	4	2	2	Host daily stand-ups or more frequent touchpoints
Availability of business users to perform UAT during a cycle	3	1	3	Create Project risk in Azure DevOps (ADO) to determine to seek alternative test representatives or resources
Delay in Testing Start Date	2	1	2	Determine actual problem for the delay and create Project risk in Azure DevOps (ADO) to determine if the Testing phase should be Extended
Unstable/unavailable test component and environment	3	1	3	Arrange for alternate test environment. Focus testing on available components that are stable. Create Project risk in Azure DevOps (ADO) for the issue.
Late entry requirements	1	1	1	Make assessment on if it affects the test timeline and if it does create Project risk in Azure DevOps (ADO) for the issue.
Complexity of functionality	1	1	1	Arrange for training or identify a test resource or SME with more familiarity with that process to lead

<b>Risk</b>	<b>Priority</b>	<b>Likelihood</b>	<b>Impact</b>	<b>Mitigation Plan</b>
	Likelihood * Impact	Low = 1, Medium = 2, High = 3		
Time needed to complete a testing cycle adversely impacts the next cycle (ex. when a cycle exceeds one week of UAT)	9	3	3	Create Project risk in Azure DevOps (ADO) for the issue to determine the extent of the impact and how to resolve. clue or help with that test effort.
Changes impacted multiple applications/systems not in the testing scope ex. external systems	9	3	3	Create Project risk in Azure DevOps (ADO) for the issue to determine how to monitor and track the additional testing.

Mitigation Plan: Issues or defects encountered during testing will need a quick turnaround triage and should be addressed in a timely fashion to maintain the project schedule; otherwise, the test schedule may be extended according to the down time.

Contingency Plan: Secondary solutions to new risks identified shall be decided upon by the CapTech project team and documented if the project schedule is vastly affected by test issues, defects or other reasons.

## QA Milestones & Deliverables

The first table below provides information about the artifacts that will be created in the process of executing this test plan. All artifacts produced will be cataloged for future reference. The second table lists the major testing milestones for every cycle.

**Table 1:**

<b>Test Artifact</b>	<b>Produced</b>	<b>Business Purpose</b>
Master Test Plan	Once	This is the highest test level document that defines all necessary information to plan and control the test effort at multiple levels (types) of testing. It outlines overall test approach and how the testing shall be managed so that the highest quality system possible is delivered
Child Test Plan	Continuously (once every cycle)	A Test Plan/Description Document for a given cycle that describes the scope and planned type of tests before test execution
Test Cases	Always	For definition of test steps/inputs, test scripts, test data and expected outcomes
Test Summary Reports	Ongoing (during test activity)	To report the status, progress and summary of the test execution
Acceptance Test (UAT) Results	Continuously (once every cycle)	A document that describes the acceptance tests that were performed with actual outcomes of the tests during a given cycle

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QA Test Results	Continuously (once every cycle)	A detailed document that describes the test results that were performed with actual outcomes of each test and defects found during QA testing for a given cycle
Test Evidence	Where possible	For verification of testing that was performed

**Table 2:**

Test Milestone	Test Artifact	Responsibility
Create Master Test Plan	Quality Assurance and Testing Plan	QA Test Lead
Review Master Test Plan	Quality Assurance and Testing Plan	Tech & Project Team
Approve Master Test Plan	Quality Assurance and Testing Plan	CLIENT
Create Test Description Documents	Child Test Plan	QA Test Lead, QA Tester
Review Test Description Documents	Child Test Plan	Tech/QA Team
Publish Test Description Documents	Child Test Plan	QA Test Lead
Execute Unit Testing	N/A	Development Team
Develop Manual Test Scripts for Functional Test Week	Test Cases	QA Tester
Review Test Scripts for Functional Test Week	Test Cases	QA Team
Develop Test Scripts for Data Test Level	Test Cases	QA Data Analysts
Execute Functional and Data Test Scripts	Test Execution Results	QA Testers, QA Data Analysts
Verify Requirements Coverage	Metrics	QA Test Lead
Develop Automated Test Scripts	Regression Test Cases	QA Automation Lead and Engineers
Produce Test Cases for UAT	UAT Test Cases	Business Testers
Execute Automated Test Scripts	Regression Test Execution Results/Report	QA Automation Engineers & Analyst
Execute Test Cases for UAT	UAT Test Execution Results	Business Testers/Users
Manage Defects (enter, prioritize, re-test, verify, close)	Defect Report and Metrics	QA Test Lead, QA Team
Complete QA Testing	Test Report Summary	QA Test Lead

Test Milestone	Test Artifact	Responsibility
Review and Acknowledge QA Test Results	Test Results, Acceptance Test Results	CLIENT

## Defect Management

### Defect Logging

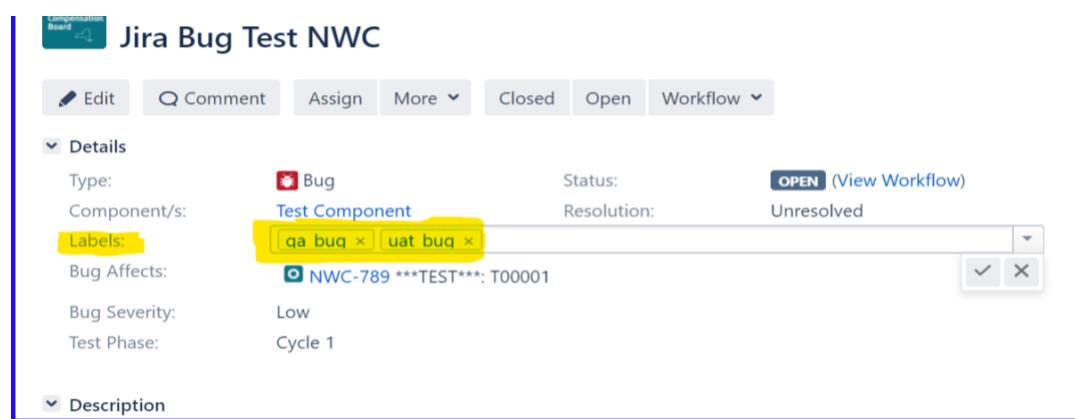
A defect shall be considered discovered when the defect has been formally brought to the attention of the development (and/or project) team, and the developers acknowledge that the defect is valid and needs to be addressed or through escalation, program/project management agrees. A test team coordinator shall enter defects electronically in Azure DevOps (ADO) when a test case fails, or when an issue with the system is identified. Detailed description shall be provided for each defect in Azure DevOps (ADO) so that the development team can determine the root cause and impact of each defect. Defect description in Azure DevOps (ADO) shall contain and shall not be limited to the following components/fields:

- Summary: This shall be the defect title written as a brief statement that sums up the defect in as few words as possible, and that also makes it easily identifiable/searchable.
- Description: Use the 'Defect Description Template' defined herein for a few short sentences describing the issue including -
  - System Configuration: The exact configuration or any unique settings of the system at which the defect was found on
  - Defect Identifier: For example, the test case number or system release/build version
  - Steps to Reproduce: A numbered details of actual steps that were taken to cause the defect
  - Expected Result: Describing how the system should work
  - Actual Result: Describing how the system doesn't work
  - Other Information: Any helpful details to determine the root cause of a defect ex. a description of relevant attachments or URL from the application when the defect occurred
- Defect Severity: Select the severity of the defect based on the defect severity table below.
- Attachment: Evidence of the issue or other relevant information ex. Screenshots, requirement, etc.
- Test Phase: The cycle the defect found
- Linked Issues: Select 'relates to' to link to the story tested under Issue below. (\*Select 'tested by' to link to the testcase executed when the defect was found)
- Issue: Search for and select the story that the defect relates to

## Labelling Defects

After the Defect is created in Azure DevOps (ADO), enter a label 'qa\_defect' if found during Functional Testing week, or 'uat\_defect' if found during UAT week. For data defects, enter 'qa\_data\_defect' or 'uat\_data\_defect' respectively. Defects found from Automated Testing shall be tagged 'qa\_auto\_defect'. This tagging is used to distinguish the defects found by various teams.

**Labels:** 'qa\_bug', 'qa\_data\_bug', 'qa\_auto\_bug', 'uat\_bug', 'uat\_data\_bug', 'wcb\_data\_bug'



Jira Bug Test NWC

Details

Type:	Bug	Status:	OPEN (View Workflow)
Component/s:	Test Component	Resolution:	Unresolved
Labels:	qa_bug, uat_bug		
Bug Affects:	NWC-789 ***TEST***: T00001		
Bug Severity:	Low		
Test Phase:	Cycle 1		

Description

## Defect Description Template

The following template should be used when filling out the Description field in Azure DevOps (ADO)

*Overview Description:*

*Steps to Reproduce:*

- 1)
- 2)
- 3)

*Actual Results:*

*Expected Results:*

*Reproducibility: Yes/No?*

*Browser/Environment/Platform:*

*Additional Information:*

- a) Defect URL:
- b) Data used:
- c) Other Platforms Tested On:
- d) Description of Attachments:
- e) Other Info:

## Defect Severity and Priority

**Severity is the measurement of how seriously the defect affects the system based on requirements including the degree of impact a defect has on the developed feature or functionality under test and whether there is a viable system workaround to continue testing.** Severity is NOT a measure of impact to the business, but a measure of the degree of impact a defect has on the development or operation of a component application being tested. Defects shall be constantly analyzed during a test cycle to determine severity and timing to fix or address issues. Based on Severity, urgency sets the timeframe and order in which a defect is expected to be resolved. The severity status of a defect is based on the technical aspect of the application and is set/controlled primarily by the CapTech QA/Technical Team. Severity is driven by functionality based on requirements and its value is objective and less likely to change. See table 1 below for the categorization of severity and more information.

**Priority is defined as the order in which a defect should be fixed; so, the higher the priority, the sooner the defect should be resolved.** The priority status of a defect is based on customer requirements or needs and is determined/controlled primarily by the Client (CLIENT) based on business value and timing. The priority value of a defect is defined by Business Users and is based upon determination of overall process impact to their overall processes and may change over time after triage/consultation or assessment by CLIENT and CapTech. See table 2 below for the categorization of priority and more information.

Within a Severity category, the CLIENT UAT Lead can work with the CapTech Test Lead to further prioritize the defects so they can be addressed in the order that allows UAT to continue most effectively.

Defect's severity and urgency shall be as follows:

Table 1

Severity	Defect Impact	Urgency	Expected Resolution
Critical	System is not accessible, or the problem prevents further processing and testing for the component in which the defect or problem exists.	Immediate	<p>The defect should be addressed, resolved, retested and closed <u>immediately</u> after detection - within the same cycle.</p> <p><b>NOTE:</b> Critical Defects found on the last day of testing may extend the testing cycle into the next week until resolved. This may overlap with the beginning phase of the next cycle.</p>

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High	<p>System is not functioning exactly as documented in the business requirements <u>and no workaround</u> exists for specific business functions. The problem affects selected processing to a significant degree, making it inoperable, causing data loss, or could cause a user to make an incorrect decision or entry.</p> <p><b>NOTE:</b> The issue blocks the individual test case but most of the testing in the application can proceed.</p> <p>*Workaround refers to testing newly developed system functionality and not an alternate way to perform a business process activity.</p>	High	<p>The defects should be addressed, resolved, retested and closed <u>within 1 or 2 days</u> of defect submission during the cycle it was found.</p> <p><b>NOTE:</b> High Defects found on the last day of testing may extend the testing cycle to continue into the next week until resolved. This may overlap with the beginning phase of the next cycle.</p>
Medium	<p>System is not functioning exactly as documented in the business requirements, <u>but a workaround</u> provides a means to proceed with other testing.</p> <p>The problem affects selected processing but has a work-around that allows continued processing and testing.</p> <p>The individual test case can proceed but a work-around must be used to complete the test steps or this defect.</p> <p>*Workaround refers to testing newly developed system functionality and not an alternate way to perform a business process activity.</p>	Mid	<p>The defects should be addressed, resolved, retested and closed <u>before the last day</u> of the testing week/cycle.</p> <p>Carryover defects shall be fixed prior to the next cycle's Functional or User Acceptance Testing. Carryover defects refers to open medium defects found on or before the last day of testing where the cycle exit threshold is deemed acceptable or has been met at the end.</p> <p><u>Example:</u> If the cycle exit threshold is met and there are still open defects at the end of the cycle, then those defects shall be ordered to be fixed before or for the next testing cycle (FT/UAT).</p> <p><b>NOTE:</b> Medium Defects found on the last day of testing causing the threshold to be over the limit shall be triaged with the project team to determine if they should be fixed in the current cycle or carried over to the</p>

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			next cycle.
Low	The problem is cosmetic, and/or does not affect further processing and testing. Examples are superficial defects such as a typo or incorrect item color, etc.	Low	<p>Fix the defect if time permits; Correction may be postponed. All low cycle defects to be fixed prior to go-live.</p> <p>Postponement applies to open low defects found during the cycle where the cycle exit threshold is deemed acceptable or has been met at the end.</p> <p><b>NOTE:</b> Low Defects found on the last day of testing causing the threshold to be over the limit shall be triaged with the project team to determine if they should be fixed in the current cycle or postponed.</p>
<b>DATA</b>			
Critical	Visibly impacts system functionality and has a high business impact	Urgent	The defect should be resolved as soon as possible during the cycle as it affects the system severely and functionality doesn't work until it's fixed.
Non-Critical (high, medium, low)	Little or no functionality impact to the system and low business impact	Low	<p>The defect should be resolved as time permits with the goal of fulfilling the threshold of allowable data defects in a cycle. Rolled over-defects shall be fixed by the next cycle.</p> <p><b>NOTE:</b> Defects that are client dependent and cannot be resolved solely by CapTech shall not count towards the acceptance criteria and may be deferred and fixed at a later cycle. Such defects should be labelled</p> <div style="border: 1px solid blue; padding: 2px; display: inline-block;"> <b>'wcb_data_bug'</b> </div>

Table 2:

Priority	Definition	Urgency
High (P1)	The defect must be resolved as soon as possible, ideally in the same cycle, as it affects the system and business function severely and is of most	Most Important

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	importance to the Customer.	
Medium (P2)	The default starting point of a defect that indicates normal importance. While triaging defects, the priority may be adjusted to higher or lower if appropriate. During the normal course of development activities, the defect should be resolved.	Average Importance
Low (P3)	The defect is valid and an irritant, but repair can be done once the more serious defects have been fixed. In some cases, a low priority defect may be postponed to a future cycle depending on the business need and requirements after triage/consultation.	Least Important

## Refinement Priority

Refinement Priority is defined similarly to Defect Priority but the Definitions, as displayed In Table 3, vary slightly. Because Refinements involve modifications to the Azure DevOps (ADO) Requirement, and review and approval, the life cycle of a Refinement is longer than that of a Defect.

Table 3:

Priority	Definition	Urgency
Critical (P0)	There is no viable workaround for Refinement and there are material operational implications. The refinement is resolved during the Cycle.	Critically Important
High (P1)	Refinement affects the system and business function severely but testing of all other functionality can be completed. Refinement is resolved as soon as possible, considering its relative priority within the Backlog. In most cases, High Priority Refinements are resolved in the current or next cycle. Like Critical and High Priority Defects, all High Priority Refinements must be resolved prior to implementation.	Most Important
Medium (P2)	Refinement creates a material operating inefficiency. During the normal course of the development activities, Refinement is resolved based on its relative priority within the backlog.	Average Importance
Low (P3)	The refinement is valid and an irritant, but enactment can be done once the more serious defects and refinements have been fixed. It is resolved based on its relative priority within the backlog.	Least Important

## Defect Lifecycle

Defect tracking is a process of recording and managing a defect's lifecycle in a defect tracking system such as Azure DevOps (ADO). Its purpose is to keep track of all steps required to correct a defect. Each defect follows through different statuses (states) until it is completely resolved. After a defect is logged,

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the BSA responsible for the user story reviews to confirm it is a valid defect; it will be worked on by the development team and returned for re-test. If there is a discrepancy with the validity of a UAT defect, CLIENT and CapTech shall triage before that determination is made; communication is initially via Azure DevOps (ADO) and then advances to instant messaging and phone as needed. Steps for analyzing, fixing, and retesting a defect are reflected in the status values on the Azure DevOps (ADO) Workflow Steps page.

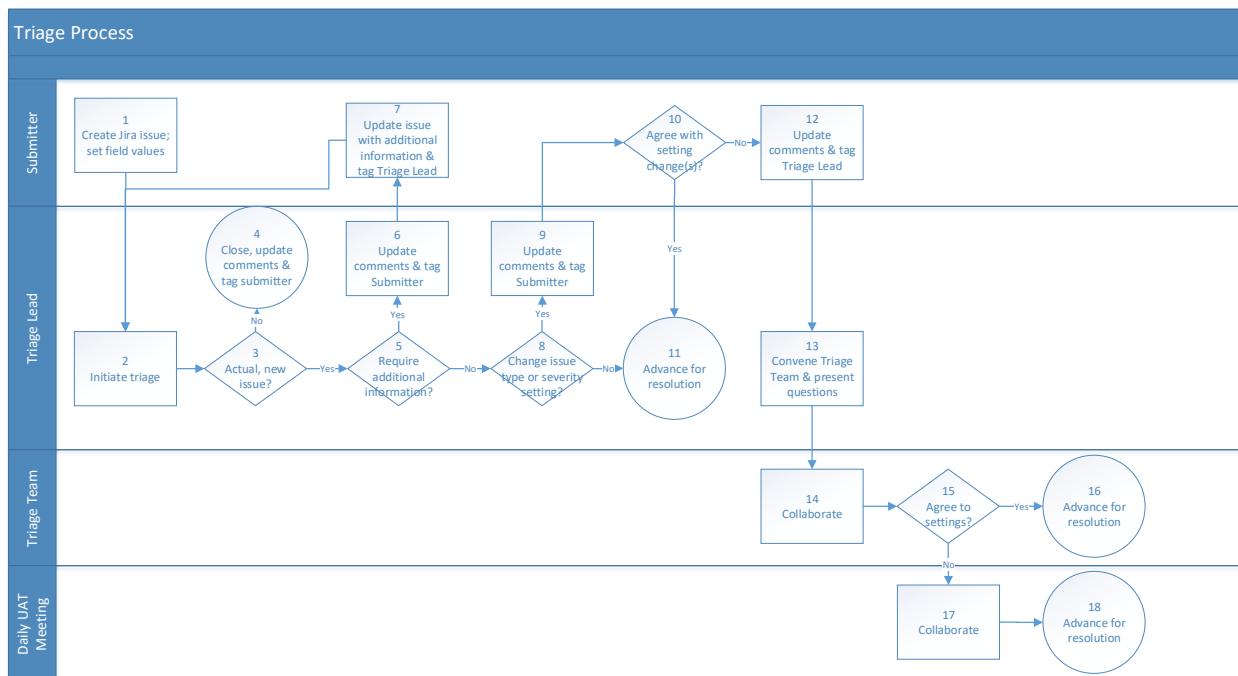
In addition to the Defect Lifecycle, the Azure DevOps (ADO) Workflow Steps page describes the User Story Workflow from the perspective of Azure DevOps (ADO). Steps and Statuses of a User Story, beginning with Pre-Analysis and completing with "Done." Steps 4 and 5 include the Statuses, "Ready for QA," "In Progress QA," "Ready for UAT," and "In Progress UAT." When UAT is complete, the Status changes to "Accepted."

## Defect Triage Process

A Triage Lead shall review each defect and assign it to the Development or Data Team to address the defect. Section 7.1 defines the Triage Group. (Note: The Triage process is identical for functional and data issues. Only the participants change.) The Triage process is identical for functional defects and data defects; the only difference is that a functional defect involves the Development Team, and a data defect involves the Data Team.

### Triage Process Flow

Below is a swimlane process flow of the Triage process, with descriptions of each action and decision in the process. This is a high-level view of the process. It is worth noting that each Issue is unique and some will not follow this exact process. Performers must be flexible and collaborative to address each unique issue in the manner most effective to triage and resolve it.



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<b>Step</b>	<b>Name</b>	<b>Performer</b>	<b>Description</b>
1	Create Azure DevOps (ADO) Issue; set field values	Submitter/ Reporter	When an issue is identified during UAT, the Submitter gathers information to describe it, fills out the defect template, collects screen-prints, and logs the issue In Azure DevOps (ADO). The Submitter, in consultation with the Test Team and CLIENT stakeholders sets the values for issue type, Severity, and Priority.
2	Initiate triage	Triage Lead	When an issue is logged to Azure DevOps (ADO), the Triage Lead performs an initial assessment to confirm the validity of the issue and completeness of the Azure DevOps (ADO) issue.  The Triage Lead also assesses the root cause and potential resolution and updates the Azure DevOps (ADO) issue accordingly.
3	Actual, new issue?	Triage Lead	The Triage Lead determines if the issue is an actual issue that requires resolution. The Triage Lead also determines if there is an existing issue with a common root cause and potential resolution.
4	Close, updated comments & tag submitter	Triage Lead	If the issue is not an actual issue or if the issue is a duplicate of an existing issue, the Triage Lead closes the issue and tags the Submitter so the Submitter is notified.  While not included in the flowchart, the Submitter reviews the comments for the closed issue. If the Submitter does not agree with closure, the Submitter initiates collaboration with the Triage Lead to agree to a status. If the question remains whether or not the issue is actual or is a duplicate, it is escalated to the Daily UAT Meeting.
5	Require additional information?	Triage Lead	The Triage Lead assesses the information (e.g. steps to reproduce, URL's, screenshots, etc.) provided to determine if it is sufficient to complete triage and resolution.
6	Update comments & tag submitter	Triage Lead	If the information provided is not sufficient, the Triage Lead updates the comments, detailing the additional Information needed, and tags the Submitter so the Submitter is notified.
7	Update issue with additional information & tag Triage Lead	Submitter / Reporter	Upon notification that additional information is needed, the Submitter gathers the necessary information and updates the Azure DevOps (ADO) issue, while tagging the Triage Lead so the Triage Lead is notified.
8	Change issue type or severity setting?	Triage Lead	The Triage Lead assesses the issue type and Severity settings based on knowledge of the User Story and Requirement, available workarounds, and other aspects of the system.
9	Update comments & tag Submitter	Triage Lead	If the Triage Lead determines the issue type or Severity should have a different setting, the Triage Lead adds a comment supporting the change, and tags the Submitter so the Submitter is notified.

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10	Agree with Setting change(s)?	Submitter /Reporter	Upon notification of an issue type or severity value needs to be changed, the Submitter reviews the comments and determines agreement or disagreement with the change.
11	Advance for resolution	Triage Lead	If the Submitter agrees with the modified settings, the Submitter records that agreement in the comments. The Triage Lead updates the setting In Azure DevOps (ADO) and forwards the issue for resolution.  If the Submitter does not reply to the Triage Lead request within a reasonable timeframe (2 business hours), the Triage Lead follows up with UAT Lead and Submitter via Skype or email informing them of the pending change. Any unaddressed issues are discussed during the Daily UAT Meeting.
12	Update comments & tag Triage Lead	Submitter /Reporter	If the Submitter does not agree with the suggested modification, the Submitter updates the comments with the question and tags the Triage Lead.  When the Submitter and Triage Lead do not agree on a setting, the first course of action is for the two to discuss the question by phone or in person.
13	Convene Triage Team & present questions	Triage Lead	If the Submitter and Triage Lead cannot agree to settings, the Triage Lead convenes the Triage Team, presents the question, and manages collaboration to resolve the question.
14	Collaborate	Triage Team	When convened, the Triage Team collaborates to achieve agreement on the settings.  The Triage Team's more important responsibilities are determining the root cause and recommending a solution. To do so, the team may need to collect additional information and discuss questions.
15	Agree to settings?	Triage Team	Based on the information available and their combined expertise, the Triage Team determines if they can agree to settings.
16	Advance for resolution	Triage Team	If the Triage Team agrees to settings, the issue is advanced for resolution.
17	Collaborate	UAT Daily Meeting	If the Triage Team cannot agree to settings, they advance the issue to the Daily UAT Meeting for resolution. They provide information and opinions to the meeting and attend to conduct the collaborative discussion. As described in the Value-Setting Authority section to following, value determination shall be made by mutual agreement between the CLIENT Project Manager or CLIENT UAT PM and the CapTech Account Executive or Program Manager.
18	Advance for resolution	UAT Daily Meeting	Upon setting the values from the Daily UAT Meeting, the Triage Lead updates the Azure DevOps (ADO) issue and advances it for resolution.

The four performers in the process are:

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- Submitter/Reporter: Tester or Test Coordinator that compiles the supporting information and screen-prints for the issue and creates the issue in Azure DevOps (ADO).
- Triage Lead (section 7.1): QA Lead or Analyst that evaluates the issue and leads evaluation and initial problem-solving.
- Triage Team (section 7.1) Group convened by the Triage Lead to evaluate the problem and establish the high-level solution; comprised of Triage Lead, CLIENT Leads, CLIENT Analyst, CLIENT Tester, BSA, and/or Developer/Data Analyst.
- Daily UAT Meeting: Group convened daily by the CapTech QA Project Manager and the CLIENT QA Project Manager to review escalated issues and advance them through the Triage process.

Collaboration among the performers is critical to effective triage. Fundamental communication is performed using comments and tagging key teammates in the Azure DevOps (ADO) issue. When teammates require more than two comments to address a question, they should improve communication by meeting in person or by phone. An in-person or a Teams meeting should be convened when more than two people are required. Because email is the slowest method of communication and because UAT issues are time-sensitive, it should be rarely used to address questions and perform triage.

### Value Setting Authority

Three fields are set during the Triage process by collaboration among the Triage Team and program management. The values determine work prioritization and the workflow to address the system and documentation modifications. The three Azure DevOps (ADO) fields are described elsewhere in this document and the authority to set the fields when in question is described here:

- Issue Type (Section 3.2.1): When Issue Type is not mutually determined by the Triage Team, it is escalated to the Daily UAT Meeting. During or following the meeting, value determination shall be made by mutual agreement between the CLIENT Project Manager or CLIENT UAT PM and the CapTech Account Executive or Program Manager.
- Severity (Section 4.1.2): When Severity is not mutually determined by the Triage Team, it is escalated to the Daily UAT Meeting. During or following the meeting, value determination shall be made by mutual agreement between the CLIENT Project Manager or CLIENT UAT PM and the CapTech Account Executive or Program Manager.
- Priority (Sections 4.1.2 & 4.1.3): When Priority is not mutually determined by the Triage Team, it is escalated to the Daily UAT Meeting. During or following the meeting, value determination shall be made by the CLIENT Project Manager, in consultation with the CLIENT Leads and Analysts.

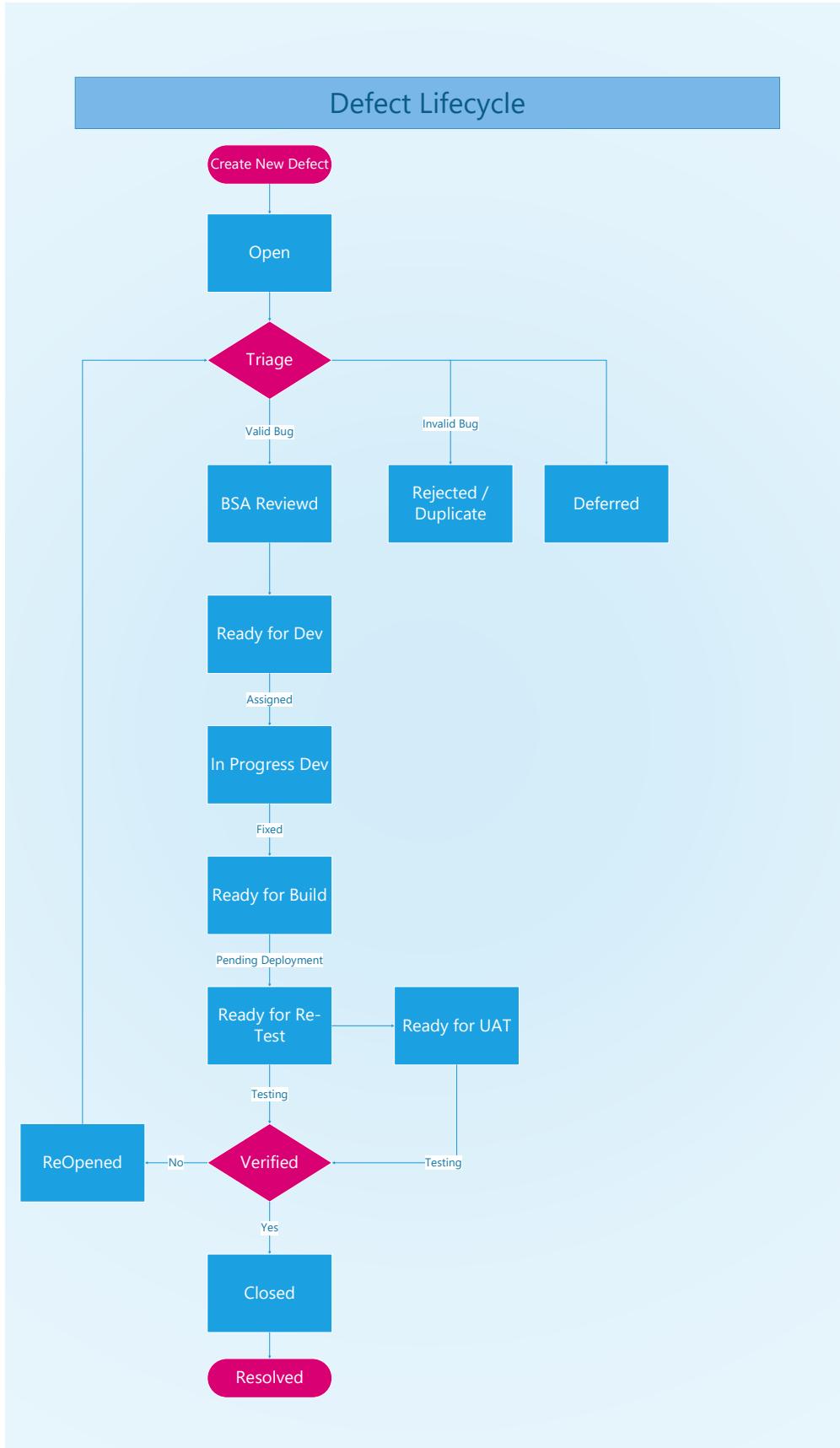
### Post Triage

Following Triage, Developers or Data Analysts shall be responsible for executing resolution of each defect and the appropriate team shall deploy defect fixes to the test environments. QA Testers retest each

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resolution and validate if it was resolved. Depending on their nature, some defects are verified by QA Testers and Business Testers combined. Refer to Defect Lifecycle diagram below for more information on the flow:

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## Refinement Process Flow

Refinements are treated differently than Defects. Following is the process flow with a description of each step.

[DIAGRAM REDACTED]

Step	Name	Performer	Description
1	Create Refinement or change issue type to Refinement	Submitter / Triage	A Refinement may be recorded in a variety of ways and performs throughout the Requirement process. Possible sources include: <ul style="list-style-type: none"> <li>• Identified by Developer during development</li> <li>• Identified by tester during Test Case creation</li> <li>• Identified by tester at any point in testing</li> <li>• Identified during Triage, with a Defect changed to a Refinement.</li> </ul>
2	Assess Refinement	QA Team / BSA Team	Depending upon when the Refinement is identified, either the QA Team, if identified by testing, or BSA Team, if identified by any process other than testing, will perform the initial assessment and determine the need, then document the Requirement modification in the Azure DevOps (ADO) Refinement.
3	Estimate Refinement Level-of Effort	Development Team	When the Refinement is updated, Development assesses the additional development required, then estimates the number hours that will be required to modify the code.
4	Is the Refinement LOE within ~2 hours?	Development Team	Refinements are assessed by the Development Team and the level of effort to resolve them is estimated. If the level of effort is over approximately two hours, the Triage team is notified for further consideration of priority and impact to overall efforts. Note: Refer to section 3.2.1 Test Components for Refinement and Enhancement definitions.
5	Submit Requirement to CLIENT for approval	QA Team / BSA Team	Continuing the Refinement process, the QA Team or BSA Team validates the Requirement documentation and forwards the Requirement to the appropriate CLIENT stakeholders for review and approval.
6	Approve Refinement?	CLIENT Analysts & SMEs	CLIENT reviewers determine if the modified Requirement satisfies the business' needs. If so, CLIENT obtains approvals from the necessary stakeholders and documents that approval in the Azure DevOps (ADO) Refinement.
7	Return comments & requested modifications	CLIENT Analysts & SMEs	If CLIENT determines the Refinement does not satisfy the need, comments are returned to the QA or BSA Team.  This series of steps is likely to be real-time conversation and coordination among the performers instead of a step-by-step process. Teamwork and real-time feedback and coordination are keys to effective Refinement documentation and approval.

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8	Add to Backlog; prioritize	QA Team	If the CLIENT approves the Refinement, it is forwarded to the QA Team which adds it to the Backlog and queues for advancement based on priority.
9	Retrieve Refinement from Backlog to work	Development Team	The Development Team retrieves a Refinement from the Backlog based on priority (section 4.1.3).
9.1	Collaborate to pull Refinement from Backlog	QA Team / BSA Team	Depending upon timing and the source of the Refinement, the QA Team and/or the BSA Team collaborate with Development to retrieve the Refinement and initiate resolution.
10	Update Requirement	BSA Team	The first step in resolution is to update the Requirement. Because the modification was approved in step 6, the Requirement does not need to be re-approved. It is possible the BSA Team will collaborate with a stakeholder and QA to complete the modifications.
11	Advance for Resolution	Development Team	The Refinement / modified Requirement advances to the Development Team. It then follows the standard development process.
12	Change Refinement to Enhancement; communicate	BSA Team	If the Refinement is changed to an Enhancement, the BSA Team updates the Refinement in Azure DevOps (ADO) and communicates the change to stakeholders.
13	Advance Enhancement for resolution	BSA Team	When the Enhancement is logged, the BSA Team adds the new Requirement to the Backlog. It is then queued based on business need.

## Quality Objectives

This section shows the acceptance criteria to allow cycle exit sign-off from test execution as defined in Section 3.7 Cycle Exit Criteria for QA Execution. For Defects, Critical-High-Medium-Low refers to Severity. Defect Priority is considered following Critical and High Severity Defect resolution but is not a factor in Quality Objectives. For Refinements, Critical-High-Medium-Low refers to Priority.

Objective	Expected	Actual Value	Status	Comment
<b>FUNCTIONAL DEFECTS</b>				
(%) critical defects resolved prior to end of cycle	= 100			
(%) high defects resolved prior to end of cycle	= 100			
(%) medium defects resolved prior to end of cycle	= 85			
(%) low defects resolved prior to end of cycle	= 70			
<b>DEFECTS-LEGACY</b>				
(%) critical legacy defects resolved prior to end of cycle when determined it can be fixed during the	= 100			Defect shall be deferred to another cycle if it is determined it cannot be

## Sample Quality Management Plan

testing phase (FT/UAT week)				fixed/addressed during the testing phase
(%) high legacy defects resolved prior to end of cycle when determined it can be fixed during the testing phase (FT/UAT week)	= 100			Defect shall be deferred to another cycle if it is determined it cannot be fixed/addressed during the testing phase
<b>DATA DEFECTS</b>				
(%) Critical Defects resolved in the cycle	= 100			Data Defects that visibly affect system functionality with a high business impact
(%) Non-Critical Defects resolved in the cycle	= 80			Data Defects that do not visibly affect system functionality with a low/no business impact
<b>FUNCTIONAL REFINEMENTS</b>				
(%) Critical Refinements resolved in the cycle	= 100			
(#) Development hours invested during cycle to resolve new Refinements	= 10			

## Test Infrastructure

This section specifies the test environments, the hardware and software requirements, tools used for the QA Testing, Reporting and QA Automation.

### Test Environment

Refer to the QA Test Environment SharePoint page for the current setup used for testing.

### Hardware and Software Infrastructure

The workstations used for testing shall be standard windows operated computers with access and connections to the internet, and to the required system application. Any unique or unusual equipment or tool setup from normal procedures shall be noted directly in the test cases as pre-conditions

### QA Testing Tools

The list of tools that shall be used during testing are listed below:

#### 1. Azure DevOps (ADO)

This tool shall be used to record and track and execute user stories, test cases and for defect management.

#### 2. Xray

This tool shall be integrated with Azure DevOps (ADO) and used for test case management, writing test scripts and test execution.

#### 3. SharePoint

## Sample Quality Management Plan

All other test artifacts shall be recorded and documented with this tool. This includes QA Test Plan herein, Child Test Plans, Test Result documents and Reports.

### 4. MS SQL Server Management Studio (SSMS)

This tool shall be used for Data Validation/ETL and Conversion testing

### 5. Protractor

This test tool shall be used to automate specific portions of the testing for regression. Execution logs (results) from automated test scripts shall be tracked and integrated in Azure DevOps (ADO).

<b>UI Automation Tool</b>	Protractor
<b>Scripting Language</b>	TypeScript
<b>Framework</b>	Jasmine 3.5

### 6. A11y Testing tools

The following automated tools shall be used for Accessibility Testing: a) Axe, b) Accessibility Insights, and c) Lighthouse.

Additional testing tools utilized for testing shall be noted directly in the child test plans for a cycle or in test case itself.

## Reporting tools

Test metrics and charts for tracking and measuring the QA activities shall be created using Azure DevOps (ADO) and Excel. The resulting reports shall be displayed in SharePoint or linked in a word document for the applicable test deliverable. Some reporting shall also be managed and produced within Azure DevOps (ADO) via dashboards like defects, test status and user stories in a cycle. Beautiful Reporter shall be used by QA Automation to generate test result reports in html and json format.

## Reporting & Metrics

The QA metrics that shall be tracked and measured during the QA process during a cycle for reporting are defined below:

### Defect Metrics

- Total # Defects: The total number of valid defects found during QA testing
- Total # Defects by Status: A summation of defects found during QA testing categorized by the state of the defect at the end of QA testing.
- Total # Defects by Severity: A summation of defects found during QA testing categorized by the severity of the defect
- Percentage of Defects by Status: The last state of defects found during QA testing in comparison to the total number of defects found
  - Defects by Status / Total # Defects x 100
- Percentage of Defects by Severity: The severity of defects found during QA testing in comparison to the total number of defects found

- Defects by Severity / Total # Defects x 100
- Total # Defects by Test Level: A count of the total number of defects found by the QA (& QA Data) team, and by the UAT team
- Defect Severity Index (DSI): This metric helps evaluate the degree of impact a defect has on the component/s of the application under test, offers insight into the quality and performance of the system, and helps gauge the quality of the team's efforts. A drop in DSI through multiple test iterations or cycles may indicate that the quality of the product/feature is increasing.
  - $DSI = \text{Sum of } (\text{Defect} * \text{Severity Level}) / \text{Total # of defects}$ , where severity of different levels characterizes how defects influence the application/system
- Defect Containment Effectiveness (DCE): This metric shows the percentage of defects contained/discovered before the system was released to the next/UAT test level. The goal is to have the ability to find defects in earlier test levels than subsequent test levels, so the higher the percentage the more effective the team is. And 100% efficiency indicates that no defects were transmitted to the next level, or any defects injected during the earlier test level were detected during that same level.
  - $DCE = (\text{FT week defects}) / (\text{FT week defects} + \text{UAT week defects}) \times 100$
- Defect Leakage: This metric reviews the QA testing process efficiency before release of the system to the UAT test level. Defects found by business testers that were undetected by the QA team in an earlier test level are considered defect/defect leakage.
  - $DL = \text{Total # of defects found in UAT} / \text{Total # of defects found before UAT} \times 100$
- Defect Removal Efficiency (DRE): This metric measures the development team's ability to remove defects from the system by the end of the testing cycle or prior to implementation. It may also indirectly indicate the quality and performance of the system. The goal is to have the ratio increase during the project or cycles, so a higher percentage means a more effective team.
  - $DRE = \# \text{ of defects resolved or closed} / \text{total # of defects at time of measurement} \times 100$

Defect Reports are available for Defects, Defects-Legacy, or both. Quality Metrics, as defined in the next section, utilize Reports using only Defects.

## Quality Metrics

- Test Case Effectiveness: This metric's objective is to know the efficiency of test cases executed by QA testers during every testing cycle. It helps in determining the quality of the test cases.
  - Test Case Effectiveness =  $(\text{total # of defects detected} / \text{total # of test cases run}) \times 100$
- Test Execution Coverage: The objective of this metric is to get an idea about the total number of test cases executed as well as the number of test cases left pending during test execution.
  - Test Execution Coverage =  $(\text{Total # of executed test cases or scripts} / \text{Total # of planned test cases or scripts}) \times 100$
- Test Design Coverage: This metric's objective is to measure the percentage for the functional coverage of test cases against the total number of requirements in scope.

- Test Design Coverage = (Total # of requirements mapped to test cases / Total # of requirements in scope) x 100
- Test Case Coverage by Status: This metric's objective is to measure the percentage of test case results by status.
  - Passed Test Cases Coverage = (# of passed tests / # of tests executed) x 100
  - Failed Test Case Coverage = (# of failed tests / Total # of test cases failed) x 100
  - Test Cases Blocked = (# of blocked tests / Total number of tests executed) x 100
- Test Efficiency Ratio: This metric's objective is to measure and ensure that test execution is done efficiently by evaluating if the test process needs improvement.
  - Efficiency Ratio = (# of test cases executed / # tested requirements, user stories verified & defects found)
- Test Duration: An absolute number that represents the actual number of days that QA testing lasted. This metric is different from the planned number of days for testing which is fixed per cycle
- # Stories Verified: An absolute number of the total number of stories validated during QA testing. This metric does not include any deferred stories.
- # Requirements Covered: The total number of business requirements covered during QA testing.
- # Tests Executed: The total number of tests or test cases executed during QA testing.
- Percentage of Defects Resolved by Severity: A percentage of the total number of defects/defects resolved and verified during QA testing.
  - (%) Defects Resolved = (# of Closed Defects / Total # of Defects)

Throughout the course of the test execution phase and up to completion of a cycle, the following forms of test reports shall be made available to the Project Team and other stakeholders:

- Status Reports: A summary of testing provided periodically /daily during QA testing with the following information –
  - Total # of Tests
  - # Tests Executed
  - # Tests Passed
  - Total # Defects found
  - # Defects Closed
- Defect Dashboard: Available directly in Azure DevOps (ADO) to view the status of Defects, not including Defects-Legacy and the following –
  - Open Defects
  - Closed Defects
  - Deferred Defects
  - Enhancements
- Test Execution Status Dashboard: Available directly in Azure DevOps (ADO) to view the result

status of tests and test cases. A test would be reflected with one of the following statuses –

- Pass – The test run has passed
  - To-do – The test run has not started
  - Executing – The test run is currently being executed
  - Fail – The test run has failed
  - Aborted – The test run was aborted
  - Deferred – The test run is being deferred to a future Cycle
  - Blocked – The test run is blocked
- Detailed definitions for Test Execution statuses can be found on the SharePoint webpage.
  - Test Results Reports: This shall be provided as a QA deliverable artifact at the end of the testing cycle and include compilation of the Defect and Quality metrics with related charts and other pertinent information.

## QA Team Structure

The planned QA team including roles and responsibilities is not necessarily limited to what's identified and defined below (or in the testing strategy above) as resources may change from time to time during the actual test cycles based on availability of personnel including the size, complexity and scope of the system under test.

## Roles and Responsibilities

The test program shall require the identification and assignment of key roles responsible for the discovery and proof of quality assurance. These are:

Test Role	Responsible Team	Responsibility
Unit Tester	CapTech Development	Conducts Unit Testing by examining each code unit separately, then integrated other units in a build.
QA Test Lead	CapTech Quality Assurance	Manages all testing activities, including UI automation, integration testing, performance/scalability testing. Defines the testing cycle and oversees the testing environments, test scheduling, and reporting on the status of testing activities. Ensures that requirements and deliverables are verified and validated at each testing phase and final acceptance Conducts Functional Testing and System Integration Testing. Performs test reviews of business requirements and user stories. Performs High Level Functional Tests during cycle development sprints Manages the process for each test level. Configures and manages test repository and tools. Defines test plans and coordinates test plan execution. Supports Unit Testers if needed Defines and assigns tasks for testers

Sample Quality Management Plan

<b>Test Role</b>	<b>Responsible Team</b>	<b>Responsibility</b>
		<p>Defines test scenarios, designs test cases and oversees test case creation</p> <p>Ensures complete requirements coverage with test cases.</p> <p>Ensures test cases map to appropriate requirements or user stories</p> <p>Executes QA test cases and analyzes test results</p> <p>Identifies test cases suitable for Regression and Automation</p> <p>Assists Business Testers during UAT.</p> <p>Manage QA defects</p> <p>Create and Track metrics, and quality objectives</p> <p>Produces various QA test reports and complete test results</p>
QA Tester/ Analyst	CapTech Quality Assurance	<p>Conducts Functional and System Integration Testing.</p> <p>Performs High Level Functional Tests during cycle development sprints</p> <p>Review User Stories and Requirements</p> <p>Designs manual test cases and scripts for Functional Testing.</p> <p>Executes test scripts and analyzes results.</p> <p>Update Regression test suite and identify new Regression tests</p> <p>Submits defects.</p> <p>Provides testing status updates to QA Test Lead.</p>
QA Test Automation Lead	CapTech Quality Assurance	<p>Designs and establishes the test automation architecture</p> <p>Manages and Defines the Automation Test Process</p> <p>Reviews automated test scripts</p> <p>Leads the automation testing effort</p> <p>Designs automated test scripts for Regression and Compatibility Testing.</p> <p>Executes automated test scripts.</p> <p>Submits defects.</p> <p>Provides testing status and test execution updates to QA Test Lead.</p> <p>Advising projects team on organizational sustainability practices for Test Automation and DevOps.</p>
QA Automation Engineer/ Developer	CapTech Quality Assurance	<p>Develops of automated scripts</p> <p>Maintains the health of the automated test suite.</p> <p>Technical analysis and building step definitions as defined by the automation analyst</p> <p>Executes automated test scripts.</p> <p>Submits defects.</p> <p>Provides testing status and test execution updates to QA Automation Lead</p>
QA Automation Analyst	CapTech Quality Assurance	<p>Identify test cases suitable for regression</p> <p>System analysis, specification, creation of functional test definition, authoring test scripts, and pairing with CLIENT team members for knowledge transfer.</p> <p>Validate the test cases identified for regression</p> <p>Validate the automated test scripts</p> <p>Executes automated test scripts and analyze results</p>

Sample Quality Management Plan

<b>Test Role</b>	<b>Responsible Team</b>	<b>Responsibility</b>
		Analyzes issues logged by the Automation scripts to ensure that the issues are valid
QA Data Analyst	CapTech Data	<p>Performs Data Conversion and Data Migration Testing</p> <p>Performs ETL and Data Validation Testing</p> <p>Creates SQL test scripts and queries</p> <p>Automates SQL scripts</p> <p>Analyzes and Validates data test results</p> <p>Submits data defects</p> <p>Coordinates with the QA Test lead and QA team</p>
CLIENT Testers	UAT PM, Test Coordinator, Test Data Coordinator, Testers (CLIENT BA, CLIENT SME, ITS SME)	<p>Business testers shall be selected as needed prior to test entry to execute test cases they create for UAT which shall be included in an Acceptance Test Plan. Business Testers may include Business Users of the application, SMEs defined below or BA's familiar with the requirements. The CLIENT/ITS Test Roles are -</p> <p>UAT PM</p> <p>Test Coordinator</p> <p>Test Data Coordinator</p> <p>Tester (note: includes CLIENT BA, CLIENT SME or ITS SME)</p> <p>Business users are business stakeholders who own the requirements specification. They are Business Testers who have an in-depth knowledge of the implementation detail pertaining to requirements verification.</p> <p>Conducts User Acceptance Testing.</p> <p>Defines end user test scenarios and cases needed for User Acceptance Testing.</p> <p>Validates end-to-end business processes.</p> <p>Verifies performance of business-critical functions.</p> <p>Confirms integrity of business data.</p> <p>Provides testing status updates to QA Test Lead and project team.</p> <p>Subject Matter Expert (SMEs) are individuals within CLIENT who know various practical use scenarios as they pertain to their roles at CLIENT and their understanding of outside constituent usage. SMEs shall be responsible for enhancing test coverage through their identification of test cases that extend beyond the coverage defined by the test lead or tester.</p>
UAT Lead/PM	CLIENT	<p>Project Manager leading the UAT Effort</p> <p>Planning and coordinating UAT</p> <p>Interfacing with the QA Test Lead</p>
Triage Lead/Team	CapTech (BSA/QA/Dev)	<p>The Triage Lead shall be the QA Test Lead of the Project and the Triage Group/Team shall comprise QA Analysts and/BSAs responsible for a given User Story and Developers.</p> <p>The triage lead is the individual that's part of the project, knowledgeable on the implementation/requirements level and responsible for determining the nature of a defect. Their responsibility</p>

Test Role	Responsible Team	Responsibility
		<p>is to bring key stakeholders and testers together if/when necessary to decide if defects should be fixed or deferred and how to resolve other issues found during testing.</p> <p>The triage team includes individuals on the Project identified by the Triage Lead. These individuals would at the minimum include the person/s that find a defect/issue, capable of fixing/resolving the defect/issue and stakeholders that make key decisions on the Project or accountable for the project's area.</p> <p>Manages defects and enhancements in Azure DevOps (ADO)</p> <p>Assigns development resource to fix a defect.</p>

## Test Team

In accordance with roles and responsibilities defined above, the following individuals or groups have been identified as part of the overall Test Team:

Tester Name / Group	Test Role	Organization / Department (Location)	Position / SME	Cycle Roll In
CapTech QA				
	QA Project Manager	CapTech (Richmond)	N/A	2
	QA Test Lead	CapTech (Schenectady)	N/A	1
	QA Test Automation Lead	CapTech/Automation (NJ/Philadelphia)	N/A	1
	QA Tester/Analyst	CapTech (Schenectady)	N/A	3/4
	QA Tester/Analyst	CapTech (Schenectady)	N/A	TBD
	QA Tester/Analyst	CapTech (Richmond)	N/A	2
	QA Tester/Analyst	CapTech (Richmond)	N/A	3
	QA Tester/Analyst	CapTech (Philadelphia)	N/A	2
	QA Automation Engineer/Developer	CapTech/Automation	N/A	2
	QA Automation Engineer/Developer	CapTech/Automation	N/A	3
	QA Automation Analyst / QA Analyst	CapTech/Automation	N/A	TBD
	QA Data Analyst	CapTech/Data (Richmond)	N/A	3
	QA Data Analyst	CapTech/Data (Richmond)	N/A	4
	QA Data Analyst	CapTech/Data (Richmond)	N/A	5
UAT				
	UAT Lead	CLIENT	Project Manager	1
	UAT Lead #2	CLIENT	Project Manager	2

## Sample Quality Management Plan

Tester Name / Group	Test Role	Organization / Department (Location)	Position / SME	Cycle Roll In
	Test Data Coordinator	ITS	Technical Expert	1
	Test Coordinator	CLIENT	BA	1
	Test Coordinator	CLIENT	BA	1
	Test Coordinator	CLIENT	BA	1

## Inputs and Outputs

This section shows QA items that are dependent on other contract deliverables/documents.

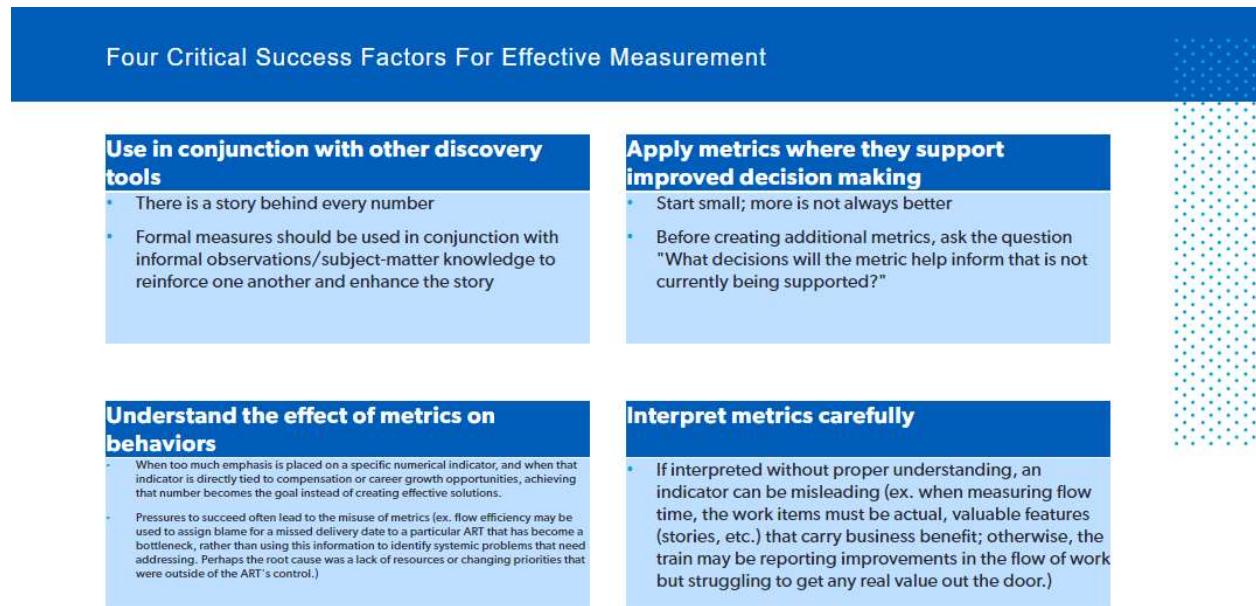
Project Deliverable (Input)	QA Item (Output)
Project Management Plan (PMP) Project Work Plan	Testing Schedule/Timeline, Test Team
Business Requirements Document (BRD)	Test Plans, Test Cases
Requirements Traceability Matrix (RTM)	Child Test Plans, Test Cases
Solution Design Document Software Component List Version Control and Release Management Plan	Test Planning
Data Conversion Plan Data Migration Plan System Integration Plan Data Warehouse Integration Design ETL Solutions	Test Cases (Data), Test Execution (Data), Test Data Management

## Appendix 12: Project Performance Plan Sample

# Project Performance Plan

## Summary

The matrix below identifies the performance goals that signify the successful accomplishment of business objectives, the measurement of the goal, when the measurement is performed, who is responsible for making the measurement, and how progress toward the goal is reported/documentated in both Stages 1 and 2.



Project Business Objective - Identify the desired result produced by the project that answers or resolves a business problem.

- Performance Goal - Define the success about the Project Objective
- Methodology - Describe how the performance goal is measured.
- Schedule - Describe when to measure.
- Responsibility - Identify who measures.
- Reports - Identify how progress toward meeting the performance goal is reported.

## Business Objectives

Project Business Objective	Performance Goal	Measurement	Timing	Responsibility	Reporting
<b>Stage 1</b>					
Deliver the POC	Finalize Project Management Plan documentation	Documented project kickoff presentation	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Documented Agile-Based Project Work Plan	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Delivered Milestones Deliverable Plan	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Documented Initial Product Backlog	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Documented Iterative Release Cycle Plan	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Documented Staffing Plan	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Documented VITA Initiation Documentation	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management Plan documentation	Documented Azure DevOps Work Management Structure	Initiation phase	POC Team	Status report
Deliver the POC	Finalize Project Management documentation	Documented PoC Vision / Scope	Initiation phase	POC Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Documented Business Processes	Design phase	Functional Architecture Team	Status report

## Project Performance Plan

	Create a detailed blueprint for the solution	Documented Business Rules	Design phase	Functional Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Documented System Design Specifications	Design phase	Technical Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Established Dev Environment	Design phase	Technical Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Provisioned Azure Instance and Infrastructure	Design phase	Technical Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Repos to Deploy Code	Design phase	Technical Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Third Party Tools Installed	Design phase	Technical Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Documented Security Architecture	Design phase	Technical Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Initial wireframes documented	Design phase	CX Architecture Team	Status report
Deliver the POC	Create a detailed blueprint for the solution	Design System Foundation	Design phase	CX Architecture Team	Status report
Proof of scaled Agile Approach	Planned to Done Ratio	Teams committed work vs. completed work as a percentage	Each Sprint	Scrum Masters	Sprint Reports
Meeting Consistent Velocity	Velocity is set and maintained by Agile teams	Velocity is consistent sprint over sprint to ensure predictability	Build & Test phases (~3-5 sprints)	Scrum Masters	Sprint Reports
Improve Time of Work Items in the System	Reduce WIP time	Time elapsed from when a work item enters the workflow to completion	Build & Test phases (~3-5 sprints)	Scrum Masters	Sprint Reports

## Project Performance Plan

Improve Flow Efficiency	Reduce portion of time backlog items are in a wait stage	Flow efficiency = Total Active Time / Flow Time	Build & Test phases (~3-5 sprints)	Scrum Masters	Sprint Reports
Deliver the POC	Iteratively deliver functionality that can be demo'd for feedback	Deliver 'Add and maintain a DMV customer'	Build & Test phases	POC Team	ADO
Deliver the POC	Iteratively deliver functionality that can be demo'd for feedback	Deliver 'Issue a basic Virginia title and registration (no liens, one owner)'	Build & Test phases	POC Team	ADO
Deliver the POC	Iteratively deliver functionality that can be demo'd for feedback	Deliver 'Request vehicle valuation from JD Power NADA value guide, licenses provided by DMV (web API request).'	Build & Test phases	POC Team	ADO
Deliver the POC	Customize a training and knowledge transfer plan	Train and coach DMV staff participating in the POC on new software and development tools as necessary	Training phase	Training Team	Status Report
<b>Stage 2</b>					
PI Objectives Met	Quarterly Planning Objectives Met Across Teams	Demonstrations of Completed Epics & Features	End of each Planning Interval	Agile Teams	Demos, Status Report
System Uptime	System Uptime of 99.99%	Capture system uptime metrics	Continuously	System Team	Status Report
Deployment & Testing Success to Pre-PROD	Regression testing successful in upper environment	Regression testing results	End of each Planning Interval when work is deployed, and regression tested	Quality Management Lead	Status Report

## Project Status Report

# Project Performance Plan

## Project Status Report

STATUS REPORT PERIOD: [Date or Range]

CURRENT STATUS:		Green	PREVIOUS STATUS:		Yellow	MILESTONE STATUS							
SCOPE:	G	SCHEDULE:	G	BUDGET:	G	Milestone	% Compl.	Target Delivery & Status	Comments / Path to Green				
Give a brief summary of the points that this status report updates on, pulling out key discussion points that highlight the report. Include overall path to Green, if applicable.													
<b>ACTIVITY SUMMARY</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Accomplishments</th> <th style="width: 70%;">Planned Activities</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>List key achievements from the report period</li> <li>Brief description or title</li> <li>Provide specific completion dates, if applicable</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>List next steps</li> <li>Include brief description or title</li> <li>Provide target dates, if applicable</li> </ul> </td> </tr> </tbody> </table>										Accomplishments	Planned Activities	<ul style="list-style-type: none"> <li>List key achievements from the report period</li> <li>Brief description or title</li> <li>Provide specific completion dates, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>List next steps</li> <li>Include brief description or title</li> <li>Provide target dates, if applicable</li> </ul>
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4	R	List major risks identified in the report period. Use the reference ID from the project risk log.	Note the risk response (i.e., if the risk will be mitigated, accepted, avoided, or transferred)			<b>DECISIONS / DISCUSSIONS</b>							
8	R	Note if the risk is near-term or mid-term. Include long-term risks if appropriate for audience.	Include the plan to implement the selected risk response			<ul style="list-style-type: none"> <li>List important decisions that were made during the report period</li> <li>List key discussions that took place during the report period</li> <li>Include stakeholders who were involved</li> </ul>							
9	I	List major issues that came up in the report period as well	Include the issue resolution or plan for resolution										

## Appendix 13: Contingency Plan Sample

# **Contingency, Readiness, and Disaster Recovery Plan**

## Summary

Contingency Planning, Readiness Planning, and Disaster Recovery Planning are critical elements to the successful implementation of technology projects. These plans identify potential risks and develop contingency strategies to mitigate them, ensuring a smooth and successful implementation.

## Contingency Plan

## An effective Contingency Plan:

- Minimizes risk by preparing the team for unforeseen events in advance. By having a plan in place, the team knows how to respond and handle risks that may arise during the project.
  - Uncover potential weaknesses in the project. Addressing these weaknesses promptly ensures that potential risks and issues are handled before they escalate.
  - Increases efficiency because the team knows what to do when a problem arises. This reduces the time wasted trying to figure out how to address the issue, promoting efficiency throughout the project.
  - Enhances team communication and coordination. The team knows how potentially impactful situations will be handled, leading to fewer disagreements and less confusion.
  - Provides plans for scenarios where a rollback is needed during cutover to ensure business stability and continuity.

# Sample Contingency Plan

## Readiness Plan

An effective Readiness Plan is a vital part of Contingency Planning by focusing attention on assessing and ensuring the readiness of the various areas and groups impacted by the project. A structured Readiness Plan:

- Helps identify potential risks and issues that may affect the successful execution of the project. This allows the project team to develop mitigation strategies and contingency plans to address those risks effectively.
  - Involves evaluating the readiness of key project components and when conducting this evaluation in advance, any issues or gaps in readiness can be detected early. This enables the

## Contingency, Readiness, and Disaster Recovery Plan

project team to take corrective actions and make necessary preparations to ensure smooth project execution.

- Aligns stakeholders' expectations and ensures their active involvement in the project. By communicating the readiness assessment and plans to stakeholders, the project team can manage expectations, clarify roles and responsibilities, and obtain necessary support. This alignment enhances stakeholder engagement and collaboration, increasing the project's chances of success.
- Simulates the Contingency Plans during a mock deployment or dress rehearsal to increase familiarity and validate all contingency and rollback procedures to be identified.

## Go-Live - Readiness

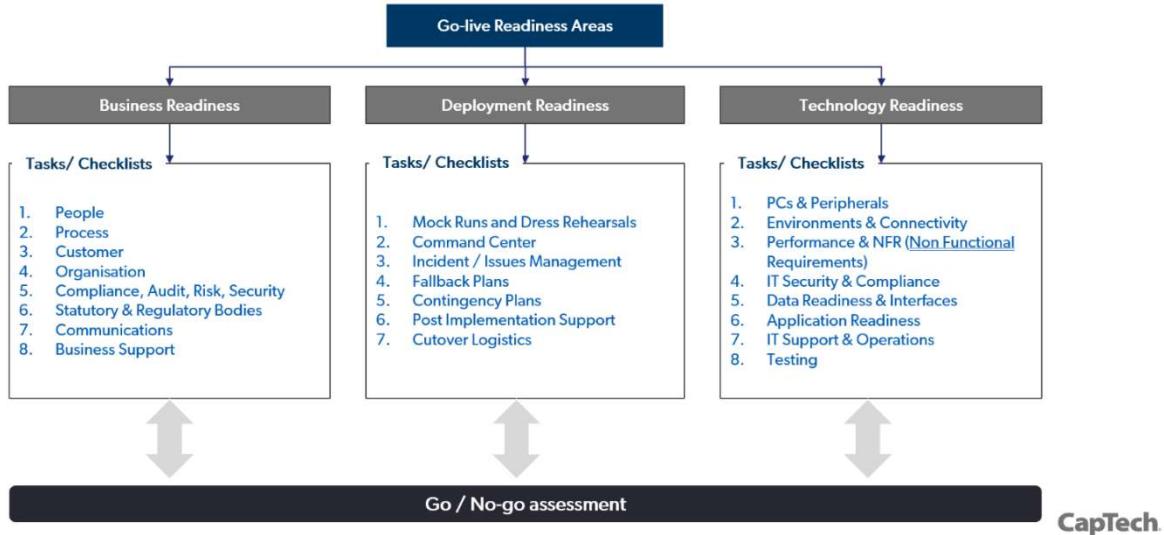
In the preparation towards a Go-Live decision, multiple impacted areas are required to be considered such that stakeholders feel comfortable that risks are being mitigated, contingencies are identified, and a 'Go Live' can be initiated.



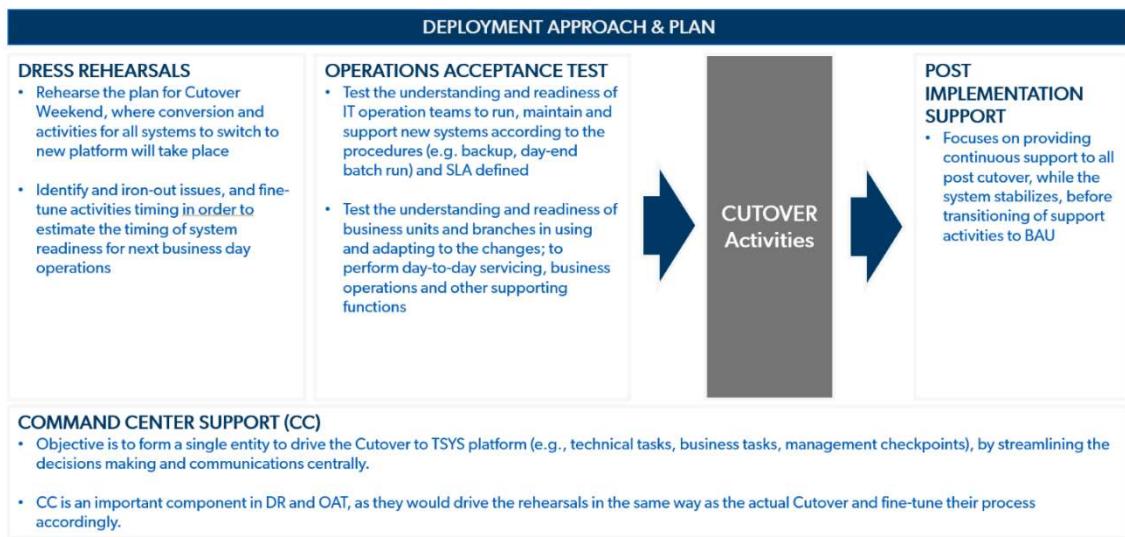
# Contingency, Readiness, and Disaster Recovery Plan

## Go-Live - Readiness

To support an effective evaluation of readiness across the program, clear and effective coordination of the assessment of systems, processes and people is required.



## Go-Live - Readiness



CapTech.

# Contingency, Readiness, and Disaster Recovery Plan

# Sample Implementation Readiness Checklist

## Implementation Readiness Checklist

**Purpose:** The Implementation Readiness Checklist is a step-by-step checklist to be used in the months leading up to the Pilot & Go-Live events. Activities and responsibilities are split across technology, business, and operations stakeholders. The Implementation Readiness Checklist is meant to provide guidance to Program Leadership on the confidence program stakeholders have the conversion will be a success given their strategic priorities. The final checklist walkthrough and Approvals from program leadership is to occur prior to each mock run and dress rehearsals.

**Process:** The information included in this document is gathered from input from Business, Technology, Conversion & Rollouts, and other program stakeholders in order to develop a consolidated readiness checklist. Input received from various program stakeholders will be reviewed by Program Leadership and approved to memorialize information they require to give formal Go\No-Go decision.

**Areas Covered:** The following areas will be captured in the Implementation Readiness Checklist - Operational: Data: System: Cutover: Organization and People: Customer

CapTech.

# Disaster Recovery Plan

A contingency plan is a proactive strategy designed to mitigate the impact of potential risks and uncertainties on an organization's operations. Its purpose is to outline a set of predetermined actions and procedures that can be implemented in response to unforeseen events or emergencies. By having a contingency plan in place, businesses can minimize disruptions, protect their assets, and ensure the continuity of critical processes during times of crisis or uncertainty. It helps organizations to be better prepared, make informed decisions, and respond effectively to various scenarios, such as natural disasters, cyberattacks, supply chain disruptions, or financial crises.

Some elements that are included in a disaster recovery plan:

1. Risk Assessment: Identify potential risks and vulnerabilities that could impact business operations, such as natural disasters, power outages, equipment failures, or cyber threats.
  2. Business Impact Analysis: Determine the potential impact of these risks on critical business processes, including financial implications, operational disruptions, and customer impact.
  3. Recovery Objectives: Define the recovery time objectives (RTO) and recovery point objectives (RPO) for each critical system or process. RTO specifies the acceptable downtime, while RPO determines the maximum acceptable data loss.
  4. Data Backup and Recovery: Establish a robust data backup strategy, including regular backups, offsite storage, and secure data replication. Define procedures for data restoration and recovery, ensuring data integrity and minimizing downtime.
  5. IT Infrastructure: Document the organization's IT infrastructure, including hardware, software, networks, and dependencies. Identify critical systems and prioritize their recovery based on business impact.
  6. Emergency Response: Define roles and responsibilities for key personnel during a disaster. Establish communication protocols, emergency contact information, and escalation procedures.

## Contingency, Readiness, and Disaster Recovery Plan

7. Alternate Site and Facilities: Identify alternate physical locations or facilities where business operations can be temporarily relocated in case the primary site becomes inaccessible. Ensure availability of necessary equipment, connectivity, and resources.
8. Vendor and Supplier Management: Assess dependencies on vendors and suppliers for critical services or products. Establish communication channels and contingency plans to address disruptions in the supply chain.
9. Testing and Training: Regularly test and validate the effectiveness of the disaster recovery plan through simulated scenarios and exercises. Provide training to employees on their roles and responsibilities during a disaster.
10. Plan Maintenance and Documentation: Review and update the plan periodically to reflect changes in the organization, technology, or risks. Ensure that the plan is well-documented, easily accessible, and known to key stakeholders.

## Appendix 14: CapTech Annual Reports (2021, 2022, 2023)

# **CAPTECH VENTURES, INC.**

## **FINANCIAL STATEMENTS**

***As of and for the Years Ended December 31, 2022 and 2021***

***And Report of Independent Auditor***

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## Report of Independent Auditor

To the Board of Directors  
CapTech Ventures, Inc.  
Richmond, Virginia

### Opinion

We have audited the accompanying financial statements of CapTech Ventures, Inc. (the "Company"), which comprise the balance sheets as of December 31, 2022 and 2021, the related statements of income, changes in stockholders' equity, and cash flows for the years then ended, and the related notes to the financial statements.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

### Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audits. We believe the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date the financial statements are available to be issued.

### Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and, therefore, is not a guarantee that an audit conducted in accordance with generally accepted auditing standards will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with generally accepted auditing standards, we:

- Exercise professional judgment and maintain professional skepticism throughout the audits.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts, and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

*Cherry Bekaert LLP*

Richmond, Virginia  
March 21, 2023

**CAPTECH VENTURES, INC.**  
**BALANCE SHEETS**

DECEMBER 31, 2022 AND 2021

	<b>2022</b>	<b>2021</b>
<b>ASSETS</b>		
Current Assets:		
Cash and cash equivalents	\$ 52,492,815	\$ 27,549,779
Accounts receivable, net	41,166,732	51,496,826
Contract assets	1,564,363	12,309,324
Prepaid expenses	2,858,484	1,516,272
Total Current Assets	98,082,394	92,872,201
Property and equipment, net	2,062,118	2,936,031
Operating lease right-of-use asset	4,318,860	5,709,357
Other Assets:		
Deferred income taxes	6,109,613	778,474
Security deposits	94,451	120,862
<b>Total Assets</b>	<b>\$ 110,667,436</b>	<b>\$ 102,416,925</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current Liabilities:		
Accounts payable and accrued expenses	\$ 3,996,405	\$ 1,834,364
Accrued payroll and payroll liabilities	24,000,133	26,742,574
Income taxes payable	13,268,310	6,371,852
Unearned revenue	2,475,095	6,575,689
Current portion of notes payable	-	2,111,968
Current portion of operating lease liability	1,931,744	2,069,157
Total Current Liabilities	<b>45,671,687</b>	<b>45,705,604</b>
Long-Term Liabilities:		
Operating lease liability, long term	3,513,725	5,204,224
Notes payable, less current portion	-	175,997
Total Long-Term Liabilities	<b>3,513,725</b>	<b>5,380,221</b>
Total Liabilities	<b>49,185,412</b>	<b>51,085,825</b>
Stockholders' Equity:		
Treasury stock	(31,959,966)	(31,959,966)
Additional paid-in capital	4,400,362	4,400,362
Retained earnings	89,041,628	78,890,704
Total Stockholders' Equity	<b>61,482,024</b>	<b>51,331,100</b>
<b>Total Liabilities and Stockholders' Equity</b>	<b>\$ 110,667,436</b>	<b>\$ 102,416,925</b>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**STATEMENTS OF INCOME**

*YEARS ENDED DECEMBER 31, 2022 AND 2021*

	<b>2022</b>	<b>2021</b>
Revenue	\$ 281,983,632	\$ 238,137,069
Operating expenses	225,229,334	205,894,282
Operating Income	<u>56,754,298</u>	<u>32,242,787</u>
Other Income:		
Other income	<u>64,552</u>	<u>84,559</u>
Total Other Income	<u>64,552</u>	<u>84,559</u>
Income before income taxes	56,818,851	32,327,346
Income taxes	12,067,927	8,768,358
Net income	<u>\$ 44,750,924</u>	<u>\$ 23,558,988</u>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY**

YEARS ENDED DECEMBER 31, 2022 AND 2021

	<b>Treasury Stock</b>	<b>Additional Paid-In Capital</b>	<b>Retained Earnings</b>	<b>Total</b>
<b>Balance, January 1, 2021</b>	\$ (31,959,966)	\$ 4,400,362	\$ 75,331,716	\$ 47,772,112
Dividends	-	-	(20,000,000)	(20,000,000)
Net income	-	-	23,558,988	23,558,988
<b>Balance, December 31, 2021</b>	(31,959,966)	4,400,362	78,890,704	51,331,100
Dividends	-	-	(34,600,000)	(34,600,000)
Purchase of Stock from Markel	7,012,670	-	-	7,012,670
Sale of Stock to Principals	(7,012,670)	-	-	(7,012,670)
Net income	-	-	44,750,924	44,750,924
<b>Balance, December 31, 2022</b>	<b>\$ (31,959,966)</b>	<b>\$ 4,400,362</b>	<b>\$ 89,041,628</b>	<b>\$ 61,482,024</b>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**STATEMENTS OF CASH FLOWS**

YEARS ENDED DECEMBER 31, 2022 AND 2021

	<b>2022</b>	<b>2021</b>
<b>Cash flows from operating activities:</b>		
Net income	\$ 44,750,924	\$ 23,558,988
Adjustments to reconcile net income to net cash flows from operating activities:		
Depreciation	803,174	1,008,574
Loss on disposal of equipment	192,308	81,227
Amortization of operating lease right-of-use asset	1,390,497	1,812,138
Deferred tax asset	(5,331,139)	(611,470)
Change in:		
Accounts receivable, net	10,330,094	(15,767,926)
Contract assets	10,744,961	4,262,665
Prepaid expenses	(1,342,212)	(124,302)
Security deposits	26,411	30,807
Accounts payable and accrued expenses	2,162,041	(1,371,053)
Accrued payroll and payroll liabilities	(2,742,441)	1,067,776
Unearned revenue	(4,100,594)	2,898,541
Lease liability - operating	(1,827,912)	(1,900,465)
Income taxes payable	6,896,458	(1,472,371)
Net cash flows form operating activities	<u>61,952,570</u>	<u>13,473,129</u>
<b>Cash flows from investing activities:</b>		
Purchase of property and equipment	<u>(121,569)</u>	<u>(12,321)</u>
Net cash flows from investing activities	<u>(121,569)</u>	<u>(12,321)</u>
<b>Cash flows from financing activities:</b>		
Purchase of shares from Market	(7,012,670)	-
Sale of shares to CapTech principals	7,012,670	-
Dividend payments	(34,600,000)	(20,000,000)
Principal payments on notes payable	(2,287,965)	(2,218,219)
Net cash flows from financing activities	<u>(36,887,965)</u>	<u>(22,218,219)</u>
Net change in cash and cash equivalents	24,943,036	(8,757,411)
Cash and cash equivalents, beginning of year	<u>27,549,779</u>	<u>36,307,190</u>
Cash and cash equivalents, end of year	<u>\$ 52,492,815</u>	<u>\$ 27,549,779</u>
<b>Supplemental disclosure of cash flow information:</b>		
Cash paid for income taxes	<u>\$ 10,665,578</u>	<u>\$ 10,844,100</u>
Cash paid for interest	<u>\$ -</u>	<u>\$ 56,547</u>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

*DECEMBER 31, 2022 AND 2021*

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**Note 1—Organization and nature of business**

CapTech Ventures, Inc. (the “Company”) is a Virginia corporation organized in 1997 and partners with some of the world’s most successful companies to design, develop, and manage technical and digital solutions. The Company’s primary practice areas include management consulting, technology optimization, data and analytics, and customer experience. The Company is headquartered in Richmond, Virginia and has eight offices in multiple states. Effective December 11, 2015, the Company became a subsidiary of Markel Ventures.

**Note 2—Summary of significant accounting policies**

*Cash and Cash Equivalents* – Cash equivalents consist of highly liquid investments purchased with an original maturity of three months or less. The carrying value of cash and cash equivalents approximates fair value because of the short maturities of those financial instruments.

*Accounts Receivable and Bad Debts* – Trade accounts receivable are stated net of an allowance for doubtful accounts. The Company estimates the allowance based on an analysis of specific customers, taking into account the age of the past due invoice and the customer’s ability to pay.

*Property and Equipment* – Acquisitions of property and equipment are recorded at cost. Improvements and replacements of property and equipment are capitalized. Maintenance and repairs that do not improve or extend the lives of property and equipment are charged to expense as incurred. When assets are sold or retired, their cost and related accumulated depreciation are removed from the accounts and any gain or loss is reported in the statements of income. Depreciation is provided over the estimated useful life of each class of depreciable assets and is computed using the straight-line and accelerated methods, with estimated useful lives as follows:

Leasehold improvements	Shorter of lease term or 15 – 40 years
Furniture and equipment	5 – 10 years
Software	3 – 5 years

*Leases* – Following the adoption of the Financial Accounting Standards Board (“FASB”) Accounting Standards Update (“ASU”) 2016-02, *Leases (Topic 842)*, effective January 1, 2019, the present value of future lease payments for the Company’s leases with terms greater than 12 months are included on the balance sheet as lease liabilities and right-of-use lease assets. The Company’s lease portfolio primarily consists of operating leases for real estate. Total expected lease payments are based on the lease payments specified in the contract and the stated term, including any options to extend or terminate that the Company is reasonably certain to exercise. The Company has elected the practical expedient to account for lease components and any associated non-lease components within a contract as a single lease component and, therefore, allocates all of the expected lease payments to the lease component.

The lease liability, which represents the Company’s obligation to make lease payments arising from the contract, is calculated based on the present value of expected lease payments over the remaining lease term, discounted using the Company’s collateralized, incremental borrowing rate at the commencement date. The lease liability is then adjusted for any prepaid rent, lease incentives received, or capitalized initial direct costs to determine the lease asset, which represents the Company’s right to use the underlying asset for the lease term.

Total rent expense is primarily comprised of rental expense for operating leases. Rental expense is recognized on a straight-line basis over the lease term and includes amortization of the right-of-use lease asset and imputed interest on the lease liability.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

DECEMBER 31, 2022 AND 2021

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**Note 2—Summary of significant accounting policies (continued)**

*Revenue Recognition* – The Company provides consultant services to fulfill contracts with customers. The Company has two types of contracts with customers: fixed-fee and time and materials contracts. Both contract types have one performance obligation that is recognized over time.

Revenue from performance obligations satisfied over time consists of consulting services to provide systems engineering and integration, customer experience, data and analytics, and transformation solutions tailored to the individual customer. For performance obligations related to consulting services, control transfers to the customer as the work product is delivered. Time and materials contracts recognize revenue as services are provided for fixed rate with variable hours. Fixed fee contracts are similar where the services provided are highly interrelated with other services included in the contract; however, fulfillment of the contract is dependent on the customer's desired outcome for a fixed transaction price. Revenue is recognized using an input method based on billable time incurred. Typically, fixed-fee and fixed-deliverable contracts involve more risk. However, they offer the opportunity for additional profits if the Company completes the contract for less than estimated. Under time-and-materials arrangements, profit may vary if actual labor-hour costs vary significantly from negotiated rates. Customers are typically billed on a monthly basis for time-and-materials contracts and based on the contractual billing schedule for fixed fee contracts where payments are due within 30 days.

The nature of the Company's business gives rise to variable consideration. Time-and-materials, fixed-deliverable, and fixed-fee contracts explicitly state the transaction price or rate in the contract, but may also include variable consideration, as the prices can vary based on tiered pricing arrangements, volume rebates, or service level clauses. The tiered pricing structures are documented and listed in the contracts and are established at the time the contract originates. Variable consideration is estimated at the most likely amount expected to be earned. Estimated amounts are included in the transaction price to the extent it is probable a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Estimates of variable consideration are based upon historical experience and known trends.

Contract assets include unbilled amounts typically resulting from sales under contracts where revenue recognized exceeds the amount billed to the customer. Contract liabilities, which are classified as unearned revenues on the accompanying balance sheets, include billings in excess of revenue recognized.

The beginning and ending contract balances were as follows:

	December 31,		
	2022	2021	2020
<b>Contract assets:</b>			
Unbilled accounts receivable	\$ 1,687,038	\$ 12,309,324	\$ 16,571,989
<b>Contract liabilities:</b>			
Unearned revenue	\$ 2,475,095	\$ 6,575,689	\$ 3,677,148
Accounts receivables, net	\$ 41,166,732	\$ 51,496,826	\$ 35,728,900

*Advertising Costs* – The Company expenses advertising costs as they are incurred. Advertising expense was \$3,932,673 and \$1,333,232 for the years ended December 31, 2022 and 2021, respectively.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

DECEMBER 31, 2022 AND 2021

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**Note 2—Summary of significant accounting policies (continued)**

*Self-Insured Group Medical Insurance* – The Company maintains a self-insured group medical insurance plan. The plan is designed to provide a specified level of coverage for employees and their dependents. Estimated liabilities for incurred but not paid claims utilize actuarial methods based on various assumptions which include, but are not limited to, historical loss experience and projected loss development factors.

*Use of Estimates* – The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. Such estimates also affect the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates and assumptions.

*Income Taxes* – The Company is included in Markel Corporation’s consolidated federal income tax return. Markel Corporation’s intention is to enter into a tax sharing agreement where federal income taxes are generally computed on a separate company basis and payments are made, or reimbursements are received, based on the tax effects to Markel Corporation from inclusion in the consolidated tax return. However, as of the date of these financial statements, no tax sharing agreement has been consummated.

Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amount of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered in income. Deferred tax assets are reduced by a valuation allowance if it is more likely than not the tax benefits will not be realized.

Management has evaluated the effect of the guidance provided by U.S. GAAP on Accounting for Uncertainty in Income Taxes. Uncertain tax positions were identified in 2022 related to research and development tax credits. There were no uncertain tax positions identified in 2021.

*Concentration of Credit Risk* – Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash and cash equivalents and trade accounts receivable.

The Company places its cash and cash equivalents on deposit with financial institutions in the United States. The Federal Deposit Insurance Corporation covers \$250,000 for substantially all depository accounts.

At times, the Company may have amounts on deposit in excess of the federally insured limits. As of December 31, 2022 and 2021, the Company had \$52,920,584 and \$28,503,963, respectively, which exceeded these insured amounts. The Company places its cash and cash equivalents with high credit quality financial institutions whose credit ratings are monitored by management to minimize credit risk.

One customer accounted for 9% of the accounts receivable balance and 17% of total sales in 2022. Three customers accounted for 24% of the accounts receivable balance and 33% of total sales in 2021. The Company believes credit risk with regard to these customers is limited due to the long-term relationships and their creditworthiness. The Company monitors its accounts receivable to minimize credit risks.

*Presentation of Sales Tax* – Certain of the Company’s sales are subject to sales tax imposed by various jurisdictions. The Company collects sales tax from customers and remits it to the applicable jurisdiction. The Company’s accounting policy is to exclude the tax collected and remitted from revenue and operating expenses.

**CAPTECH VENTURES, INC.**  
NOTES TO THE FINANCIAL STATEMENTS

DECEMBER 31, 2022 AND 2021

**Note 2—Summary of significant accounting policies (continued)**

*Upcoming Accounting Standards* – In June 2016, FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The ASU replaces the current incurred loss model used to measure impairment losses with an expected loss model for trade and other receivables as well as financial instruments measured at amortized cost. ASU 2016-13 becomes effective for the Company in 2023 and will be applied using a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. The Company is currently evaluating ASU 2016-13 to determine the potential impact adopting this standard will have on the financial statements.

**Note 3—Accounts receivable, net**

Accounts receivable, net consist of the following at December 31:

	<b>2022</b>	<b>2021</b>
Accounts receivable	\$ 41,321,962	\$ 52,675,460
Less allowance for doubtful accounts	<u>(155,230)</u>	<u>(1,178,634)</u>
	<u>\$ 41,166,732</u>	<u>\$ 51,496,826</u>

The Company had related party receivables of \$176,000 and \$657,138 for the years ended December 31, 2022 and 2021, respectively. Revenue from sales to these related parties were \$2,982,723 and \$3,852,464 for the years ended December 31, 2022 and 2021, respectively.

**Note 4—Property and equipment, net**

Major classes of property and equipment, net consist of the following at December 31:

	<b>2022</b>	<b>2021</b>
Furniture and equipment	\$ 4,563,459	\$ 4,603,536
Leasehold improvements	2,256,799	3,001,211
Software	<u>3,944,494</u>	<u>3,944,494</u>
	<u>10,764,752</u>	<u>11,549,241</u>
Less accumulated depreciation	<u>(8,702,634)</u>	<u>(8,613,210)</u>
	<u>\$ 2,062,118</u>	<u>\$ 2,936,031</u>

Depreciation expense for the years ended December 31, 2022 and 2021 was \$803,174 and \$1,008,574, respectively.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

*DECEMBER 31, 2022 AND 2021*

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**Note 5—Line of credit**

The Company has a revolving line of credit of \$20,000,000 with Capital One Financial Corporation. The line of credit is collateralized by a first priority security interest in all tangible and intangible assets of the Company. Interest is paid monthly at Secured Overnight Financing Rate ("SOFR") plus a variable rate between 1.50% and 2.00% (depending on the Company's leverage ratio). The maturity date is May 26, 2027. The amount available to the Company as of December 31, 2022 and 2021 was \$20,000,000. The Company had no amounts outstanding under the line of credit at December 31, 2022 and 2021. The interest rate was 5.32% and 1.65% at December 31, 2022 and 2021, respectively.

**Note 6—Notes payable**

In December 2012, the Company issued a \$25,000,000 note payable with Capital One Financial Corporation. The note payable is collateralized by a first priority security interest in all tangible and intangible assets of the Company. Interest is paid monthly at SOFR plus a variable rate between 1.50% and 2.00% (depending on the Company's leverage ratio). The interest rate was 2.10% on the note payable at December 31, 2021. The outstanding balance on the note payable at December 31, 2021 was \$2,287,965. The note payable contains restrictive covenants covering the Company's financial position and other requirements. The Company was in compliance with these covenants as of December 31, 2021. The note was paid off in May of 2022.

**Note 7—Lease obligations**

The Company's leases primarily consist of operating leases for real estate and have remaining terms of up to four years. Total lease expense for operating leases were \$2,241,248 and \$3,147,418 for the years ended December 31, 2022 and 2021, respectively.

The following table summarizes details for the Company's operating leases recorded on the balance sheet as of December 31, 2022:

Right-of-use lease assets	\$ 4,318,860
Lease liabilities	5,445,469
Weighted average remaining lease term	4.3
Weighted average discount rate	2.17%

The table below summarizes maturities of the Company's operating lease liabilities as of December 31, 2022, which reconciles to total lease liabilities included on the Company's balance sheet:

2023	\$ 1,931,744
2024	1,779,121
2025	1,264,174
2026	680,068
	<hr/>
	5,655,107
Less imputed interest	(209,638)
	<hr/>
	\$ 5,445,469

# **CAPTECH VENTURES, INC.**

## **FINANCIAL STATEMENTS**

***As of and for the Years Ended December 31, 2023 and 2022***

***And Report of Independent Auditor***

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## Report of Independent Auditor

To the Board of Directors  
CapTech Ventures, Inc.  
Richmond, Virginia

### Opinion

We have audited the accompanying financial statements of CapTech Ventures, Inc. (the "Company"), which comprise the balance sheets as of December 31, 2023 and 2022, the related statements of income, changes in stockholders' equity, and cash flows for the years then ended, and the related notes to the financial statements.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2023 and 2022, the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

### Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audits. We believe the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date the financial statements are available to be issued.

### Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and, therefore, is not a guarantee that an audit conducted in accordance with generally accepted auditing standards will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with generally accepted auditing standards, we:

- Exercise professional judgment and maintain professional skepticism throughout the audits.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts, and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

*Cherry Bekaert LLP*

Richmond, Virginia  
March 15, 2024

**CAPTECH VENTURES, INC.**  
**BALANCE SHEETS**

DECEMBER 31, 2023 AND 2022

	<b>2023</b>	<b>2022</b>
<b>ASSETS</b>		
Current Assets:		
Cash and cash equivalents	\$ 29,541,165	\$ 52,492,815
Accounts receivable, net	40,561,558	41,166,732
Contract assets	2,954,625	1,564,363
Prepaid expenses	<u>1,693,161</u>	<u>2,858,484</u>
Total Current Assets	74,750,509	98,082,394
Property and equipment, net	1,459,916	2,062,118
Operating lease right-of-use asset	3,014,539	4,318,860
Other Assets:		
Deferred income taxes	9,662,356	6,109,613
Security deposits	<u>121,055</u>	<u>94,451</u>
<b>Total Assets</b>	<b>\$ 89,008,375</b>	<b>\$ 110,667,436</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current Liabilities:		
Accounts payable and accrued expenses	\$ 2,149,799	\$ 3,996,405
Related party payable	4,170,842	-
Accrued payroll and payroll liabilities	22,309,932	24,000,133
Income taxes payable	9,326,472	13,268,310
Unearned revenue	2,713,378	2,475,095
Current portion of operating lease liability	<u>2,033,609</u>	<u>1,931,744</u>
Total Current Liabilities	<u>42,704,032</u>	<u>45,671,687</u>
Long-Term Liabilities:		
Operating lease liability, long term	<u>1,951,260</u>	<u>3,513,725</u>
Total Long-Term Liabilities	<u>1,951,260</u>	<u>3,513,725</u>
Total Liabilities	<u>44,655,292</u>	<u>49,185,412</u>
Stockholders' Equity:		
Treasury stock	(50,186,725)	(31,959,966)
Additional paid-in capital	4,400,362	4,400,362
Retained earnings	<u>90,139,446</u>	<u>89,041,628</u>
Total Stockholders' Equity	<u>44,353,083</u>	<u>61,482,024</u>
<b>Total Liabilities and Stockholders' Equity</b>	<b>\$ 89,008,375</b>	<b>\$ 110,667,436</b>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**STATEMENTS OF INCOME**

*YEARS ENDED DECEMBER 31, 2023 AND 2022*

	<b>2023</b>	<b>2022</b>
Revenue	\$ 252,189,695	\$ 281,983,632
Operating expenses	213,597,364	225,229,334
Operating Income	<u>38,592,331</u>	<u>56,754,298</u>
Other Income:		
Interest income	708,089	64,553
Total Other Income	<u>708,089</u>	<u>64,553</u>
Income before income taxes	39,300,420	56,818,851
Income taxes	<u>10,202,602</u>	<u>12,067,927</u>
Net Income	<u>\$ 29,097,818</u>	<u>\$ 44,750,924</u>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY**

YEARS ENDED DECEMBER 31, 2023 AND 2022

	<b>Treasury Stock</b>	<b>Additional Paid-In Capital</b>	<b>Retained Earnings</b>	<b>Total</b>
<b>Balance, January 1, 2022</b>	\$ (31,959,966)	\$ 4,400,362	\$ 78,890,704	\$ 51,331,100
Dividends	-	-	(34,600,000)	(34,600,000)
Purchase of stock from Market	7,012,670	-	-	7,012,670
Sale of stock to principals	(7,012,670)	-	-	(7,012,670)
Net income	-	-	44,750,924	44,750,924
<b>Balance, December 31, 2022</b>	<b>(31,959,966)</b>	<b>4,400,362</b>	<b>89,041,628</b>	<b>61,482,024</b>
Dividends	-	-	(28,000,000)	(28,000,000)
Stock repurchase	(18,226,759)	-	-	(18,226,759)
Net income	-	-	29,097,818	29,097,818
<b>Balance, December 31, 2023</b>	<b>\$ (50,186,725)</b>	<b>\$ 4,400,362</b>	<b>\$ 90,139,446</b>	<b>\$ 44,353,083</b>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**STATEMENTS OF CASH FLOWS**

YEARS ENDED DECEMBER 31, 2023 AND 2022

	<b>2023</b>	<b>2022</b>
<b>Cash flows from operating activities:</b>		
Net income	\$ 29,097,818	\$ 44,750,924
Adjustments to reconcile net income to net cash flows from operating activities:		
Depreciation	711,522	803,174
Loss on disposal of equipment	9,912	192,308
Amortization of operating lease right-of-use asset	1,304,321	1,390,497
Change in:		
Accounts receivable, net	605,174	10,330,094
Contract assets	(1,390,262)	10,744,961
Prepaid expenses	1,165,323	(1,342,212)
Security deposits	(26,604)	26,411
Deferred tax asset	(3,552,743)	(5,331,139)
Accounts payable and accrued expenses	(1,846,606)	2,162,041
Accrued payroll and payroll liabilities	(1,690,201)	(2,742,441)
Unearned revenue	238,283	(4,100,594)
Lease liability - operating	(1,460,600)	(1,827,912)
Income taxes payable	(3,941,838)	6,896,458
Net cash flows form operating activities	<u>19,223,499</u>	<u>61,952,570</u>
<b>Cash flows used in investing activities:</b>		
Purchase of property and equipment	(119,232)	(121,569)
Net cash flows used in investing activities	<u>(119,232)</u>	<u>(121,569)</u>
<b>Cash flows used in financing activities:</b>		
Repurchase of stock	(18,226,759)	-
Purchase of shares from Market	-	(7,012,670)
Sale of shares to CapTech principals	-	7,012,670
Dividend payments	(28,000,000)	(34,600,000)
Principal payments on notes payable	-	(2,287,965)
Net cash flows used in financing activities	<u>(46,226,759)</u>	<u>(36,887,965)</u>
Net change in cash and cash equivalents	(27,122,492)	24,943,036
Cash and cash equivalents, beginning of year	<u>52,492,815</u>	<u>27,549,779</u>
Cash and cash equivalents, end of year	<u>\$ 25,370,323</u>	<u>\$ 52,492,815</u>
<b>Supplemental disclosure of cash flow information:</b>		
Cash paid for income taxes	<u>\$ 17,986,203</u>	<u>\$ 10,665,578</u>
Right-of-use assets obtained for lease obligations	<u>\$ 524,486</u>	<u>\$ -</u>

The accompanying notes to the financial statements are an integral part of these statements.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

DECEMBER 31, 2023 AND 2022

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**Note 1—Organization and nature of business**

CapTech Ventures, Inc. (the “Company”) is a Virginia corporation organized in 1997 and partners with some of the world’s most successful companies to design, develop, and manage technical and digital solutions. The Company’s primary practice areas include management consulting, technology optimization, data and analytics, and customer experience. The Company is headquartered in Richmond, Virginia and has eight offices in multiple states. Effective December 11, 2015, the Company became a subsidiary of Markel Ventures, Inc.

**Note 2—Summary of significant accounting policies**

*Cash and Cash Equivalents* – Cash equivalents consist of highly liquid investments purchased with an original maturity of three months or less. The carrying value of cash and cash equivalents approximates fair value because of the short maturities of those financial instruments.

*Accounts Receivable and Allowance for Credit Losses* – The allowance for credit losses is based on the Company’s assessment of the collectability of customer accounts receivable. In accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) Topic 326, *Financial Instruments – Credit Losses*, the Company makes ongoing estimates relating to the collectability of accounts receivable and records an allowance for estimated losses expected from the inability of its customers to make required payments. Accounts receivable is considered past due when payment is not received within the credit terms extended to the customer, normally 30 days. The Company establishes expected credit losses by evaluating historical levels of credit losses, current economic conditions that may affect a customer’s ability to pay, and creditworthiness of significant customers. These inputs are used to determine a range of expected credit losses and an allowance is recorded within the range. Additionally, the Company incorporates forward-looking macroeconomic conditions to establish this allowance. Recoveries of accounts receivable previously written off are recorded when received.

*Property and Equipment* – Acquisitions of property and equipment are recorded at cost. Improvements and replacements of property and equipment are capitalized. Maintenance and repairs that do not improve or extend the lives of property and equipment are charged to expense as incurred. When assets are sold or retired, their cost and related accumulated depreciation are removed from the accounts and any gain or loss is reported in the statements of income. Depreciation is provided over the estimated useful life of each class of depreciable assets and is computed using the straight-line and accelerated methods, with estimated useful lives as follows:

Leasehold improvements	Shorter of lease term or 15 – 40 years
Furniture and equipment	5 – 10 years
Software	3 – 5 years

*Leases* – Following the adoption of FASB Accounting Standards Update (“ASU”) 2016-02, *Leases (Topic 842)*, effective January 1, 2019, the present value of future lease payments for the Company’s leases with terms greater than 12 months are included on the balance sheet as lease liabilities and right-of-use lease assets. The Company’s lease portfolio primarily consists of operating leases for real estate. Total expected lease payments are based on the lease payments specified in the contract and the stated term, including any options to extend or terminate that the Company is reasonably certain to exercise. The Company has elected the practical expedient to account for lease components and any associated non-lease components within a contract as a single lease component and, therefore, allocates all of the expected lease payments to the lease component.

The lease liability, which represents the Company’s obligation to make lease payments arising from the contract, is calculated based on the present value of expected lease payments over the remaining lease term, discounted using the Company’s collateralized, incremental borrowing rate at the commencement date. The lease liability is then adjusted for any prepaid rent, lease incentives received, or capitalized initial direct costs to determine the lease asset, which represents the Company’s right to use the underlying asset for the lease term.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

DECEMBER 31, 2023 AND 2022

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**Note 2—Summary of significant accounting policies (continued)**

Total rent expense is primarily comprised of rental expense for operating leases. Rental expense is recognized on a straight-line basis over the lease term and includes amortization of the right-of-use lease asset and imputed interest on the lease liability.

*Revenue Recognition* – The Company provides consultant services to fulfill contracts with customers. The Company has two types of contracts with customers: fixed-fee and time and materials contracts. Both contract types have one performance obligation that is recognized over time.

Revenue from performance obligations satisfied over time consists of consulting services to provide systems engineering and integration, customer experience, data and analytics, and transformation solutions tailored to the individual customer. For performance obligations related to consulting services, control transfers to the customer as the work product is delivered. Time and materials contracts recognize revenue as services are provided for fixed rate with variable hours. Fixed fee contracts are similar where the services provided are highly interrelated with other services included in the contract; however, fulfillment of the contract is dependent on the customer's desired outcome for a fixed transaction price. Revenue is recognized using an input method based on billable time incurred. Typically, fixed-fee and fixed-deliverable contracts involve more risk. However, they offer the opportunity for additional profits if the Company completes the contract for less than estimated. Under time-and-materials arrangements, profit may vary if actual labor-hour costs vary significantly from negotiated rates. Customers are typically billed on a monthly basis for time-and-materials contracts and based on the contractual billing schedule for fixed fee contracts where payments are due within 30 days.

The nature of the Company's business gives rise to variable consideration. Time-and-materials, fixed-deliverable, and fixed-fee contracts explicitly state the transaction price or rate in the contract, but may also include variable consideration, as the prices can vary based on tiered pricing arrangements, volume rebates, or service level clauses. The tiered pricing structures are documented and listed in the contracts and are established at the time the contract originates. Variable consideration is estimated at the most likely amount expected to be earned. Estimated amounts are included in the transaction price to the extent it is probable a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Estimates of variable consideration are based upon historical experience and known trends.

Contract assets include unbilled amounts typically resulting from sales under contracts where revenue recognized exceeds the amount billed to the customer. Contract liabilities, which are classified as unearned revenues on the accompanying balance sheets, include billings in excess of revenue recognized.

The beginning and ending contract balances were as follows:

	December 31,		
	2023	2022	2021
<b>Contract assets:</b>			
Unbilled accounts receivable	\$ 2,954,625	\$ 1,564,363	\$ 12,309,324
<b>Contract liabilities:</b>			
Unearned revenue	\$ 2,713,378	\$ 2,475,095	\$ 6,575,689
Accounts receivables, net	\$ 40,561,558	\$ 41,166,732	\$ 51,496,826

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

*DECEMBER 31, 2023 AND 2022*

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**Note 2—Summary of significant accounting policies (continued)**

*Advertising Costs* – The Company expenses advertising costs as they are incurred. Advertising expense was \$3,747,147 and \$3,932,673 for the years ended December 31, 2023 and 2022, respectively.

*Self-Insured Group Medical Insurance* – The Company maintains a self-insured group medical insurance plan. The plan is designed to provide a specified level of coverage for employees and their dependents. Estimated liabilities for incurred but not paid claims utilize actuarial methods based on various assumptions which include, but are not limited to, historical loss experience and projected loss development factors.

*Use of Estimates* – The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. Such estimates also affect the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates and assumptions.

*Income Taxes* – The Company is included in Markel Group, Inc. consolidated federal income tax return. Markel Group, Inc.’s intention is to enter into a tax sharing agreement where federal income taxes are generally computed on a separate company basis and payments are made, or reimbursements are received, based on the tax effects to Markel Group, Inc. from inclusion in the consolidated tax return. However, as of the date of these financial statements, no tax sharing agreement has been consummated.

Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amount of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered in income. Deferred tax assets are reduced by a valuation allowance if it is more likely than not the tax benefits will not be realized.

Management has evaluated the effect of the guidance provided by U.S. GAAP on Accounting for Uncertainty in Income Taxes. Uncertain tax positions were identified from 2019 through and 2023 related to research and development tax credits.

*Concentration of Credit Risk* – Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash and cash equivalents and trade accounts receivable.

The Company places its cash and cash equivalents on deposit with financial institutions in the United States. The Federal Deposit Insurance Corporation covers \$250,000 for substantially all depository accounts.

At times, the Company may have amounts on deposit in excess of the federally insured limits. As of December 31, 2023 and 2022, the Company had \$29,455,067 and \$52,920,584, respectively, in excess of the insurance limits. The Company places its cash and cash equivalents with high credit quality financial institutions whose credit ratings are monitored by management to minimize credit risk.

No customer accounted for over 10% of total sales or 10% of accounts receivable in 2023. One customer accounted for 9% of the accounts receivable balance and 17% of total sales in 2022. The Company believes credit risk with regard to these customers is limited due to the long-term relationships and their creditworthiness. The Company monitors its accounts receivable to minimize credit risks.

*Presentation of Sales Tax* – A portion of the Company’s sales are subject to sales tax imposed by various jurisdictions. The Company collects sales tax from customers and remits it to the applicable jurisdiction. The Company’s accounting policy is to exclude the tax collected and remitted from revenue and operating expenses.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

DECEMBER 31, 2023 AND 2022

**Note 2—Summary of significant accounting policies (continued)**

*Accounting Pronouncements Adopted in the Current Year* – In June 2016, FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326)*, and subsequently related amendments (ASU 2018-19, ASU 2019-04, ASU 2019-05, ASU 2019-10, ASU 2019-11, and ASU 2022-02). This guidance replaces the existing incurred loss impairment guidance and establishes a single allowance framework for financial assets carried at amortized cost based on expected credit losses. The estimate of expected credit losses requires the incorporation of historical information, current conditions, and reasonable and supportable forecasts.

The Company adopted this new accounting standard effective January 1, 2023 and all of the related amendments using the modified retrospective method. There was no material impact to the Company's financial position at January 1, 2023, or financial results for the year ended December 31, 2023, due to adopting this standard.

*Upcoming Accounting Pronouncement* – In December 2023, FASB issued ASU 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax Disclosures*, which expands income tax disclosure requirements to include greater disaggregation of information in the rate reconciliation and income taxes paid disaggregated between jurisdictions. This ASU will be effective for the year ended December 31, 2025. The Company is currently evaluating the effect the adoption of this ASU will have on the financial statements and disclosures.

**Note 3—Accounts receivable, net**

Accounts receivable, net consist of the following at December 31:

	<b>2023</b>	<b>2022</b>
Accounts receivable	\$ 41,214,999	\$ 41,321,962
Less allowance for credit losses	(653,441)	(155,230)
	<b>\$ 40,561,558</b>	<b>\$ 41,166,732</b>

**Note 4—Property and equipment, net**

Major classes of property and equipment, net consist of the following at December 31:

	<b>2023</b>	<b>2022</b>
Furniture and equipment	\$ 4,579,698	\$ 4,563,459
Leasehold improvements	2,267,939	2,256,799
Software	3,944,494	3,944,494
	<b>10,792,131</b>	<b>10,764,752</b>
Less accumulated depreciation	(9,332,215)	(8,702,634)
	<b>\$ 1,459,916</b>	<b>\$ 2,062,118</b>

Depreciation expense for the years ended December 31, 2023 and 2022 was \$711,522 and \$803,174, respectively.

**CAPTECH VENTURES, INC.**  
**NOTES TO THE FINANCIAL STATEMENTS**

*DECEMBER 31, 2023 AND 2022*

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**Note 5—Line of credit**

The Company has a revolving line of credit of \$20,000,000 with Capital One Financial Corporation. The line of credit is collateralized by a first priority security interest in all tangible and intangible assets of the Company. Interest is paid monthly at Secured Overnight Financing Rate ("SOFR") plus a variable rate between 1.50% and 2.00% (depending on the Company's leverage ratio). The maturity date is May 26, 2027. The amount available to the Company as of December 31, 2023 and 2022 was \$20,000,000. The Company had no amounts outstanding under the line of credit at December 31, 2023 or 2022. The interest rate was 6.88% and 5.32% at December 31, 2023 and 2022, respectively.

**Note 6—Lease obligations**

The Company's leases primarily consist of operating leases for real estate and have remaining terms of up to three years. Total lease expense for operating leases were \$2,269,561 and \$2,241,248 for the years ended December 31, 2023 and 2022, respectively.

The following table summarizes details for the Company's operating leases recorded on the balance sheet as of December 31, 2023:

	<b>2023</b>	<b>2022</b>
Right-of-use lease assets	\$ 3,014,539	4,318,860
Lease liabilities	3,984,869	5,445,469
Weighted average remaining lease term	2.2	4.3
Weighted average discount rate	2.58%	2.17%

The table below summarizes maturities of the Company's operating lease liabilities as of December 31, 2023, which reconciles to total lease liabilities included on the Company's balance sheet:

<b><u>Years Ending December 31,</u></b>	
2024	\$ 2,033,609
2025	1,332,035
2026	730,031
	<hr/> 4,095,675
Less imputed interest	(110,806)
Total lease liabilities	<hr/> \$ 3,984,869

## Appendix 15: Contract Redline



**MODERNIZED DMV CSS SOLUTION CONTRACT**

THIS MODERNIZED DMV CSS SOLUTION CONTRACT ("Contract") is entered into by and between the Virginia Department of Motor Vehicles ("DMV") and \_\_\_\_\_ ("Contractor"), a corporation organized and existing under the laws of the State/Commonwealth of \_\_\_\_\_, and headquartered at \_\_\_\_\_.

DMV and Contractor, in consideration of the mutual covenants, promises and agreements herein contained, agree as follows:

**1. PURPOSE**

This Contract sets forth the terms and conditions under which Contractor agrees to provide services and support for a Modernized Citizen Services Solution ("Solution", or "Modernized CSS Solution").

**2. DEFINITIONS**

**A. Acceptance**

The written acknowledgement by DMV of successful delivery and performance by the Contractor of its contractual commitments as stated in this Contract, including completed and successful acceptance testing in conformance with the Requirements as determined by DMV and set forth in this Contract.

**B. Application(s)**

The software programs and other related data, including intellectual data, software configuration, interfaces, proprietary information, and Documentation applicable to the Modernized CSS Solution developed by Contractor and DMV under this Contract and its Exhibits, including any Updates, enhancements, and replacements to the Application(s).

**C. Application Users**

Application Users shall include employees of DMV and any other person or entity performing work for and/or on behalf of DMV, as well as customers required to use the Modernized CSS Solution.

**D. Code**

The Code of Virginia, as in effect and amended from time-to-time.

**E. Commonwealth**

The Commonwealth of Virginia

**F. Computer Virus**

Any malicious code, program, or other internal component (e.g., computer worm, computer time bomb, or similar component), which could damage, destroy, alter or disrupt any computer program, firmware, or hardware or which could, in any manner, reveal, damage, destroy, alter or disrupt any data or other information accessed through or processed by such software in any manner.

**G. Contract**

This agreement, including all exhibits, schedules, and attachments, including any modifications or amendments thereto, entered into by the DMV and the Contractor.

**H. Confidential Information**

Any confidential or proprietary information of a Party that is disclosed in any manner, including oral or written, graphic, machine readable or other tangible form, to any other Party in connection with or as a result of discussions related to this Contract, and which at the time of disclosure

**Commented [HDT1]: General Exception:** It is CapTech's standard practice that it does not store, host, process or otherwise handle its clients' sensitive information or data (including but not limited to Personal Data, PHI or PCI data) on its systems or infrastructure. In the event that access to such information or data is required for the services, CapTech uses client issued laptops and email or access using Virtual Desktop Infrastructure ("VDI") only (and not VPN only).

CapTech is respectfully requesting the use of DMV or State issued laptops and email for these services.



either (i) is marked as being "Confidential" or "Proprietary" (ii) is otherwise reasonably identifiable as the confidential or proprietary information of the disclosing Party, or (iii) under the circumstances of disclosure should reasonably be considered as confidential or proprietary information of the disclosing Party or (iv) any personally identifiable information, including information about DMV's employees, contractors, and customers, that is protected by statute or other applicable law. Confidential Information may include trade secrets or proprietary information; however, the identification of such information as "Confidential" may not prevent its release under the Virginia Freedom of Information Act (§ 2.2-3700, et seq., of the *Code of Virginia*) or § 2.2-4342 of the *Code of Virginia*.

**I. Content**

Any data, including the selection, arrangement, and organization of such data, entered, uploaded to the Modernized CSS Solution and its Application(s), or otherwise provided to Contractor by DMV or by any Application User, and any software and related documentation, from whatever source, provided by DMV or any Application User to Contractor in connection with this Contract. Any data generated, captured, and stored through the use of the Modernized CSS Solution shall be considered Content.

**J. Contractor**

Includes the The entity identified in the preamble as the Contractor and any of its Affiliates (i.e., an entity that controls, is controlled by, or is under common control with Contractor), and includes any employees, and individual agents, sub-contractors, or and independent contractors of Contractor involved in providing the Modernized CSS Solution and/or any additional products or services related to the Modernized CSS Solution provided under this Contract.

**K. Contractor Product/Intellectual Property**

Contractor's proprietary reports, information and data made available to DMV and its Application Users, including as further described in this Section 2.K:

- i) Pre-Existing Intellectual Property. Contractor's proprietary software, methodologies, tools, specifications, drawings, sketches, models, samples, records, documentation, works of authorship or creative works, ideas, knowledge or data which have been originated or developed by Contractor or its affiliates or by third parties under contract with such party to develop same, or which have been purchased by, or licensed to, such Contractor (together "Works"); (b) any intellectual property rights in and to the Works; (c) any further developments, enhancements, or modifications to Contractor's intellectual property rights in the Works conceived, created, or reduced to practice in the course of performing the Services or otherwise. Contractor Intellectual Property shall not include the Works or intellectual property rights of third parties not licensed or purchased by Contractor.
- ii) Specific to the Contractor Services, the following components of the Solution and any enhancements thereto will be Contractor Intellectual Property:
  - 1) Large Language Model ("LLM") prompts, algorithms and models, with associated reasoning and execution engines, feedback loops, user interfaces and interaction mechanisms, and security and compliance configurations;
  - 2) Configuration and integration methodologies for ingesting and indexing data, using semantic search, querying of indexed sources, augmenting the development environment, identifying patterns and similarities, and responding in accordance with compliance and security configuration;
  - 3) User Interfaces created internally by Contractor; and
  - 4) Associated documentation and training materials.

**L. Contractor Services**

Includes all work of the Contractor related to the analysis, design, development, Customization, configuration, installation, training, and support of the Modernized CSS Solution.

**M. Customization**

Adjustments to and developments with respect to the Modernized CSS Solution and any of its Application(s) required in order for the Modernized CSS Solution and its Application(s) to operate or interface specifically with Content or with any of DMV's other systems or applications and/or to meet the EPD requirements, and any subsequent changes to the scope of the Contract.

**Commented [HDT2]: Exception:** CapTech is fully committed to ensuring that all individuals and parties working on CapTech's behalf under this Contract are bound by appropriate contractual mechanisms to comply with all terms that apply to them or their work. But we suggest that only CapTech should be the only entity singularly identified as the party to this Contract. Purporting to treat all CapTech Subcontractors or Affiliates as parties to the Contract by including them in the definition of "Contractor" yields untenable interpretations of certain Contract terms, by implying that each of them are separately, fully obligated to comply with terms of the Contract that are logically intended to apply only to the prime contracting entity. Instead, CapTech would expect to enter into written agreements with each Subcontractor (including any Affiliate of CapTech, if applicable), if any is ever used, that binds the Subcontractor to fully comply with all obligations and standards under this Contract that apply to that Subcontractor and its work.

**Commented [HDT3]: Exception:** In its EPD, DMV has asked for innovative ways to deliver the Services and Solution. CapTech proposes to use certain existing tools and methods that it uses to accelerate client projects. To ensure CapTech can continue to use those items for future clients in an unfettered manner that does not disclose DMV information or encumber DMV's use of the Solution, CapTech must retain ownership of those items, including any additional enhancements and modifications to them created during performance of this Contract, but CapTech would provide DMV with all necessary license rights to use CapTech IP included in the Solution. See Section 9 of the Contract for details of CapTech's proposal on this topic.



**N. Defect**

Any flaw or weakness in the system or its components that causes the system to behave in an unintended or unwanted manner, that has a materially adverse impact to the system. This includes any material fault, failure, or coding error, imperfection, or shortcoming in the provided Modernized CSS Solution or provided Documentation, or standard required to be maintained under this Contract express or implied, in any manner whatsoever. DefectsMaterial defects are determined at DMV's sole discretion.

**Commented [HDT4]: Exception:** CapTech intends to deliver a fully functioning Solution that meets the Requirements. But potentially subjective standards for assessment of the Solution's performance pose unknowable and unsustainable risk to both parties. The term "Defect" should conform to the objectively reasonable and attainable performance standards used in the acceptance and warranty provisions.

**O. Solution or Modernized CSS Solution**

A fully integrated and automated DMV transaction processing solution jointly developed by Contractor and DMV, and fully owned by or licensed to DMV. Includes, but is not limited to, all-Services, the Application(s), Customizations, Contractor Services, Documentation, all necessary hardware, software, design, development, configurations, databases, custom developed interfaces, testing, training, delivery, installation/implementation, security, and support, related to the Modernized CSS Solution and any additional related components as described in the Contract Exhibits.

**Commented [HDT5]: Exception:** CapTech will only provide professional services in developing and delivering the Solution for ongoing operation by DMV. CapTech does not offer any portion of the Solution on an "as a service" basis.

**P. Documentation**

The user manuals, training materials, guides, product descriptions, technical manuals, product specifications, supporting materials and Updates describing the Modernized CSS Solution and its Application(s) and Services provided to DMV, in printed or electronic form.

**Commented [HDT6]: Exception:** CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment necessary for DMV to host, use and operate the Solution on an ongoing basis. CapTech does not offer any portion of the Solution on an "as a service" basis, and we suggest it is much more efficient and beneficial to DMV for the State and DMV to directly procure any such items, allowing DMV and VITA, as applicable, to ensure they meet applicable State standards.

**Q. Material Obligation**

A requirement that, when not met, causes a significant divergence from the terms of the contract.

**R. Party**

Contractor or DMV.

**S. Privileged Information**

Any information that falls under one or more categories of information that is subject to legal protection from disclosure and misuse, including but not limited to: personal information and highly restricted personal information in connection with motor vehicle records under the Federal Drivers Privacy Protection Act, (18 U.S.C. §2721, et seq.); law enforcement sensitive data and information; personal and/or privileged vehicle and driver information as defined under and governed by the *Code of Virginia*, §46.2-208, et seq.; personal information as defined under and governed by the Virginia Government Data Collection and Dissemination Practices Act (*Code of Virginia* §2.2-3800, et seq.); and taxpayer information as defined under and governed by the *Code of Virginia*, §58.1, et seq.

**T. Requirements**

The functional, performance, operational, compatibility, acceptance testing criteria and other parameters and characteristics of the Modernized CSS Solution as stated in this Contract, including all Exhibits, and any such other parameters, characteristics, or performance standards that may be agreed upon by the Parties in writing in a change order or SOW to this Contract.

**Commented [HDT7]: Exception:** We believe this to be consistent with DMV's intent but would like to confirm that any agreement by the Parties on parameters, characteristics or performance standards would be documented in a written change order or SOW. CapTech should only act on changes, additions or reduction in scope or Requirements that are mutually agreed and properly documented, allowing both parties to avoid any risk of future confusion or dispute and ensuring that both parties sign on to the impact of such changes, including potential impact to the cost of services (whether it is an increase or decrease).

**U. Services**

Any work performed or service provided by Contractor – including the design and development of software and modifications, software updates, solution, products, implementation, installation, maintenance, support, testing, training, or other provision of service – in meeting the Requirements and fulfilling Contractor's obligations under the Contract or, as applicable, under any change order or SOW authorized by the scope of the Contract. "Services" includes all functions, responsibilities, activities, and tasks of the Contractor that are an inherent, necessary, or customary part of the Services, or are required for the proper performance or provision of the Services. As permitted by the scope of the Contract, "Services" may include the discovery, creation, or development of Work Product.

**V. Statement of Work ("SOW")**



Any document describing the deliverables, due dates, assignment duration, Acceptance criteria, and payment obligations for a specific project, engagement, or assignment that Contractor commits to provide to DMV, which, upon signing by both Parties, is made a part of the Contract.

**W. Subcontractor**

Any entity to which Contractor (or other Subcontractor of any tier) has subcontracted for performance of, or delegated any of its responsibilities under the Contract; including an affiliate of the Contractor.

**Commented [HDT8]: Exception:** CapTech will not be subcontracting any of the services under this Contract to its parent entity.

**X. SWaM**

Any entity certified by the Commonwealth's Department of Small Business and Supplier Diversity as a small, women-owned, minority-owned, or service-disabled veteran-owned business, as defined in Code §§ 2.2-2000.1 and 2.2-4310, or a certified micro business as defined in Executive Order Number 35 (2019).

**Y. Contractor Personnel**

Any and all of Contractor's employees, agents, contractors, or Subcontractors performing under this Contract.

**Z. Update**

As applicable, any update, modification or new release of the Application(s), Documentation or Contractor Product|Intellectual Property that Contractor makes generally available to its customers at no additional cost. Updates include software patches, fixes, upgrades, enhancements, improvements, or access mode, including without limitation, additional capabilities to or otherwise improve the functionality, increase the speed, efficiency, or base operation of the Modernized CSS Solution and its Applications.

**Commented [HDT9]: Exception:** Changed to align to edits to that definition above

**AA. VITA**

Virginia Information Technologies Agency, an agency of the Commonwealth established pursuant to Title 2.2, Chapter 20.1 (§2.2-2005, *et seq.*) of the *Code of Virginia*.

**BB. Work Product**

Inventions, combinations, machines, methods, formulae, techniques, processes, improvements, software designs, computer programs, Application(s), configurations, strategies, specific computer-related know-how, data and original works of authorship discovered, created, or developed by Contractor, or jointly by Contractor and an DMV in the performance of this Contract. except that Work Product does not include Contractor Intellectual Property or anything developed by Contractor prior to, or outside of, this Contract.

**Commented [HDT10]: Exception:** As noted in the definition of Contractor Intellectual Property and Section 9, CapTech must retain ownership of certain items that would be Work Product by the broad definition proposed by DMV, but CapTech will provide DMV with all necessary license rights to give DMV full use of the Solution for its intended purposes. See Section 9 for more detailed treatment of this topic.

**3. TERM AND TERMINATION**

**A. Contract Term**

This Contract is effective and legally binding as of the date of execution ("Effective Date") and, unless terminated as provided for in this Section, shall continue to be effective and legally binding through 1 year following the date of Final Acceptance (the "Initial Term").

**B. Contract Renewal**

After the expiration of the Initial Term, and subject to any Contractor election to not renew pursuant to this Section, DMV, in its sole discretion, may renew this Contract annually (the for successive one-year terms (each, a "Renewal Term") for the purposes of continued services and support until such time as the Modernized CSS Solution is no longer in use. The service fee(s) for renewal shall be as stated in the Contract Exhibits. DMV will issue a written notification to the Contractor stating its intent to renew at least 30 days before the expiration of any current term. The notwithstanding the foregoing, Contractor shall issue may prevent any further renewal by providing a written notification to DMV stating its intent not to renew at least 12 months before the expiration of any current term. Commencing with the sixth Renewal Term, the service fee(s) shall not exceed the fee(s) charged for the preceding year's Renewal Term by more than 3%, or the

**Commented [HDT11]: Clarification:** In its original form, Section 3.B included a degree of internal inconsistency regarding the nature of Renewal Terms. We have proposed revisions that we believe clarify the original intent of DMV's language.



annual change in the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, Not Seasonally Adjusted, as published by the Bureau of Labor Statistics of the Department of Labor (<http://www.bls.gov/cpi/home.htm>), for the effective date of the increase compared with the same index 1 year prior, whichever is less.

**C. Scalability**

DMV may make a written request to increase or decrease the scope (e.g., add or remove solution components, system functionality, etc.) of the Modernized CSS Solution ("revised usage") under this Contract. DMV and Contractor shall determine the effective date of the revised usage which shall be as soon as practicable available based upon the size and complexity of the request. Pricing for the revised usage of the Modernized CSS Solution shall be calculated as provided for in the Contract.

**D. Termination for Convenience**

DMV may terminate this Contract, in whole or in part, or any order issued hereunder, in whole or in part, at any time for any reason upon 30 days prior written notice.

**E. Contractor's Right to Terminate**

Under no circumstances other than for breach by DMV shall Contractor have the right to terminate this Contract.

**F. Termination for Breach**

DMV Unless otherwise prohibited by applicable law, each Party shall have the right to terminate this Contract, in whole or in part, or any order issued hereunder, in whole or in part, for breach of Contract. Contractor Each Party shall be deemed in breach if Contractor such Party fails to meet any Material Obligation stated in this Contract.

If DMV one Party deems the Contractor other Party to be in breach, DMV the non-breaching Party will provide Contractor the breaching Party with notice of breach and allow Contractor breaching Party 15 days to cure the breach. or, if the breach cannot reasonably be cured within 15 days and provided the breaching Party commences the cure within 15 days of notice and continues to diligently pursue the cure until complete, such longer period as is reasonably necessary to effect the cure. If Contractor the breaching Party fails to cure the breach as noted, DMV the nonbreaching Party may immediately terminate this Contract, in whole or in part. In addition, if Contractor is found by a court of competent jurisdiction to be in violation of or to have violated 31 USC § 1352 or if Contractor becomes a party excluded from Federal Procurement and Non-procurement Programs, DMV may immediately terminate this Contract, in whole or in part, for breach, and DMV shall provide written notice to Contractor of such termination. Contractor shall provide prompt written notice to DMV if Contractor is charged with violation of 31 USC § 1352 or if federal debarment proceedings are instituted against Contractor.

**Commented [HDT12]: Exception:** Though the ways DMV might possibly breach the Contract are extremely limited, the possible breaches that could occur—particularly non-payment—could have significant, adverse impact on CapTech. CapTech must be able to terminate the engagement in the unlikely event of an uncured DMV breach. CapTech is open to discussing the conditions of CapTech's termination right, including a longer cure period or reasonable materiality standard, as it is not CapTech's intention to discontinue work unless it becomes absolutely necessary. But for simplicity and efficiency at this stage, we've edited the Contract to provide for a basic reciprocal right to terminate for breach, noting that the right to terminate may be limited by applicable law.

**Commented [HDT13]: Exception:** In a large, complex project, cure of a breach may require a longer period of time. Termination should be avoided if CapTech promptly begins and continuously pursues the cure until complete, even if the cure unavoidably requires more than 15 days.

**G. Termination for Non-Appropriation of Funds**

All payment obligations under this Contract may be subject to the availability of legislative appropriations at the federal, state, or local level, for this purpose. In the event of non-appropriation of funds, irrespective of the source of funds, for the items under this Contract, DMV may terminate this Contract, in whole or in part, or any order issued hereunder, in whole or in part, for those goods or services for which funds have not been appropriated. Written notice will be provided to the Contractor as soon as possible after legislative action is completed.

**H. Effect of Termination**

Upon termination, neither the Commonwealth nor DMV shall have any future liability except for components of the Modernized CSS Solution delivered by Contractor and accepted by DMV before the termination date. Notwithstanding the foregoing, in the case of any DMV termination pursuant to Sections 3.D, 3.G, 22, or 23.O, DMV will pay Contractor any undisputed fees due and payable for Services performed prior to the effective date of the termination, including the applicable, pro rata amount of any hold back fees that would have otherwise been due and payable upon Final Acceptance with respect to the Services performed prior to termination. For any milestone that has been partially completed prior to termination, the applicable fees that will be due and payable will be calculated on a time and materials basis at Contractor's then-

**Commented [HDT14]: Exception:** CapTech should not bear the financial risk of DMV termination for reasons that CapTech cannot control. We should be paid for work performed prior to any termination for reasons other than CapTech breach, whether or not the work contributes to fully complete components that have been accepted by DMV. And because project pricing is a milestone-based fixed fee, we've proposed a reasonable mechanism for pricing CapTech work-in-process.



prevailing rates.

In the event of a Termination for Breach, DMV shall not be liable for any cost related to the terminated Contract or portion thereof. Contractor shall accept return of any products or software provided to DMV, and Contractor shall refund any monies paid by DMV for components of the Modernized CSS Solution not accepted by DMV pursuant to the Contract or portion thereof terminated for breach. All, and all costs of de-installation and return of product or software shall be borne by Contractor. Contractor agrees that DMV may pursue all remedies provided under law in the event of a breach or threatened breach of this Section, including re-procurement or transition costs or injunctive or other equitable relief.

**Commented [HDT15]: Exception:** We've made a simple revision to clarify the intent that CapTech will bear extrication costs only if termination is due to CapTech breach, not in the case of DMV's termination for convenience.

**I. Contract Kick-Off Meeting**

Within 30 days of Contract award, Contractor may be required to facilitate a Contract orientation meeting, along with the DMV Contract Officer, the DMV Contract Administrator, the DMV Project Manager, technical leads, and any other significant stakeholders who have a part in the successful performance of this Contract. The purpose of this meeting is to review all contractual obligations for both Parties, all administrative and reporting requirements, and to discuss any other relationship, responsibility, communication, and performance criteria stated in the Contract. The Contractor may be required to have its Project Management team and key project team members in attendance. The time and location of this meeting must be coordinated by Contractor and other meeting participants with the DMV Project Manager.

**4. NEW TECHNOLOGY**

**A. Access to New Technology**

Contractor shall bring to DMV's attention any new products or services within the scope of the Contract that it believes is of interest to DMV and must work to develop proposals for the provision of any such products or services as DMV requests.

**B. New Service Offerings Not Available from Contractor**

If new product or service offerings become available to DMV under the scope of the Contract, and cannot be competitively provided by the Contractor, DMV may purchase such new products or services from a third-party, and Contractor shall reasonably assist DMV to integrate such products or services if DMV elects to use such new product or service offerings.

If DMV elects to acquire new products or services as described in the above paragraph and such services replace existing Contractor-provided services, discount tiers and any commitments (as applicable per the Contract) ~~must~~may be reduced to reflect reductions in purchases of the replaced products or services. ~~If the changes in products and services impact the scope of Services, the Requirements and/or the cost of performance, the Parties will mutually agree on such changes in a change order or SOW.~~

**Commented [HDT16]: Exception:** We support and acknowledge DMV's need to continuously innovate, but swapping products and services could actually result in an increase in pricing since the services and prices were scoped based on specific assumptions. In a project of this magnitude and complexity, adding or substituting third-party products or services may increase complexity and may increase what CapTech must do to put the new third-party products or services in place.

**5. ADDITIONAL DESCRIPTION OF SERVICES**

During the term of this Contract, Contractor and DMV shall jointly custom develop the Modernized CSS Solution and its Application(s) described in the Contract Exhibits on hardware (including all necessary servers, workstations, solution components, consoles, etc.) provided, owned, operated, and maintained by DMV and/or the Commonwealth and shall make such Solution and its

~~Application(s) available to DMV's designated Application Users through such methods as specified in the Contract Exhibits.~~

~~Except as expressly provided in and subject to Section 9 herein, Contractor hereby waives and releases any ownership rights to the Modernized CSS Solution, solution components, its Application(s), all Work Product, Documentation, and Content and full ownership rights shall be held solely by DMV.~~

**Commented [HDT17]: Exception:** Please see Section 9 of these Exceptions. The statement of DMV's ownership should be consistent with the reservation of rights by CapTech expressed in Section 9 of the Contract.



## **6. CONTRACTOR PERSONNEL**

### **A. Selection of Contractor Personnel**

Selection of Contractor Personnel shall be in accordance with the project staffing requirements stated in the Contract Exhibits. Contractor shall take such steps as may be necessary to ensure that all Contractor Personnel performing under this Contract are competent and knowledgeable of the terms and conditions of the Contract between DMV and Contractor.

### **B. Management of Contractor Personnel**

Contractor shall be solely responsible for the conduct, including all acts and omissions, of its employees, agents, and Subcontractors, and shall ensure that such employees, agents, and Subcontractors comply with DMV's site security, information security, and personnel conduct policies and rules, as well as all applicable federal, state and local laws, rules and regulations, including export regulations. DMV reserves the right to require the immediate removal from DMV's premises of any employee, agent, or Subcontractor of Contractor whom DMV believes has failed to comply with any of the policies, rules, regulations, or laws specified herein, or whose conduct or behavior is unacceptable or unprofessional or results in a security or safety breach.

### **C. Contractor Personnel Supervision**

Subject to the rights of personnel termination reserved by DMV in the Contract Exhibits, Contractor acknowledges that Contractor, or any of its agents, contractors, or Subcontractors, is and shall be the employer of Contractor Personnel, and shall have sole responsibility to supervise, counsel, discipline, review, evaluate, set the pay rates of, provide (to the extent required by law) health care and other benefits for, and terminate the employment of Contractor Personnel. DMV shall have no such responsibilities for Contractor or Subcontractor personnel.

### **D. Subcontractors**

Contractor shall not use Subcontractors to perform Contractor Services unless specifically authorized in writing to do so by DMV. If Contractor desires to subcontract some part of the work specified herein, Contractor shall furnish DMV with the name, qualifications, and experience of each proposed Subcontractor. If the Modernized CSS Solution provided pursuant to this Contract is supported in whole or in part with federal funds, Contractor shall not subcontract any Contractor Services pursuant to this Contract to any Subcontractor that is a party excluded from Federal Procurement and Non-procurement Programs. In no event shall Contractor subcontract any Contractor Services to any Subcontractor which is debarred by the Commonwealth or which owes back taxes to the Commonwealth and has not made arrangements with the Commonwealth for payment of such back taxes.

If Contractor subcontracts the provision of any performance obligation under this Contract to any other party, Contractor shall (i) act as prime contractor and shall be the sole point of contact with regard to all obligations under this Contract, and (ii) hereby represents and warrants that any authorized Subcontractors shall perform in accordance with the warranties set forth in this Contract.

## **7. CONTRACTOR RESPONSIBILITIES**

### **A. Standard Responsibilities**

Unless otherwise indicated in the Contract Exhibits, Contractor shall provide all staff support and Services required to create, develop, and implement the Modernized CSS Solution and its Application(s).

### **B. Ancillary Responsibilities**

Contractor shall, throughout the term of this Contract, make available such resources, including Contractor personnel, as are reasonably required to: (i) train designated DMV personnel in the creation and development of the Modernized CSS Solution; (ii) develop modifications to the Application(s) as agreed by DMV and Contractor in any exhibit to the Contract or as agreed to by



Contractor and DMV in any order or Statement of Work issued hereunder; and (iii) otherwise support the Modernized CSS Solution as provided under this Contract and any exhibits hereto and as agreed in any order issued hereunder.

## **8. PRIVACY AND SECURITY COMPLIANCE**

### **A. Incorporated Privacy and Security Provisions**

Contractor agrees to comply at all times with all applicable federal, state, and local laws and regulations. To the extent that any policy(ies), standard(s), or guideline(s), as incorporated below, conflicts with any such law(s) or regulation(s), the applicable law(s) and/or regulation(s) shall take precedence.

Contractor shall review the incorporated provisions above periodically for revisions and provide all necessary services and support to make such modifications to the Modernized CSS Solution as are necessary to maintain compliance during the life of the Contract and any Renewal Terms.  
provided that Contractor will be entitled to an equitable adjustment to its fees and time for performance, to be mutually determined by the Parties in a written change order or SOW under this Contract, if the necessary services and support materially affect the scope or cost of Contractor's performance of Services. If a change is made to the policies, standards and guidelines, a new effective date will be noted on the document cover page. DMV shall not incur any additional costs associated with Contractor providing additional services and support to maintain privacy and security compliance.

### **B. Non-Disclosure Provisions**

#### **i) Confidential Information**

##### **1) Treatment and Protection**

Each Party shall (i) hold in strict confidence all Confidential Information of any other Party, (ii) use the Confidential Information solely to perform or to exercise its rights and obligations under this Contract, and (iii) not transfer, display, convey or otherwise disclose or make available all or any part of such Confidential Information to any third-party. However, each Party may disclose the Confidential Information as delivered by the other party to the receiving Party's subcontractors, contractors or agents that are bound by non-disclosure agreements with the receiving Party. Each Party shall take the same measures to protect against the disclosure or use of the Confidential Information as it takes to protect its own proprietary or Confidential Information (but in no event shall such measures be less than reasonable care).

##### **2) Exclusions**

The term "Confidential Information" shall not include information that is:

- a) In the public domain through no fault of the receiving Party or of any other person or entity that is similarly contractually or otherwise obligated;
- b) Obtained independently from a third-party without an obligation of confidentiality to the disclosing Party and without breach of this Contract, provided the third-party lawfully acquired and was legally authorized to disclose the information;
- c) Developed independently by the receiving Party without reference to the Confidential Information of the other Party, provided the development can be demonstrated by that Party's written records; or
- d) Required to be disclosed under the Virginia Freedom of Information Act (§2.2-3700, et seq., of the *Code of Virginia*) or other applicable laws, pursuant to a valid order of a court or other governmental body, or necessary to establish a Party's rights or obligations under the Contract.

**Commented [HDT18]: Exception:** Changes in applicable laws, regulations and standards can have a material impact on scope and pricing of these Services. If data privacy standards evolve or change in a manner that necessitates redesign or reconfiguration of a significant component of the Solution or a change in CapTech's delivery of Services, CapTech must be entitled to an equitable adjustment to pricing and time for performance.



- 3) **Compliance**  
Each Party shall be responsible for monitoring, maintaining, and enforcing compliance with the terms of this provision by all of its employees, agents, servants, contractors, and/or representatives to whom access to proprietary or Confidential Information of the other Party is granted.

**ii) Privileged Information**

Contractor acknowledges and agrees that:

- 1) Content obtained and work performed under this Contract will involve Privileged Information contained in or derived from DMV records;
- 2) DMV alone will determine and convey to Contractor in writing the purposes for which and the manner in which all Privileged Information maintained by DMV and processed by Contractor, in connection with this Contract, will be processed under any applicable data privacy laws and regulations;
- 3) Contractor, its officers, directors, employees and agents shall hold Privileged Information obtained from DMV records in the strictest confidence and must collect, maintain and use such Privileged Information and any related Content in a secure manner and must not, for any reason, disclose, sell, disseminate or distribute such Privileged Information or Content or provide access to such Privileged Information or Content to any person other than those persons who need to access such Privileged Information or Content for delivery of products or services hereunder;
- 4) Contractor shall take all precautions and measures necessary to ensure the integrity, nondisclosure, confidentiality and protection of all Privileged Information and related Content obtained from DMV or derived therefrom, including but not limited to all original reporting forms and data in any other form; and
- 5) Contractor shall immediately notify the DMV Project Manager and the DMV ISO of any breach of unencrypted and unredacted personal information, as those terms are defined in § 18.2-186.6 of the *Code of Virginia*, or any other Privileged Information provided by DMV to, or otherwise obtained by, Contractor under this Contract. Contractor shall provide DMV the opportunity to participate in the investigation of the breach and to exercise control over reporting the unauthorized disclosure, to the extent permitted by law.

**Commented [HDT19]: Exception:** We agree that DMV must make this determination but ask that any such determination be properly memorialized in writing. It is in both parties' interests to eliminate any potential miscommunication about the processing of Privileged Information.

**iii) Security and Non-Disclosure**

- 1) DMV will perform background security checks of the Virginia State Police database and Federal Bureau of Investigation database on Contractor's employees and subcontractors that have access to DMV facilities, DMV Confidential Information, or Privileged Information (including live production data), or supporting a DMV sensitive business process.
- 2) DMV will perform driving record checks for Contractor's employees and subcontractors residing in Virginia that have access to DMV facilities, DMV Confidential Information, or Privileged Information (including live production data), or supporting a DMV sensitive business process.
- 3) Contractor will perform driving record checks on its employees and subcontractors located outside of Virginia that have access to DMV facilities, DMV Confidential Information, or Privileged Information (including live production data), and Contractor will provide the results of such checks to DMV.
- 4) DMV security procedures may also include photographing Contractor's employees or



agents for purposes of creating access badges.

- 5) Contractor shall be required to execute and complete, for each individual Contractor employee and/or agent, additional forms which may include non-disclosure agreements to be signed by Contractor's employees or agents acknowledging that all DMV information with which such employees and agents come into contact while at DMV site(s) and/or working on the Modernized CSS Solution project is confidential and proprietary. Any unauthorized release of Privileged Information or DMV Confidential Information by Contractor or an employee or agent of Contractor shall constitute a breach of Contractor's obligations under this Section and the Contract.

#### C. Return or Destruction

##### i) Content

Within 15 business days after written notice from DMV, Contractor shall confirm in writing to DMV that all Content, including any and all Privileged Information, has been removed from all systems where the Content resided during performance of this Contract in a manner that complies with and/or exceeds the Removal of Commonwealth Data from Electronic Media Standard (SEC514-05): <https://www.vita.virginia.gov/it-governance/itm-policies-standards/>.

The written confirmation shall include (i) sufficient detail describing the processes and procedures used in removing the Content, (ii) information about the locations of where it was removed from within the Solution and its Application(s) and storage and other locations, and (iii) the date the removals were performed. All Content, in its original, unaltered form, shall be returned to DMV in a format mutually agreed upon by the Parties.

##### ii) Confidential Information

Upon the termination or expiration of this Contract or upon the earlier request of the disclosing Party, the receiving Party shall (i) at its own expense, (a) promptly return to the disclosing Party all tangible Confidential Information (and all copies thereof except the record required by law), or (b) upon written request from the disclosing Party, destroy such proprietary or Confidential Information and provide the disclosing Party with written certification of such destruction, and (ii) cease all further use of the disclosing Party's Confidential Information, whether in tangible or intangible form.

DMV shall retain and dispose of Contractor's proprietary or Confidential Information in accordance with the Commonwealth's records retention policies, but in no event with less care than required by this Section.

DMV Confidential Information that is provided to Contractor as Content under this Contract shall be subject to the provisions of item (i) above.

#### 9. PROPRIETARY RIGHTS AND RIGHTS TO WORK PRODUCT

Any license to pre-existing workContractor Intellectual Property will be held, and all rights in, title to, and ownership of Work Product will vest, pursuant to the terms of the "Licensing Within the Commonwealth" section of this Contract below.

##### A. Rights to Work Product

DMV and Contractor mutually acknowledge that performance of this Contract will result in Work Product. Contractor shall promptly and fully disclose to the Commonwealth or DMV any and all Work Product generated, conceived, reduced to practice, or learned by Contractor or any Contractor Personnel, either solely or jointly with others, during the term or performance of this Contract, which in any way relates to the business of the Commonwealth or DMV. Contractor and Contractor Personnel shall not make use of, or disclose to others, any proprietary information relating to the Work Product other than Contractor Intellectual Property and Retained Rights.

**Commented [HDT20]: Clarification:** Using the defined term for consistency in the Contract's treatment of pre-existing materials.

**Commented [HDT21]: Exception:** As CapTech proposes to define its Contractor Intellectual Property, the "proprietary information relating to the Work Product" referred to in this sentence could be read to extend to information that constitutes Contractor Intellectual Property. Furthermore, DMV acknowledges, in Section 9.D, the right of CapTech personnel to use knowledge and skills gained in performance of the Contract (which we've proposed to define as "Retained Rights" for simplicity of necessary cross-references), and we suggest that those Retained Rights need to be excluded from the prohibition in this sentence in order to preserve the intent of the Retained Rights clause in Section 9.D.



(defined below), other than as is required in the performance of this Contract. All Services performed pursuant to this Contract will include delivery of all source and object code and all executables and documentation for all Work Product. At no time may Contractor deny DMV or DMV access to the Work Product, regardless of form.

**B. Ownership of Work Product**

All Except for Contractor Intellectual Property and Retained Rights (defined below), all Work Product discovered, created, or developed under this Contract, or in the course of executing a change order or SOW issued pursuant to this Contract, is and will remain the sole property of DMV, regardless of whether the Deliverable or Services are considered "works made for hire" or "hired to invent". Subject to the previous sentence, Contractor agrees that DMV will have all rights with respect to any Work Product discovered, created or developed under this Contract, or any change order or SOW issued hereunder, without regard to the origin of the Work Product.

Contractor irrevocably transfers, grants, conveys, assigns and relinquishes exclusively to DMV any and all right, title and interest it now has or may hereafter acquire in and to the Work Product under Product under patent, copyright, trade secret and trademark law in perpetuity, or for the longest period otherwise otherwise permitted by law. If any moral rights are created, Contractor expressly waives all moral rights created in the Work Product. Contractor shall assist DMV in every reasonable way to obtain and, from time to time, enforce patents, copyrights, trade secrets and other rights and protection relating to the Work Product. Upon the reasonable request by DMV with respect to the Work Product, Contractor and any required Contractor Personnel shall execute all documents necessary for use in applying for and obtaining patents, copyrights, and other rights and protection, and in protecting trade secrets with respect to the Work Product.

Contractor agrees that the provisions of this section will survive any termination of this Contract by DMV, or the termination of any change order or SOW issued hereunder by DMV. With the exception of the State's breach of its payment obligations hereunder, Contractor also agrees that in the event of a breach of this Contract by DMV, Contractor's remedy will not include any right to rescind, revoke, or otherwise invalidate the provisions of this section.

Contractor acknowledges that in the case of DMV which is a public body of the Commonwealth, all rights and remedies afforded DMV under this section shall also be held and exercisable by the Commonwealth.

**Commented [HDT22]: Exception:** While CapTech understands the critical nature of this project to DMV and the State, payment to CapTech is a fundamental condition of CapTech relinquishing any rights to the products of its services.

**C. DMV Proprietary Rights and Ownership of Content and Customizations**

Except as otherwise stated herein and with the exception of any applicable third-party rights, Content and any Customizations made for DMV's operation of the Solution and its Application(s) or for interoperability with other DMV systems or applications paid for by DMV are and shall remain the sole and exclusive property of DMV, including all applicable rights to patents, copyrights, trademarks, trade secrets or other proprietary property rights thereto. Additionally, all right, title and interest in and to any Content or Customizations relating to DMV's business shall remain the property of DMV, whether or not supplied to Contractor or uploaded into the Solution and its Application(s). Nothing in this Contract shall be construed as conveying any rights or interest in Content or Customizations to Contractor. Upon termination of this Contract, Contractor agrees to either provide the Content and Customizations to DMV, or, at DMV's request, certify in writing that said Content and Customizations in all formats, have been destroyed. To the extent in performing under this Contract, Contractor develops knowledge or skills that will or may be useful in performing other tasks for other customers, (the "Retained Rights"), nothing in this Contract shall or is intended to restrict Contractor from utilizing any such knowledge or skills in situations outside of performing under this Contract, subject to Contractor not in any way using or disclosing any Confidential Information of DMV.

**D. Pre-existing Work**

If, and to the extent that, any pre-existing rights are Contractor Intellectual Property is embodied or



reflected in the Work Product Solution, Contractor grants to the Commonwealth or DMV the irrevocable, perpetual, non-exclusive, worldwide, royalty-free right, non-transferable and non-sublicensable license to (i) use, execute, reproduce, display, perform; perform and distribute copies of, and prepare derivative works based upon such pre-existing rights and any derivative works thereof; and (ii) authorize others to do any or all of the foregoing. Contractor will retain all ownership rights in any pre-existing works Contractor Intellectual Property.

**E. Return of Materials**

Upon termination of this Contract or in the event DMV terminates any change order or SOW issued pursuant to this Contract, Contractor shall immediately return to DMV all copies, in whatever form, of any and all Confidential Information, Work Product, Documentation, and other properties provided by DMV that are in Contractor's possession, custody, or control provided Contractor may retain copies as required for legal purposes or otherwise on backup tapes and any such copies shall be retained in accordance with the terms in this Contract.

**10. TRANSITION ASSISTANCE**

Prior to or upon expiration or termination of this Contract, Contractor shall provide all assistance as DMV may reasonably require in writing to transition the Contractor's contractual obligations, or any portion thereof, to DMV and any other Contractor or contractor with whom DMV contracts for provision of same. This Transition Period obligation may extend beyond expiration or termination of the Contract for a period of up to 2 years. Provided all applicable fees are paid when and as required by this Contract, Contractor shall provide all reasonable transition assistance requested by DMV to allow for the Services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such Services to DMV. The transition assistance will be deemed by the parties to be governed by the terms and conditions of this Contract, except for those terms or conditions that do not reasonably apply to transition assistance.

In the event of a termination for breach and/or default of Contractor, Contractor shall perform such obligations at no charge or fee to DMV; otherwise, Contractor shall perform such obligations at the hourly rate or a charge agreed upon by Contractor and DMV.

**11. COMMENCEMENT AND ACCEPTANCE OF THE MODERNIZED CSS SOLUTION**

**A. Project Delays**

If the Modernized CSS Solution project must be delayed, the Parties agree to enter into good faith negotiations to revise, in writing, the applicable project documentation including, but not limited to, the project schedule, deployment plan, training plan, and staffing plan in response to the delay. Cost impacts may be discussed during the negotiations. Approvals for any reimbursements by DMV will be at DMV's sole judgement and decision. No penalties will be assessed to either Party.

**B. Component Acceptance Criteria**

Each component of the Modernized CSS Solution, as stated in the Contract Exhibits, shall be accepted by DMV when DMV determines that the component materially conforms to its applicable Requirements. Acceptance of any one component shall not imply DMV's concurrence that the component functions properly with or within any other component of the Modernized CSS Solution.

Contractor shall notify DMV of the completion and/or implementation readiness of a component. Components must be reviewed by DMV as they are completed and/or designated ready for implementation. All reviews must be completed within 7 business days ("the review period") after completion of all testing required in Section 5 of the EPD document, unless otherwise agreed to by the Parties. Acceptance of each component will be indicated in writing (including by email) by the DMV Project Manager or designee.

**Commented [HDT23]: Exception:** The changes to this license grant are meant to align with the position expressed above, recognizing that CapTech will furnish to DMV, as part of the Solution, Contractor Intellectual Property that is proprietary to CapTech. While DMV should have a right to use that proprietary material for all purposes for which the Solution is intended, CapTech does not grant the right to create derivative works from its IP, in recognition of the proprietary nature of those materials.

**Commented [HDT24]: Exception:** CapTech requests a customary carve-out for legal purposes and for copies that reside on back-up and archival systems in the ordinary course of operations.

**Commented [HDT25]: Exception:** CapTech can support a smooth transition of support for the Solution but asks that DMV request this assistance in writing, to eliminate miscommunication and allow CapTech to properly staff and plan for the work. And though it is unlikely, CapTech should not be asked to continue working if DMV has not timely paid for prior work according to the terms of this Contract.

**Commented [HDT26]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.



Acceptance of any component will not be unreasonably withheld. If DMV does not respond to any request for approval of a component within the review period, Contractor shall escalate the component approval request to the DMV Project Sponsor and/or the DMV Oversight Committee pursuant to the mutually agreed upon Project Escalation Process.

**C. Component Cure Period**

If any component is not accepted by DMV, DMV will identify the material deficiencies in writing and by the end of the first review period. Contractor shall submit a remedied version of the component within 7 business days of receipt of written notice of deficiencies unless a longer time period is mutually agreed to by the Parties. If the material deficiency identified in writing by DMV is the inability of DMV and its Application Users to access the functionalities of the Application(s), the remedy supplied by the Contractor shall be the provision of all required access to DMV and its Application Users.

After receiving the remedied version and/or required access and after completion of all testing required by Section 5 of the EPD, DMV's review period shall be the same as for the initial submission, unless a longer period is mutually agreed to by the Parties. If any component is not acceptable, DMV will identify the deficiencies in writing by the end of the second review period. As needed, Contractor shall submit a remedied version of the component within 7 business days of receipt from DMV of a second written notice of deficiencies, unless a longer time period is mutually agreed to by the Parties.

Acceptance of any remedied version of a component will not be unreasonably withheld. If DMV does not respond to any request for approval of a component within the review period, Contractor shall escalate the component approval request to the DMV Project Sponsor and/or the DMV Oversight Committee pursuant to the mutually agreed upon Project Escalation Process.

After the third set of Acceptance tests, should Contractor fail to cure all identified material nonconformities with the Requirements, DMV may, in its sole discretion: (i) reject the component in its entirety and recover amounts previously paid for the applicable component hereunder,

(ii) issue a "partial Acceptance" of the component with an equitable adjustment in the price to account for such deficiency, or (iii) conditionally accept the applicable component while reserving its right to revoke Acceptance if timely correction is not forthcoming.

Notwithstanding anything to the contrary herein, if DMV and its Application Users are unable to access the functionalities of the Application after a third set of Acceptance tests, Contractor shall be deemed in default of the Contract. In the event of such default, DMV may, at its sole discretion, terminate this Contract, in whole or in part, for the Modernized CSS Solution to be provided thereunder by Contractor.

**D. Final Acceptance of the Modernized CSS Solution**

Final Acceptance of the Modernized CSS Solution will be achieved when DMV provides written notice that the full Modernized CSS Solution successfully operates in material conformance with the Requirements. DMV will provide written notice of Final Acceptance or identify any material deficiencies within 30 days of the deployment of the full Modernized CSS Solution by Contractor. If DMV does not provide written notice of Acceptance or identify any material deficiencies within the 30-day Final Acceptance period, Contractor shall escalate the approval request to the DMV Project Sponsor and/or the DMV Oversight Committee pursuant to the mutually agreed upon Project Escalation Process.

**E. Modernized CSS Solution Cure Period**

Contractor shall correct any material non-conformities and deficiencies identified pursuant to Section 11(D) and shall thereafter re-submit such previously non-conforming components for re-testing within 15 days of written notice of material non-conformance to Contractor, unless a longer time period is mutually agreed to by the Parties.

After receiving the remedied version and after completion of all testing required by Section 5 of

**Commented [HDT27]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.

**Commented [HDT28]: Clarification:** CapTech requests clarification of DMV's intent for the last sentence of Section 11.C. We expect that component acceptance testing and corrections will occur only in Test or Dev environments and not in the Production or live environment, meaning the deficiencies contemplated by this Section should not impact Application Users. We suggest that any access to Production or live environments should be controlled by DMV, not CapTech.

**Commented [HDT29]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.

**Commented [HDT30]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components..

**Commented [HDT31]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.



the EPD, DMV's review period shall be the same as for the initial submission, unless a longer period is mutually agreed to by the Parties. If the Modernized CSS Solution is not acceptable, DMV will identify any deficiencies, in writing, by the end of the second review period.

Contractor shall, as needed, correct any [material] non-conformities and deficiencies identified hereunder and shall thereafter re-submit such previously non-conforming components for re-testing within 15 days of the second written notice of non-conformance to Contractor, unless a longer time is mutually agreed to by the Parties.

Should Contractor fail to deliver a Modernized CSS Solution that materially meets the Requirements after the third set of Acceptance tests, DMV may, without prejudice to any other remedy, cure or make good any deficiencies, including securing the services of third-parties at Contractor's sole expense, at rates to be no more than market rates and with reasonable limits on the total amount incurred. In such case, Contractor shall either suspend services with regard to the Modernized CSS Solution immediately until the deficiencies have been cured or continue to work and assume the risk of any re-work required as a result. The expense incurred by DMV to independently cure the deficiencies shall be deducted from the amount due Contractor for the Modernized CSS [Solution].

If a cure is not achieved in 45 calendar days under the foregoing process, DMV may issue a "partial Acceptance" of the Modernized CSS Solution with an equitable adjustment in the price to account for such deficiency.

**F. Charges for Testing Not Allowed**

Contractor shall not be entitled to, and DMV will not pay, any charges, associated with Contractor's failure to satisfy any testing criteria, pass any test period, and/or achieve Final Acceptance.

**Commented [HDT32]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.

**Commented [HDT33]: Exception:** We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.

**12. RECORDS AND RIGHT TO AUDIT**

Contractor shall maintain accurate records and other evidence pertaining to performance/delivery of all Licensed Services covered under the Contract. The Contractor shall retain all books, records, and other documents (henceforth referred to as artifacts) in whatever form they may be kept, whether written, electronic, or other, relating to or pertaining to this Contract for 5 years after termination/completion of the services provided under this Contract.

On an annual basis, DMV, its authorized representatives, and/or other authorized State/Federal entities shall have the right to audit, inspect, examine, and make copies of all applicable financial, technical configuration, information security, system performance (i.e. Uptime and Downtime as stated in the Contractor Responsibilities section), audit reports, and related artifacts kept by or under the control of the Contractor, including, but not limited to those kept by the Contractor, its employees, agents, assigns, successors, and subcontractors.

The financial records shall be kept to the extent and in such detail to properly reflect all direct and indirect costs and expenses associated with the Contract for the purpose of auditing the accuracy of amounts billed.

DMV's right to audit is limited as follows:

- i) Contractor's cost structure, including overhead, general and administrative expenses, and profit factors, shall be excluded from review;
- ii) Terminates 5 years after the services are complete;
- iii) Occurs at Contractor's premises, during normal business hours at mutually agreed upon times;
- iv) Excludes access to Contractor cost information;



- v) Only takes place upon reasonable notice of at least 2 weeks; and
- vi) Takes place no more frequently than annually or based on reasonable concern of DMV.

Within 30 days of award of the Contract, the Contractor shall establish a process that is acceptable to DMV for the production of any requested artifacts within 10 business days of the request and reach an agreement with DMV for the format for each.

In no event shall Contractor have the right to audit, or require to have audited, DMV records.

### **13. GENERAL WARRANTY**

**THE OBLIGATIONS OF CONTRACTOR UNDER THIS GENERAL WARRANTY SECTION ARE DEEMED MATERIAL. CONTRACTOR MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY CONCERNING MERCHANTABILITY OR FITNESS FOR ANY OTHER PARTICULAR PURPOSE.**

Contractor warrants and represents to DMV that Contractor shall fulfill its contractual obligations and all Requirements of the Modernized CSS Solution described in this Contract and any of its Exhibits as follows:

#### **A. Ownership**

Contractor has the right to provide all components of the Modernized CSS Solution, including access to the Solution and its Application(s) ~~and necessary hardware and operating system software~~, by DMV and its Application Users ~~without violating or infringing any law, rule, regulation, copyright, patent, trade secret or other proprietary right of any third party~~.

#### **B. Services, Application, and Documentation**

During the Initial Term, Contractor warrants the following with respect to the Services and Application(s):

- i) The Application(s) is pursuant to a particular EPD, and therefore the Application(s) shall ~~be fit for the particular purposes conform in all material respects to the requirements~~ specified by DMV in the EPD and set forth and/or incorporated in this Contract. Further, Contractor possesses superior knowledge with respect to the Application(s) and is aware that DMV is relying on Contractor's skill and judgment in providing the Services, including the Application(s);
- ii) Contractor represents and warrants ~~(a)~~ that it shall perform the Services in ~~material~~ conformity to the specifications stated in Contract Exhibits in a professional and workmanlike manner ~~and (b) that the Services shall not infringe any third-party proprietary rights including (without limitation) any trademark, trade name, trade secret, copyright, moral rights, patents or similar intellectual property rights~~;
- iii) Contractor warrants that the Application(s) and Services will conform in all material respects to the Requirements stated in this Contract. Contractor warrants that the Application(s) and Services will conform to the applicable specifications and Documentation, not including any post-Acceptance modifications or alterations to the Documentation which represent a material diminishment of the functionality of the Application(s), Services or Contractor Product Intellectual Property. Contractor also warrants that such Application(s) and Services are compatible with and will operate successfully when used on the equipment specified in the Requirements or Documentation (if any) ~~and~~ in accordance with the Documentation and all of the terms and conditions hereof;
- iv) No corrections, work-arounds or future Application(s) releases provided by Contractor shall ~~materially~~ degrade the Application(s), cause any other warranty to be breached, or require DMV to acquire additional hardware equipment or software;

**Commented [HDT34]: Exception:** As noted with respect to the definition of "Solution" above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment or any third-party software or hosting services necessary for DMV to host, use and operate the Solution on an ongoing basis. CapTech does not offer any portion of the Solution on an "as a service" basis, and we suggest it is much more efficient and beneficial to DMV for the State and DMV to directly procure any such items, allowing DMV and VITA, as applicable, to ensure they meet applicable State standards.

**Commented [HDT35]: Exception:** CapTech offers clients a customary covenant to indemnify and defend against third-party claims of infringement or misappropriation, in lieu of general warranties of non-infringement. We believe the indemnification covenant is standard in the industry and provides clients with appropriate protection against infringement allegations without exposing the parties to unwanted disputes over the veracity of the third-party infringement claims. Please note that we have not added the standard indemnity to this draft due to DMV's instructions not to propose or modify liability provisions, which we interpret as extending to indemnification provisions. We will be happy to provide the proposed indemnity as part of the indemnification and limitation of liability discussions in the event of an award.

**Commented [HDT36]: Exception:** CapTech proposes to confine all performance warranties to the Initial Term, giving DMV full confidence in the Solution for a full year after Final Acceptance. Thereafter, CapTech would continue to support the Solution on a paid basis, through 1-year support and maintenance periods to be implemented during Renewal Terms of this Contract.

**Commented [HDT37]: Exception:** As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a "fit for purpose" standard shifts to CapTech a scope of responsibility that DMV is uniquely and exclusively situated to fulfil, and it introduces a subjective me... [1]

**Commented [HDT38]: Exception:** As noted in Section 13.A, CapTech offers a customary non-infringement indemnification and defense covenant in lieu of a warranty of non-infringement. We will provide the proposed indemnity as part of the indemnification and limitation of liability discussions in the event of an award.

**Commented [HDT39]: Exception:** The reference to "equipment" in this warranty implies that CapTech was the provider of the equipment. As noted above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment, so we propose to clarify that the referenced "equipment" is the equipment with which CapTech designs the Solution to oper... [2]

**Commented [HDT40]: Exception:** We propose to harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft warranties.



- v) Contractor warrants that all post-Acceptance Updates, changes, alterations or modifications to the Application(s), Services, and Documentation by Contractor shall be compatible with, and shall not materially diminish the features or functionality of the Application(s), Services, and/or Contractor ProductIntellectual Property when used on the equipment specified in the Requirements or Documentation (if any) and in accordance with the Documentation and all of the terms and conditions hereof; and
- vi) Contractor warrants that the Documentation and all modifications or amendments thereto which Contractor is required to provide under this Contract shall be sufficient in detail and content to allow DMV and its Application Users to understand and utilize fully the Application(s) without reference to any other materials or information that are not referenced in the Requirements or Documentation.

**C. Performance Warranty**

During the lifeInitial Term of the Contract, Contractor warrants that the Modernized CSS Solution shall not contain any material errors and shall function properly and in conformity with the Requirements. Contractor shall correct, at no additional cost to DMV, all material errors identified during the life of the Contract that result in a failure of the Modernized CSS Solution to function properly or to meet the Requirements in accordance with the cure provisions of this Contract.

Contractor warrants and represents

that, at the following with respect to Performance:

- i) All time of performance, all contractual obligations shall be performed with care, skill and diligence, consistent with or above applicable professional standards currently recognized in Contractor's profession, and Contractor shall be responsible for the professional quality, technical accuracy, completeness, and coordination of all plans, information, specifications, Services and Modernized CSS Solution furnished by the Contractor under this Contract.
- ii) All contractual obligations pursuant to the EPD shall be fit for the particular purposes specified by DMV in the EPD and in this Contract and Contractor is possessed of superior knowledge with respect to its contractual obligations and is aware that DMV is relying on Contractor's skill and judgment in providing its contractual obligations.

**D. Interoperability Warranty**

During the Initial Term, Contractor warrants that each component of the Solution, regardless of the origin of the component, delivered under this Contract shall be interoperable with other components of the Solution delivered under this Contract, so as to meet or exceed the performance specified in the requirements of the EPD Requirements.

**E. Documentation and Deliverables**

During the Initial Term, Contractor warrants the following as applicable to the Contract:

- i) The Solution is provided pursuant to a particular EPD, and therefore such Solution shall be fit for conform in all material respects to the particular purposes specified by DMV requirements in the EPD of document and in this Contract. Further, Contractor possesses superior knowledge with respect to the Solution and is aware that all Application Users are relying on Contractor's skill and judgment in providing the Solution.
- ii) If the EPD document or the Contract Exhibits specifies the hardware equipment an Application User shall use to run the Solution, then Contractor warrants the Solution and any subsequent releases are compatible with and shall perform well with such hardware equipment.
- iii) No corrections, work-arounds or future releases provided by Contractor under the warranty provisions or under maintenance shall materially degrade the Solution, cause any other

**Commented [HDT41]: Exception:** The reference to "equipment" in this warranty implies that CapTech was the provider of the equipment. As noted above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment, so we propose to clarify that the referenced "equipment" is the equipment with which CapTech designs the Solution to operate, as specified in the Requirements or the Documentation.

**Commented [HDT42]: Exception:** CapTech anticipates an unavoidable need for the Documentation to make reference to external materials, including appropriate third-party documentation like operating system manuals or terms of use over which CapTech and DMV have no control.

**Commented [HDT43]: Exception:** CapTech proposes to confine all performance warranties to the Initial Term, giving DMV full confidence in the Solution for a full year after Final Acceptance. Thereafter, CapTech would continue to support the Solution on a paid basis, through 1-year support and maintenance periods to be implemented during Renewal Terms of this Contract.

**Commented [HDT44]: Exception:** We propose to eliminate potential subjective evaluations and harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft warranties.

**Commented [HDT45]: Exception:** Because performance of contractual obligations will necessarily occur on an ongoing basis, both during and after the Initial Term, we seek to distinguish the timing of this performance warranty from the other warranties applicable to Solution functionality and performance. While the Solution warranties must be limited to the Initial Term, the warranty applicable to any given contractual obligation should apply at the time of ... [3]

**Commented [HDT46]: Exception:** As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a "fit for purpose" standard shifts to CapTech a scope of ... [4]

**Commented [HDT47]: Exception:** As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a "fit for purpose" standard shifts to CapTech a scope of ... [5]

**Commented [HDT48]: Exception:** Interoperability is a reasonable expectation that CapTech fully supports, but we ask to clarify that the universe of components being referenced in the warranty is clearly limited to the components of the Solution for which we are responsible.

**Commented [HDT49]: Exception:** CapTech can only provide its warranties during the Initial Term as defined in that section of this Contract.

**Commented [HDT50]: Exception:** We propose to harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft warranties.



warranty to be breached, or require an Application User to acquire additional hardware equipment or software.

- iv) Contractor warrants that the Documentation and all modifications or amendments thereto which Contractor is required to provide under this Contract shall be sufficient in detail and content to allow a user to fully understand and operate the Solution without reference to any other materials or information.

**Commented [HDT51]: Exception:** This is a duplicate of Section 13.B.vi above.

**F. Malicious Code**

Contractor has used its best efforts through quality assurance procedures to ensure that there are no Computer Viruses or undocumented features in the Application(s) accessed by DMV or its Application Users; and the Application(s) does not contain any embedded device or code (e.g., time bomb) that is intended to obstruct or prevent any use of or access to the Application(s).

Notwithstanding any rights granted under this Contract or at law, Contractor hereby waives under any and all circumstances any right it may have or may hereafter have to exercise Electronic Self-Help. Contractor agrees that DMV may pursue all remedies provided under law in the event of a breach or threatened breach of this Section, including injunctive or other equitable relief.

**G. Ownership of Intellectual Property**

All copyright and patent rights to all papers, reports, forms, materials, creations, or inventions created or developed in the performance of this Contract shall become the sole property of the Commonwealth. On request, the contractor shall promptly provide an acknowledgment or

assignment in a tangible form satisfactory to the Commonwealth to evidence the Commonwealth's sole ownership of specifically identified intellectual property created or developed in the performance of the contract.

**G. Intentionally Omitted**

**H. Privacy and Security**

Contractor warrants that Contractor and its employees, subcontractors, partners, Contractor Personnel and third party providers have taken all necessary and reasonable measures Subcontractors will use best efforts through quality assurance procedures to ensure that the Modernized CSS Solution does not include any degradation, known security vulnerabilities, or breach of privacy or security. Contractor agrees to notify DMV of any occurrence of such as soon as possible after discovery and provide DMV with fixes or upgrades for security vulnerabilities within 90 days of discovery.

**Commented [HDT52]: Exception:** For consistency, we suggest using the appropriate defined terms.

**Commented [HDT53]: Exception:** The warranties in Sections 13.H and 13.J overlap in scope and substance with the warranties requested by DMV in Section 13.F. CapTech proposes to align the standards applicable to all three sections with the reasonable and customary standard established by DMV in Section 13.F.

**Commented [HDT54]: Exception:** We can only warrant to the state of facts in existence at the time of delivery of the Services and applicable components of the Solution. CapTech cannot warrant in advance to what might be discontinued by third parties after delivery.

**Commented [HDT55]: Exception:** The warranties in Sections 13.H and 13.J overlap in scope and substance with the warranties requested by DMV in Section 13.F. CapTech proposes to align the standards applicable to all three sections with the reasonable and customary standard established by DMV in Section 13.F

**Commented [HDT56]: Exception:** CapTech would like to discuss DMV's expectations with respect to uninterrupted access. CapTech will not create mechanisms to disable use, but post-delivery and during the day-to-day use of the Solution after Final Acceptance, CapTech will not have control over DMV's access, tokens and encryption keys and cannot warrant what CapTech does not fully control.



as part of the Modernized CSS Solution specified in the Requirements or Documentation (if any).

**K. Open Source**

Contractor shall notify DMV if the any component of the Modernized CSS Solution provided by Contractor contains any Open Source code and identify the specific Open Source License that applies to any embedded code dependent on Open Source code; provided by Contractor under this Contract.

**L. Contractor's Viability**

Contractor warrants that it has the financial capacity to perform and continue to perform its obligations under this Contract; that Contractor has no constructive or actual knowledge of a potential legal proceeding being brought against Contractor that could materially adversely affect performance of this Contract; and that entering into this Contract is not prohibited by any contract, or order by any court of competent jurisdiction.

**M. Contractor's Past Experience**

Contractor warrants that Contractor has met similar contractual obligations and provided a substantially similar solution to a non-related third-party customer of Contractor without significant problems due to any component of the solution or Contractor's performance and without causing a contractual breach or default claim by any customer.

**N. Warranty Exclusions**

In the event that any component or result of Contractor's Services or performance under this Contract fails to conform to any applicable warranties in this Section 13 in any material respect, Contractor will, at its expense, use its commercially reasonable efforts to cure or correct such failure as soon as reasonably practical, where such failure is capable of being cured or corrected. If, after repeated attempts, Contractor is unable to cure or correct such failure, Contractor shall refund all amounts paid by DMV for such nonconforming component of the Services. The warranties and associated obligations and remedies set forth in this Section 13 are conditioned upon: (a) DMV providing Contractor with prompt written notice of any claim; (b) DMV's full cooperation with Contractor in all reasonable respects; (c) the failure not being caused by the use of Services, Solution, or any component thereof, in combination with any non-Contractor approved equipment, software, or data, the use of the non-current version of any component or in any manner for which the Services, Solution and applicable component thereof were not designed; and (d) the absence of any alteration or other modification by any person or entity other than Contractor. Notwithstanding anything in this Contract to the contrary, Contractor provides no warranty relating to the content, accuracy or completeness of DMV's or DMV's third parties' documentation or the accuracy of DMV's or DMV's third-parties' Content or other data that existed prior to Contractor's performance of the services or documentation or Content or other data that is introduced into DMV's environment or created by DMV or DMV's third parties (including Application Users) independent of Contractor.

**Commented [HDT57]: Exception:** As noted above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment, so we propose to clarify that the referenced "equipment" is the equipment with which CapTech designs the Solution to operate, as specified in the Requirements or the Documentation.

**Commented [HDT58]: Exception:** We believe this was DMV's original intent but would like to clarify that CapTech can only address the existence of open source software in components of the Solution that CapTech provides.

**Commented [HDT59]: Exception:** These are CapTech's warranty exclusions - these are the circumstances under where CapTech does not have direct control. CapTech can warranty to correct something that is caused by the actions DMV, the State, DMV's users or DMV 3rd parties. Often the actions of others can cause non-conformance.

**14. TRAINING AND DOCUMENTATION**

The Modernized CSS Solution fee includes all costs for the training and coaching detailed in the Contract Exhibits.

Contractor shall deliver to DMV hard and/or electronic copy(ies) of Documentation, as requested by DMV. With the exception of Contractor Intellectual Property, DMV shall have full ownership and have the right to make additional copies of the Documentation, in whole or in part, for its own use as required. To the extent necessary to use the Documentation as described in this Contract, Contractor hereby grants a perpetual, non-exclusive, non-transferable (except where permitted pursuant to Section 23.K), non-sublicensable right to use the Contractor Intellectual Property incorporated in the Documentation.

**Commented [HDT60]: Exception:** We propose revisions consistent with the intellectual property covenants more fully developed in Section 9 of the Contract.

**15. FEES AND PAYMENT PROCEDURE**



**A. Fees and Charges**

In consideration for the Contractor's performance obligations under this Contract, DMV shall pay Contractor the fee(s) owed pursuant to the schedule of fees and charges as set forth in Contract Exhibits. Contractor will only be entitled to those fees owed for Contractor's performance obligations and any additional Services provided to DMV in accordance with the scope of this Contract and its Exhibits and the Requirements, and per and DMV issued change order or SOW. The fees, and any associated discounts, will be applicable throughout the Contract Term unless modified pursuant to the terms and conditions of this Contract.

**B. Ordering**

Contractor shall not accept any order or SOW from DMV if the order or SOW is to be funded, in whole or in part, by federal funds and if, at the time the order or SOW is placed, Contractor is not eligible to be the recipient of federal funds as may be noted on any of the Lists of Parties Excluded from Federal Procurement and Non-procurement Programs.

Contractor shall accept any order or SOW placed by DMV through the eVA electronic procurement website portal (<http://www.eva.virginia.gov/>).

**C. Payment Terms**

Invoices shall be promptly rendered after the Modernized CSS Solution components have achieved Acceptance by the DMV Project Manager in writing, as appropriate. Payment for ongoing services related to the Modernized CSS Solution, as further described in the Contract Exhibits, shall be monthly in arrears unless otherwise stated herein. No invoice shall include any costs other than those identified in the pricing schedule, or a change order or SOW executed by DMV pursuant to this Contract. Without limiting the foregoing, all shipping and travel related costs are the Contractor's responsibility except to the extent such charges are identified in the pricing schedule or a change order, or SOW executed by DMV. Invoices shall provide at a minimum:

- i) Dates during which Contractor provided the services to DMV;
- ii) Quantity, charge, and extended pricing for each service;
- iii) Applicable Contract date, date of the change order, or date of the SOW;
- iv) The Purchase Order Number and this Contract number; and
- v) Contractor's Federal Identification Number (FIN).

All terms included on Contractor's invoice that are in addition to, inconsistent with, or contrary to terms stated in this Contract shall have no force or effect and will in no way bind DMV.

Contractor is responsible for the accuracy of its billing information. Contractor agrees not to issue invoices hereunder until items, components, and/or milestones have met Acceptance criteria. **Charges for services accepted more than 90 days before receipt of a valid invoice may not be paid. Should** Contractor repeatedly over-bill DMV, DMV may assess a 1% charge for the amount over-billed for each month that such over-billing continues.

In the event DMV does not receive or have access to the applicable Documentation, payment shall not be due until the required Documentation is provided.

If there are any disputed items, DMV shall pay all undisputed charges and promptly notify Contractor in writing of any disputed amount. Contractor shall thereupon review its records and, if it does not concur with DMV, provide DMV with documentation to support the charge. If such charges remain in dispute, such dispute shall be resolved in accordance with the Dispute Resolution section of this Contract. In the absence of the Contractor's written evidence identifying the merit of the disputed amounts, DMV may not pay the disputed amounts and may consider the matter concerning the specific identified amounts closed. All payment terms are net 30 days after Acceptance.

**Commented [HDT61]: Exception:** The milestone-based, fixed fee pricing model required by this EPD increases the risk of misinterpretation or misapplication of any invoicing rules that are tied to acceptance of "services." While CapTech is open to discussing a prompt invoicing covenant that is more appropriate for this project, we cannot accept the risk created by imprecise invoicing rules.



## **16. REPORTING – MICRO BUSINESS AND/OR SMALL BUSINESS PARTICIPATION**

### **A. Micro-Business and/or Small Business Participation**

By the 10th day of every month, Contractor shall submit the Small Business Procurement and Subcontracting Report. This information should include spend on all Contractor's contracts with subcontractors, which provide products or services under the contract. The spend information should specify the amount of such spend provided to each certified SWaM business and non-SWaM subcontractors. Contractor shall submit the report to the DMV Contracts and Procurement Office.

Contractor shall provide a signed certification of its compliance with the Plan or a written explanation of any variance from the Plan, as requested in writing by DMV, as applicable, within 10 business days of such request.

Contractor shall provide to DMV within 30 days of the date of expiration of the Contract an accompanying statement certifying that Contractor has fully complied with the Contract's Small Business (SWaM) Procurement Plan, and if Contractor has not fully complied, provide a written explanation of any variances between such Plan and the actual participation. The Contractor's compliance confirmation and/or written explanation of variance shall be maintained by DMV, in the Contract file.

Contractor's failure to satisfactorily meet designated requirements of the Plan, or Contractor's inability or refusal to certify compliance with the Plan during performance of the Contract may affect renewals and/or modifications to the Contract, any final payments due under this Contract, and the award of future contracts to Contractor. Failure to comply with all reporting requirements may result in default of the Contract.

### **B. Performance Reporting**

Once each calendar month during the life of this Contract, Contractor shall provide DMV with a written report that shall contain information with respect to the performance of the Modernized CSS Solution components as well as the performance of the project. Representatives of Contractor and DMV shall meet as often as may be reasonably requested by either Party, but no less often than once each calendar quarter, to review Contractor's performance of the components of the Modernized CSS Solution and project and to discuss technical plans, financial matters, system performance, project performance, quality of services performed, staffing/personnel issues, and for any other matters related to this Contract.

**Commented [HDT62]: Clarification:** CapTech would propose consolidating all performance reporting into a single section or Exhibit to the Contract, to eliminate any overlapping requirements and ensure consistency of timing expectations for all reporting mechanisms.

In addition to the reporting requirement of this Section, Contractor shall ensure that use commercially reasonable efforts to provide DMV has with access, as needed reasonably required, to the data on which each report is based in order for DMV to prepare its own reports or otherwise use such data to support the ongoing operation and evaluation of the Modernized CSS Solution and project.

**Commented [HDT63]: Exception:** CapTech promotes transparency and close collaboration throughout the project. But the absolute nature of the on-demand access proposed by DMV in this clause could put CapTech in breach of the Contract for reasons that CapTech cannot reasonably control.

## **17. COMPETITIVE PRICING**

Contractor warrants and agrees that each of the charges, economic or product terms or warranties granted pursuant to this Contract are comparable to or better than the equivalent charge, economic or product term or warranty being offered to any commercial or government customer of Contractor.If Contractor enters into any arrangements with another customer of Contractor to provide services under more favorable prices, as the prices may be indicated on Contractor's current U.S. and International price list or comparable document, then this Contract shall be deemed amended as of the date of such other arrangements to incorporate those more favorable prices, and Contractor shall immediately notify DMV of such change, for a substantially similar scope of services.

**Commented [HDT64]: Exception:** We believe DMV will find our proposed pricing very competitive with that of others, but CapTech does not have a GSA schedule or any publicly facing US or Intl. pricing schedule. CapTech prices its services based on the specific scope and services being provided to each Customer and depending on all of the factors impacting such pricing.

## **18. CONTRACTOR PERFORMANCE MEASURES**



**A. Contractor Performance Measures**

DMV has developed a set of performance measures relating to Contractor's performance under this Contract and which are attached hereto and incorporated by reference as Exhibit [H].

Contractor agrees to be bound by and perform its obligations under this Contract pursuant to these performance measures. The remedies for Contractor's failure to meet the performance measures are set forth in Exhibit [H].

Contractor and DMV agree to meet within 30 calendar days of the Effective Date of this Contract to set forth the methodology and designated personnel of each Party to provide, collect, monitor, and report the performance measures data and mutually agreed-to incentives and remedies.

Contractor agrees to provide to DMV a report of its performance against the performance measures no less than once every six (6) months throughout the Contract Term. Contractor's report must include a comparison of its performance measures against the agreed-to targets and, in the event of any shortfall by Contractor, proposed remediation measures. Contractor will report its performance for the Contract in aggregate and for each change order or SOW over \$1,000,000. Any instances of Contractor non-compliance will be recorded in Contractor's Contract file and shared with Contract stakeholders. Contractor further agrees that any degradation or failure of Contractor's performance obligations may result in according and subject to the terms and conditions of this Contract, failure to renew the Contract, termination for convenience of the Contract or termination for breach of the Contract. DMV will have all rights and remedies available at law.

**B. Contract Enforcement Provisions**

The DMV Project Manager, the DMV Contract Administrator, the Project Steering Committee, and/or any other authorized DMV representative(s) will regularly monitor the Contractor's performance for the entire life of the Contract.

DMV will actively enforce and take prompt action to enforce the milestone completion dates, performance measures, and service levels. DMV will use a variety of tools and other types of monitoring mechanisms to enforce the Contract. The Contractor shall be accountable and responsible for submitting reports with quantitative data for each measurable performance metric and service level agreement.

Contractor shall attend regular Contract performance review meetings, along with the DMV Project Manager, DMV Contract Administrator, Steering Committee, and/or any other authorized DMV representative(s), who have a part in the successful performance of this Contract. The purpose of the performance review meetings is to review the Contractor's performance and to discuss ways to ensure compliance with the performance criteria set forth in the Contract. DMV will document all instances of Contractor's failure to meet its contractual obligations in the Contract file as Contractor non-compliance.

In the event the Contractor fails to comply with the performance criteria set forth in the Contract, DMV may exercise all available rights and remedies under law and equity, to include withholding payment for un-met, unacceptable, or late completion of milestones during the life of the Contract.

**19. INDEMNIFICATION AND LIABILITY**

Contractor agrees to indemnify, defend and hold harmless the Commonwealth, VITA, and DMV, their officers, directors, agents and employees (collectively, "the Indemnified Parties") from and against any and all third-party claims, demands, proceedings, suits and actions, including any related liabilities, obligations, losses, damages, assessments, fines, penalties (whether criminal or civil), judgments, settlements, expenses (including attorneys' and accountants' fees and disbursements) and costs (each, a "Claim" and collectively, "Claims"), incurred by, borne by or asserted against any of the Indemnified Parties to the extent such Claims in any way relate to, arise out of or result from: (i) any intentional or willful conduct or negligence of any employee, agent, or subcontractor of

**Commented [HDT65]: Exception:** We acknowledge that non-renewal or termination may result from deficient performance but would like to clarify that this sentence is not intended to create separate rights of non-renewal or termination. Those rights are established by the appropriate terms in Section 3 of the Contract.

**Commented [HDT66]: Exception: RESERVED**  
Pursuant to DMV's instructions in Section 8.1 of the EPD, deferring revisions related to liability to post-award discussions, CapTech reserves the right to present revisions and exceptions to this Section 19 following award.



**MODERNIZED CITIZEN SERVICES SOLUTION**  
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**APPENDIX A**  
**PROPOSED CONTRACT**

Contractor, (ii) any act or omission of any employee, agent, or subcontractor of Contractor, (iii) breach of any representation, warranty or covenant of Contractor contained herein, (iv) any defect in the Modernized CSS Solution, (v) any unauthorized use or disclosure of any personal, protected, or privileged DMV data or information by any employee, agent, or subcontractor of Contractor, (v) any actual or alleged infringement or misappropriation of any third-party's intellectual property rights by the Modernized CSS Solution or any component thereof, or (vi) loss of Content provided to Contractor due to Contractor's failure to back up Content in accordance with the Contract.

Selection and approval of counsel and approval of any settlement shall be accomplished in accordance with all applicable laws, rules and regulations, including §§ 2.2-510 and 2.2-514 of the *Code of Virginia*. Contractor shall reimburse the Indemnified Parties for any reasonable legal defense costs incurred as a result of a Claim for which Contractor is required to provide indemnification under this Section. To receive the foregoing indemnities, DMV or the Commonwealth must promptly notify Contractor in writing of the claim or suit and enable Contractor to participate in the defense of the claim or suit in an advisory capacity.

If a Claim is commenced against any of the Indemnified Parties alleging that use of the Modernized CSS Solution or any component thereof under this Contract infringes any third-party's intellectual property rights and Contractor is of the opinion that the allegations in such Claim in whole or in part are not covered by this indemnification provision, Contractor shall immediately notify DMV in writing, via certified mail, specifying to what extent Contractor believes it is obligated to defend and indemnify under the terms and conditions of this Contract. Contractor shall in such event protect the interests of the Indemnified Parties and secure a continuance to permit DMV, or the Commonwealth's Indemnified Parties against whom the Claim has been asserted, to appear and defend its interests in cooperation with Contractor as is appropriate, including any jurisdictional defenses DMV, or the Commonwealth's Indemnified Parties against whom the Claim has been asserted, may have.

In the event of a Claim pursuant to any actual or alleged infringement or misappropriation of any third-party's intellectual property rights by any component(s) of the Modernized CSS Solution, and in addition to all other obligations of Contractor in this Section, Contractor shall at its expense, either (a) procure for DMV and the Commonwealth the right to continue use of such infringing component(s); or (b) replace or modify the such infringing component(s) with non-infringing products or services satisfactory to DMV. And in addition, Contractor shall provide DMV with a comparable temporary replacement component(s) or reimburse DMV for the reasonable costs incurred by DMV in obtaining an alternative product in the event DMV cannot use the affected component(s). If Contractor cannot accomplish any of the foregoing within a reasonable time and at commercially reasonable rates, then Contractor shall accept the return of the infringing component of the Modernized CSS Solution, along with any other components of any products rendered unusable by DMV as a result of the infringing component(s), and refund the price paid to Contractor for such component(s) less a reasonable amount for productive use up to the time of return. Contractor's obligation to provide indemnity under this Contract does not cover intellectual property infringement by third-party software unless such software is provided by Contractor as a component of the Modernized CSS Solution.

Contractor agrees that it is fully responsible for all Content produced by the Solution and its Application(s) and for all acts and omissions of its employees, agents, and subcontractors, including their gross negligence or willful misconduct. Contractor is responsible for any losses, including payments not made to DMV by third parties, resulting from any errors in the Solution and its Application(s), or any acts or omissions of its employees, agents, and subcontractors.

As a Contract for a major information technology project, while terms and conditions relating to the indemnification obligations and liability of the Contractor shall be reasonable and shall not exceed in aggregate twice the value of the Contract, there shall be no limitation on the liability of the Contractor for (i) the intentional or willful misconduct, fraud, or recklessness of the Contractor or any employee of the Contractor or (ii) claims for bodily injury, including death, and damage to real property or tangible personal property resulting from the negligence of the Contractor or any employee of the Contractor.

Contractor shall be liable for damages caused by its employees, agents, or subcontractors. Except for liability arising out of a Party's intentional or willful conduct, negligence, fraud, or recklessness,



neither Party will be liable to the other Party for any indirect, incidental, consequential, or punitive damages, including (without limitation) loss of profit, income, or savings, even if advised of the possibility of these damages.

## **20. INSURANCE**

In addition to the insurance coverage required by law as referenced in the Incorporated Contractual Provisions section of this Contract, Contractor shall carry:

- i) Automobile Liability Insurance Coverage: \$1,000,000 combined single limits (only if Contractor is using company owned vehicles in performance of the Contract);
  - ii) Errors and Omissions Insurance Coverage: A minimum of \$5,000,000 per occurrence;
  - iii) Commercial General Liability Insurance Coverage: A minimum of \$2,000,000 per occurrence; and
  - iv) Cyber Security Liability Insurance Coverage: A minimum of \$5,000,000 per occurrence.
- v) Performance Surety Bond: Equal to a minimum of the value of the Contract.  
Intentionally omitted.

## **21. IMPORT/EXPORT**

In addition to compliance by Contractor with all applicable export laws and regulations, DMV requires that any data deemed "privileged," "restricted," or "sensitive" by either federal or state authorities or law, must only be collected, developed, analyzed, or otherwise used or obtained by persons or entities working within the boundaries of the continental United States.

## **22. BANKRUPTCY**

If Contractor becomes insolvent, takes any step leading to its cessation as a going concern, fails to pay its debts as they become due, or ceases business operations continuously for longer than 15 business days, then DMV may immediately notify Contractor and terminate this Contract unless Contractor immediately gives DMV adequate assurance of the future performance of this Contract. If bankruptcy proceedings are commenced with respect to Contractor, and if this Contract has not otherwise terminated, then DMV may suspend all further performance of this Contract until Contractor assumes this Contract and provides adequate assurance of performance thereof or rejects this Contract pursuant to Section 365 of the Bankruptcy Code or any similar or successor provision, it being agreed by DMV and Contractor that this is an executory contract. Any such suspension of further performance by DMV pending Contractor's assumption or rejection shall not be a breach of this Contract and shall not affect the rights of DMV to pursue or enforce any of its rights under this Contract or otherwise. Suspension of performance by DMV pursuant to this Section does not absolve DMV of any obligation to pay undisputed fees due and payable up to the effective date of the suspension and the applicable amount (pro-rated) of the hold back fees that would have otherwise been due and payable upon Final Acceptance. For any milestone that has been partially completed prior to suspension, the applicable fee that is due and payable will be pro-rated and calculated on a time and materials basis.

## **23. GENERAL PROVISIONS**

### **A. Relationship Between DMV and Contractor**

Contractor has no authority to contract for, bind or commit to any agreement of any kind, or to assume any liabilities of any nature in the name of or on behalf of DMV. Under no circumstances shall Contractor, or any Contractor Personnel, hold itself out as or be considered an agent or an employee of DMV, and DMV shall not have any duty to provide or maintain any insurance or other employee benefits on behalf of Contractor or any Contractor Personnel. Contractor

**Commented [HDT67]: Exception:** We suggest that a Performance Bond raises both Parties' costs of performing this project without adequate benefit to DMV. DMV's 20% hold back of fees until Final Acceptance should provide DMV adequate security for full performance, in lieu of asking CapTech to incur (or price into its proposal) the additional expense a Performance Bond.

**Commented [HDT68]: Exception:** CapTech adds an applicability standard to all references to law and regulation in order to avoid any impression of extending the reach of any law or regulation beyond its existing boundaries. CapTech certainly intends to comply with all law and regulation that does apply to CapTech and its performance under the Contract.

**Commented [HDT69]: Exception:** CapTech understands the need for DMV to expressly reserve the right to suspend its performance to avoid undesirable impacts of federal law, but suspension should not affect CapTech's right to be paid for conforming services performed prior to the suspension.



represents and warrants that it is an independent contractor for purposes of federal, state, and local employment taxes, and agrees that DMV is not responsible to collect or withhold for Contractor any federal, state, or local employment taxes, including, but not limited to, income tax withholding and social security contributions. Contractor shall pay or withhold any and all taxes, interest or penalties (including, but not limited to, any federal, state, or local withholding or employment taxes, and any penalties related to health care or employee benefits laws) that are imposed, assessed, or levied as a result of this Contract or Services performed pursuant to this Contract. Contractor shall reimburse DMV in the event that any taxes, interest or penalties are assessed against and paid by DMV as a result of this Contract.

**B. Licensing Within the Commonwealth**

Any and all licenses granted or provided pursuant to this Contract, whether to Work Product, System Software, COTS Software, Product, or any other Software will be held by the Commonwealth.

**C. Incorporated Contractual Provisions**

In addition to the terms, conditions, and obligations of this Contract, Contractor agrees to all mandatory Contract terms required by law or by VITA, links to which can be found at the following URL (or any successor URL), are hereby incorporated into the Contract by reference: <https://www.vita.virginia.gov/procurement/contracts/mandatory-contract-terms/>.

Contractor agrees that non-compliance with the above-referenced mandatory contract terms and IRS Publication 1075—including Exhibit 7, “Safeguarding Contract Language” of IRS Publication 1075 which is incorporated by reference—may be deemed, solely by DMV, as a material breach of the Contract or any change order or SOW. Contractor is responsible for verifying the correct and current version of this IRS publication and related safeguarding terms language and acknowledges that DMV will be held harmless.

The terms and conditions set forth in documents posted at the URL above, and any successor URL(s), are subject to change pursuant to action by the legislature of the Commonwealth, change in DMV policy, adoption of revised eVA business requirements, or change to IRS Publication 1075. If a change is made to any of the mandatory contract terms documents, a new effective date will be noted in the applicable document title. Contractor is advised to check the URLs, or their successors, periodically.

**D. Compliance with the Federal Lobbying Act**

Contractor's signed certification of compliance with 31 USC §1352 (entitled "Limitation on use of appropriated funds to influence certain Federal Contracting and financial transactions") or by the regulations issued from time to time thereunder (together, the "Lobbying Act") is incorporated as Exhibit [F] hereto.

**E. Ethics in Public Contracting**

By signing this Contract, Contractor warrants that its assent to this Contract is made without collusion or fraud, and that Contractor has not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer, or subcontractor in connection with their proposal or the terms of this Contract. Further, Contractor warrants that it has not conferred any payment, loan, subscription, advance, deposit of money, services, or anything of more than nominal value, present or promised, on any public employee having official responsibility for this procurement transaction, unless consideration of substantially equal or greater value was exchanged. In addition, Contractor warrants that it will notify DMV if it becomes aware of a potential conflict of interest in the future.

**F. Governing Law**

This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia without regard to that body of law controlling choice of law. Any and all litigation shall be brought in the circuit courts of the Commonwealth of Virginia. The English language version of this Contract prevails when interpreting this Contract. The United Nations Convention on Contracts for the International Sale of Goods and all other laws and international



treaties or conventions relating to the sale of goods are expressly disclaimed. The Uniform Computer Information Transaction Act (UCITA) shall apply to this Contract only to the extent required by § 59.1-501.15 of the *Code of Virginia*.

**G. Dispute Resolution**

The Parties shall make good faith efforts to first resolve internally any dispute by escalating it to higher levels of management.

In accordance with § 2.2-4363 of the *Code of Virginia*, contractual claims, whether for money or other relief, shall be submitted in writing to DMV no later than 60 days after final payment; however, written notice of Contractor's intention to file such claim must be given to DMV at the time of the occurrence or beginning of the work upon which the claim is based. Pendency of claims shall not delay payment of amounts agreed due in the final payment. DMV shall render a final decision in writing within 30 days after its receipt of the Contractor's written claim.

Contractor may not invoke any available administrative procedures under § 2.2-4365 of the *Code of Virginia*, nor institute legal action before receipt of DMV's decision on the claim, unless DMV fails to render its decision within 30 days. The decision of DMV shall be final and conclusive unless Contractor, within 6 months of the date of the final decision on the claim, invokes appropriate action under § 2.2-4364 of the *Code of Virginia* or the administrative procedure authorized by § 2.2-4365 of the *Code of Virginia*.

In the event of any breach by DMV, Contractor's remedies shall be limited to claims for damages and Prompt Payment Act interest and, if available and warranted, equitable relief, all such claims to be processed pursuant to this Section. In no event shall Contractor's remedies include the right to terminate any license or support services for the licensed items hereunder. Nothing herein shall be construed to prevent DMV from instituting legal action against Contractor.

**H. Advertising and Use of Proprietary Marks**

Contractor may use DMV's name in client lists and may generally describe the types of projects for purposes of describing Contractor's capabilities in proposals to third-parties, provided however that neither Party shall use the name or proprietary mark of the other Party or refer to the other Party, directly or indirectly, in any press release or formal advertisement without receiving prior written consent of the named Party.

**I. Notices**

Any notice required or permitted to be given under this Contract shall be in writing and shall be deemed to have been sufficiently given if delivered in person, if deposited in the U.S. mail,-

postage prepaid, for mailing by registered, certified mail, or overnight courier service addressed to the addresses shown below, or if provided by email to both persons designated below. DMV or Contractor may change its contact information for notice purposes by giving the other Party notice of such change in accordance with this Section.

Notice to DMV shall be sent to:

Virginia Department of Motor Vehicles  
Attn: Arthur Vandenesse  
Senior Contract Specialist  
2300 West Broad Street  
P.O. Box 27412  
Richmond, Virginia 23269  
[arthur.vandenesse@dmv.virginia.gov](mailto:arthur.vandenesse@dmv.virginia.gov)

Virginia Department of Motor Vehicles  
Attn: Charles Sheldon  
Assistant Commissioner/Deputy CIO  
2300 West Broad Street  
P.O. Box 27412  
Richmond, Virginia 23269  
[charles.sheldon@dmv.virginia.gov](mailto:charles.sheldon@dmv.virginia.gov)

Notice to Contractor shall be sent to:

[Contractor Name]

[Contractor Name]





**MODERNIZED CITIZEN SERVICES SOLUTION  
EMERGENCY PROCUREMENT  
EPD 154:24-CSS**

**APPENDIX A  
PROPOSED CONTRACT**

Attn: [Name, Title]  
[Street Address]  
[City, State, Zip]  
[Email Address]

Attn: [Name, Title]  
[Street Address]  
[City, State, Zip]  
[Email Address]

**J. No Waiver**

Any failure to enforce any terms of this Contract shall not constitute a waiver.

**K. Assignment**

This Contract shall be binding upon and shall inure to the benefit of the permitted successors and assigns of DMV and Contractor. Contractor may not assign, subcontract, delegate, or otherwise convey this Contract, or any of its rights and obligations hereunder, to any entity without the prior written consent of DMV, and any such attempted assignment or subcontracting without consent shall be void. DMV may assign this Contract to any entity, so long as the assignee agrees in writing to be bound by all the terms and conditions of this Contract.

If any law limits the right of DMV or Contractor to prohibit assignment or nonconsensual assignments, the effective date of the assignment shall be 60 days after Contractor gives DMV prompt written notice of the assignment, signed by authorized representatives of both Contractor and the assignee. Any payments made before receipt of such notification shall not be covered by this assignment.

**L. Section/Paragraph Captions and Headings**

The captions and headings are for convenience and in no way define, limit or enlarge the scope of this Contract or any of its Sections or provisions.

**M. Severability**

Invalidity of any term of this Contract, in whole or in part, shall not affect the validity of any other term. DMV and Contractor further agree that in the event such provision is an essential part of this Contract, they shall immediately begin negotiations for a suitable replacement provision.

**N. Survival**

Any provisions of this Contract regarding Software License, License, Rights To Work Product, Warranty, Confidentiality, Content, Privacy and Security, Liability, and Indemnification, Transition of Services, the right to purchase Services, and the General Provisions shall survive the expiration or termination of this Contract.

**O. Force Majeure**

No Party shall be responsible for failure to meet its obligations under this Contract, if the failure to perform is due to causes beyond its reasonable control, including without limitation, acts of God, disease, war, terrorism or the public enemy, riot, civil commotion or sabotage, expropriation, condemnation of facilities, changes in law, national or state emergencies or other governmental action, strikes, lockouts, work stoppages or other such labor difficulties by third-parties, floods, droughts or other severe weather, fires, explosions or other catastrophes, or accidents causing damage to or destruction, in whole or in part, of the equipment or property necessary to perform the services required. If any performance date under this Contract is postponed or extended pursuant to this Section for longer than 30 calendar days, DMV, by notice given during the postponement or extension, may terminate Contractor's right to render further performance of the Contract after the effective date of termination without liability for that termination.

**P. Remedies**

The remedies stated in this Contract are intended to be cumulative. In addition to any specific remedy, DMV reserves any and all other remedies that may be available at law or in equity.

**Q. Right to Audit**

DMV reserves the right to audit those Contractor records that relate to the Contract or any SOWs or change orders issued there under. DMV's right to audit is limited as follows:

**Commented [HDT71]: Exception:** Pursuant to Section 8.1 of the EPD, deferring revisions related to liability to post-award discussions, CapTech reserves the right to address the cumulative or exclusive nature of particular remedies/liability as part of the negotiation regarding indemnification and liability at the point of award.



- i. three (3) years from end date of the Contract;
- ii. at DMV's expense;
- iii. no more than once every twelve (12) months;
- iv. performed at Contractor's premises, during normal business hours at mutually agreed upon times; and
- v. access to Contractor cost information is excluded.

In no event will Contractor have the right to audit, or require to have audited, DMV.

**R. Taxes**

The Commonwealth is exempt from Federal excise and all State and Local taxes and any such taxes may not be included in Contract prices. Tax certificates of exemption, Form ST-12 can be obtained from DMV upon request. Deliveries against this Contract shall be free of Federal excise and transportation taxes. The Commonwealth's excise tax exemption registration number is 54-73-0076K.

**S. Currency**

All prices, costs, or fees in this Contract and all exhibits, schedules, orders, or SOWs will be in United States dollars.

**T. Non-Disparagement**

Each Party agrees that it shall not engage in any conduct or pattern of conduct that involves the making or publishing of written or oral statements or remarks (including without limitations, the repetition or distribution of derogatory rumors, allegations, negative reports or comments) which are disparaging, deleterious or damaging to the integrity, reputation or good name of any other Party or the Party's affiliates, employees, agents, contractors, or subcontractors. This section will not be construed to prevent a Party from responding publicly to incorrect public statements or from making truthful statements when required by subpoena, court order, or otherwise required by law.

**U. Offers of Employment**

During the first 12 months of the Contract, the Parties agree not to solicit each other's employees who are involved in the Modernized CSS Solution project and, if contacted by such an employee seeking employment, shall coordinate with the other Party's management before any offer of employment.

**V. Contract Administration**

Contractor agrees that at all times during the term of this Contract an account executive, at Contractor's senior management level, shall be assigned and available to DMV. Contractor reserves the right to change such account executive upon reasonable advance written notice to DMV.

**W. Entire Contract**

The following Exhibits, including all subparts thereof, are attached to this Contract and are made a part of this Contract for all purposes:

*The list of Exhibits will be finalized during negotiations but is expected to include the following:*

- i) Exhibit A: DMV EPD document (Dated xx/xx/yyyy)
- ii) Exhibit B: Supplier Proposal (Dated xx/xx/yyyy)
- iii) Exhibit C: Supplier Responses to Proposal Clarification Questions (Dated xx/xx/yyyy)
- iv) Exhibit D: Supplier Proposal Modifications From Negotiations (Dated xx/xx/yyyy)
- vi) Exhibit E: Small Business Subcontracting Monthly Report
- vii) Exhibit F: Certification Regarding Lobbying (Dated xx/xx/yyyy)
- viii) Exhibit G: Virginia State Corporation Commission (SCC) Registration Information
- ix) Exhibit H: Contractor Performance Measures

This Contract, its Exhibits, and any prior non-disclosure agreement constitute the entire



agreement between DMV and Contractor and supersedes any and all previous representations, understandings, discussions or agreements between DMV and Contractor as to the subject matter hereof. Any and all terms and conditions contained in, incorporated into, or referenced by the Contractor's Proposal shall be deemed invalid. The provisions of the Virginia Department of General Services, Division of Purchases and Supply Vendor's Manual shall not apply to this Contract. In the event of a conflict, the following order of precedence shall apply: this Contract document, Exhibit A, Exhibit D, Exhibit C, Exhibit B.

**X. Changes to Contract**

This Contract may only be changed in either of the following ways:

- i) This Contract may be amended by an instrument in writing signed by DMV and Contractor; or
- ii) DMV may order changes within the general scope of the Contract at any time by written notice to Contractor. Changes within the scope of the Contract include, but are not limited to, things such as services to be performed, the method of packing or shipment, and the place of delivery or installation. Contractor shall be compensated for any additional approved costs incurred as the result of such order and shall give DMV a credit for any price reduction. Said compensation shall be determined by mutual agreement between the Parties in writing.

DMV and Contractor each acknowledge that it has had the opportunity to review this Contract and to obtain appropriate legal review if it so chose.

Executed as of the last date set forth below by the undersigned authorized representatives of DMV and Contractor.

**(Contractor)**

**Virginia Department of Motor Vehicles**

By: \_\_\_\_\_  
(Signature)

By: \_\_\_\_\_  
(Signature)

Name: \_\_\_\_\_  
(Print)

Name: \_\_\_\_\_  
(Print)

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_



The following is a summary of the performance standards, metrics, resolution time, and performance targets/service levels contained in the EPD. The Supplier shall complete the 3 far right columns: Contractor Measurement Method, Contractor Measurement Period/Frequency, and Contractor Escalation Procedures and submit this summary with their proposal. This summary will be finalized between DMV and the Contractor within 30 days after Contract signing and will be maintained and updated on an ongoing basis throughout the term of the Contract.

**PERFORMANCE STANDARDS, METRICS, METRICS, RESOLUTION TIME, PERFORMANCE TARGET / LEVEL**

#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
1	EPD 5.F.2.c	Solution Risk Assessment	An ongoing risk assessment of the Modernized CSS Solution shall be performed jointly by the Contractor and DMV during the project to identify how the security and privacy controls shall be met and remediate any deficiencies in the Solution design. The DMV CISO will provide a risk assessment workbook that will be used for tracking purposes and shall be maintained throughout the term of the Contract.			
2	EPD 5.F.2.d	Production Release	The Contractor and DMV staff will perform a risk assessment to evaluate compliance with baseline security requirements, identify threats and vulnerabilities, and assess alternatives for mitigating or accepting residual risks. As part of the production release the Contractor and DMV shall jointly support key aspects of service delivery for the Solution			
3	EPD 5.F.7	Change Management Requirements	The objective of the DMV change management process is to ensure that standardized methods and			



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			<p>procedures are used for efficient and prompt handling of all changes to IT infrastructure in a secure manor.</p> <ul style="list-style-type: none"><li>a. The Contractor shall participate in the DMV change management process when applicable.</li><li>b. The Contractor shall provide a copy of all artifacts generated during the testing of proposed changes to the Modernized CSS Solution for DMV review.</li><li>c. The Contractor shall work with the DMV to mitigate or reduce any residual risk to an acceptable level.</li></ul>			
4	EPD 5.F.8.1	Availability	The Modernized CSS Solution shall provide greater than 99.9% up-time on a 24/7, 365 day per year basis (excluding planned system maintenance downtime).			
5	EPD 5.F.8.6	Capacity	The Modernized CSS Solution shall support more than 300,000 customer transactions per day.			
6	EPD 5.F.8.13	Performance	The Modernized CSS Solution shall complete 95% of online transactions within three (3) seconds (real time) and <u>100%</u> within ten (10) seconds (near real time).			
7	EPD 5.F.8.14	Performance	The Modernized CSS Solution shall allow for up to 3,000 concurrent Application Users while meeting the response time and throughput requirements. Concurrent users are			

**Commented [HDT72]: Exception:** To be discussed. Although CapTech understands the criticality of this measure there is no industry standard for 100% performance - there are too many factors beyond CapTech's control once a system is in production that may impact transaction time. CapTech can design the solution to complete to the timing, but not to a 100% standard.



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			defined as Solution Application Users who are logged on and/or actively performing solution functions.			
8	EPD 5.H.2	Project Staffing	<p>The Contractor shall provide an appropriate level of Contractor project staffing necessary to complete all tasks and deliverables as defined and required in this EPD. Contractor staffing must include, but is not limited to:</p> <ul style="list-style-type: none"><li>• A Contractor Project Manager available on-site at DMV on a full-time, 5-days per week basis, throughout the duration of the project until Final Acceptance has been achieved.</li><li>• An appropriate level of Contractor technical and support staff necessary to complete all tasks and deliverables on schedule and satisfy the requirements of this project.</li></ul>			
9	EPD 5.H.2.c	Project Staffing	<p>A proposed Contractor staffing matrix in detail which clearly identifies:</p> <ul style="list-style-type: none"><li>• All proposed Contractor staff identifying each individual proposed and their role on the project, their specific skills, expertise, and level of expertise they will bring to the project.</li><li>• The time frame for each individual assignment and availability of each project team member.</li></ul>			



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			<ul style="list-style-type: none"><li>• Proposed percentage of time each staff person is assigned and available to the project.</li><li>• Proposed percentage of time each staff person is working on-site at DMV in Richmond.</li><li>• Proposed percentage of time each staff person is working off-site on project activities.</li></ul>			
10	EPD 5.I.1	Testing and Acceptance	<p>System acceptance will be based on individual Modernized CSS Solution components that are built in an agile-based iterative/release approach. For each component being reviewed and tested for acceptance, the following levels of testing will occur:</p> <ol style="list-style-type: none"><li>a. Level 1 Testing: General unit testing performed during the development stage. Testing is performed in a development environment.</li><li>b. Level 2 Testing: System integration testing, to include regression testing, mock live testing, volume testing, security testing, and stress testing, prior to production implementation. Volume and stress testing must replicate anticipated volumes at all DMV service locations. Testing is performed in a test environment.</li></ol>			



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			c. Level 3 Testing: User acceptance testing which involves coordination of business user approval, and regression testing. Testing is performed in a test environment. d. Level 4 Testing: Component level acceptance review where system components are implemented and monitored for a minimum of 30 calendar days in a production environment. Upon successful review and monitoring, based on the sole judgement of DMV, the DMV Project Manager will issue a component level acceptance notice, in writing, to the Contractor.			
11	EPD 5.I.2	Final Acceptance	After all components of the full Modernized CSS Solution have been built, deployed, and operational, DMV will conduct a review and monitoring period for a minimum of 30 calendar days. Upon successful review and monitoring, based on the sole judgement of DMV, the DMV Project Manager will issue a Final Acceptance notice, in writing, to the Contractor.			
12	EPD 5.L.1	Account Management	The Contractor must appropriately manage the business and performance aspects of a resultant Contract to achieve maximum service and performance levels			



#	EPD Section	Performance Standard	Description of Performance Metrics / Resolution Time / Performance Target / Service Level	Contractor Measurement Method	Contractor Measurement Period / Frequency	Contractor Escalation Procedures
			within a minimal amount of time during the project as well as during the life of the contract.			
13	EPD 5.L.2.b	Service and Support	DMV must be self-sufficient to the fullest extent possible and transition into full system support once acceptance is achieved for each Modernized CSS Solution component. The Supplier must provide a detailed narrative describing the proposed approach, to include training and coaching, that will facilitate and ensure self-sufficiency of DMV with respect to transitioning ongoing management and maintenance of the Modernized CSS Solution to DMV.			

**Page 15: [1] Commented [HDT37] Hilary D. Toole 4/24 12:03:00 PM**

**Exception:** As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a “fit for purpose” standard shifts to CapTech a scope of responsibility that DMV is uniquely and exclusively situated to fulfil, and it introduces a subjective measure of evaluation that threatens both parties’ ability to timely and efficiently achieve a fully functioning Solution for the benefit of Virginia’s citizens. DMV has other more appropriate, comprehensive rights under the Contract to ensure that CapTech delivers the Solution that DMV seeks.

**Page 15: [2] Commented [HDT39] Hilary D. Toole 4/24 12:08:00 PM**

**Exception:** The reference to “equipment” in this warranty implies that CapTech was the provider of the equipment. As noted above, CapTech does not expect to sell to DMV, or purchase on DMV’s behalf as part of CapTech’s delivery of the Solution, any hardware or equipment, so we propose to clarify that the referenced “equipment” is the equipment with which CapTech designs the Solution to operate, as specified in the Requirements or the Documentation.

**Page 16: [3] Commented [HDT45] Hilary D. Toole 4/24 9:07:00 AM**

**Exception:** Because performance of contractual obligations will necessarily occur on an ongoing basis, both during and after the Initial Term, we seek to distinguish the timing of this performance warranty from the other warranties applicable to Solution functionality and performance. While the Solution warranties must be limited to the Initial Term, the warranty applicable to any given contractual obligation should apply at the time of performance of the obligation. Warranty claims in either case remain available after the time the warranty is given; the key question would be whether the warranty violation occurred at the time the warranty was given.

**Page 16: [4] Commented [HDT46] Hilary D. Toole 4/24 8:18:00 AM**

**Exception:** As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a “fit for purpose” standard shifts to CapTech a scope of responsibility that DMV is uniquely and exclusively situated to fulfil, and it introduces a subjective measure of evaluation that threatens both parties’ ability to timely and efficiently achieve a fully functioning Solution for the benefit of Virginia’s citizens. DMV has other more appropriate, comprehensive rights under the Contract to ensure that CapTech delivers the Solution that DMV seeks.

**Page 16: [5] Commented [HDT47] Hilary D. Toole 4/24 9:06:00 AM**

**Exception:** As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a “fit for purpose” standard shifts to CapTech a scope of responsibility that DMV is uniquely and exclusively situated to fulfil, and it introduces a subjective measure of evaluation that threatens both parties’ ability to timely and efficiently achieve a fully functioning Solution for the benefit of Virginia’s citizens. DMV has other more appropriate, comprehensive rights under the Contract to ensure that CapTech delivers the Solution that DMV seeks.

## Appendix 16: Contract Exception Matrix

**STATE OF VA - DMV - RFP FOR CSS SOLUTION**  
**CAPTECH VENTURES, INC.**  
**CONTRACT EXCEPTIONS**  
**(04052024)**

No.	Section / Subsection / Title	Redlined Language	Exception Explanation/Rationale
CapTech proposes limited edits and exceptions to the Contract offered by DMV. Our goal with these edits is two-fold: address only our fundamental requirements for the terms of engagement and promote clear expectations that will improve the Parties' efficiency and success in delivering the Modernized CSS Solution.			
Several of our edits work together to implement two important positions:			
1)	<b>Objective, consistent performance standards:</b>	We propose to harmonize the many sources of standards applicable to performance and functionality of the Solution provided by CapTech. DMV's draft warranties generally use a materiality standard in establishing expectations for the Solution. This "material conformity" approach proposed by DMV is customary in the industry, and we suggest it promotes timely, cost-effective achievement of the fully functioning Solution that DMV seeks. CapTech's edits extend that material conformance standard to all testing and acceptance criteria and similar contractual checkpoints for Solution performance. Without these changes, certain performance standards in the Contract introduce a subjective measure of evaluating the Solution and its components. Subjective evaluation creates unknowable and unsustainable risk to the project, threatening both Parties' ability to timely and efficiently deliver a fully functioning Solution for the benefit of Virginia's citizens.	
2)	<b>Performance warranties for 1 year from Final Acceptance; annual maintenance and support thereafter:</b>	CapTech will warrant performance and functionality of the Solution and its components for a full year following Final Acceptance, giving DMV access to no-cost support during the critical initial rollout of citizen access to the new Solution. Thereafter, CapTech proposes to continue maintenance and support for the Solution on a paid basis, through 1-year support and maintenance periods to be implemented during Renewal Terms of the Contract. We believe this is consistent with DMV's commercial intent based on DMV's proposed structure of an Initial Term followed by annual Renewal Terms, but certain of the warranty provisions in the original draft Contract required ongoing, perpetual warranty of the Solution, exposing CapTech to unpaid work indefinitely, which we believe DMV will agree is an untenable arrangement for CapTech. CapTech's proposed approach is designed to ensure that DMV receives the technical expertise it needs to continue operating the Solution as best-in-class technology for the citizens of Virginia.	
<b>Proposed Contract</b>			
1	General Exception	It is CapTech's standard practice that it does not store, host, process or otherwise handle its clients' sensitive information or data (including but not limited to Personal Data, PHI or PCI data) on its systems or infrastructure. In the event that access to such information or data is required for the services, CapTech uses client issued laptops and email or access using Virtual Desktop Infrastructure ("VDI") only (and not VPN only).	
2.	2.J Contractor	J. → <b>Contractor</b> <i>Includes the entity identified in the preamble as the Contractor and any of its Affiliates (i.e., an entity that controls, is controlled by, or is under common control with Contractor), and includes any employees, and individual agents, sub-contractors, or and independent contractors of Contractor involved in providing the Modernized CSS Solution and/or any additional products or services related to the Modernized CSS Solution provided under this Contract.</i>	CapTech is fully committed to ensuring that all individuals and parties working on CapTech's behalf under this Contract are bound by appropriate contractual mechanisms to comply with all terms that apply to them or their work. But we suggest that only CapTech should be the only entity singularly identified as the party to this Contract. Purporting to treat all CapTech Subcontractors or Affiliates as parties to the Contract by including them in the definition of "Contractor" yields untenable interpretations of certain Contract terms, by implying that each of them are separately, fully obligated to comply with terms of the Contract that are logically intended to apply only to the prime contracting entity. Instead, CapTech would expect to enter into written agreements with each Subcontractor (including any Affiliate of CapTech, if applicable), if any is ever used, that binds the Subcontractor to fully comply with all obligations and standards under this Contract that apply to that Subcontractor and its work.
3.	2.K Contractor Product		In its EPD, DMV has asked for innovative ways to deliver the Services and Solution. CapTech proposes to use certain existing tools and methods that it uses to accelerate client projects. To

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**CAPTECH VENTURES, INC.**  
**CONTRACT EXCEPTIONS**  
**(04052024)**

No.	Section / Subsection / Title	Redlined Language	Exception Explanation/Rationale
		<p>K. <b>Contractor Product Intellectual Property</b>  Contractor's proprietary reports, information and data made available to DMV and its Application Users, <u>including as further described in this Section 2.K:</u></p> <p>i) <u>Pre-Existing Intellectual Property.</u> Contractor's proprietary software, methodologies, tools, specifications, drawings, sketches, models, samples, records, documentation, works of authorship or creative works, ideas, knowledge or data which have been originated or developed by Contractor or its affiliates or by third parties under contract with such party to develop same, or which have been purchased by, or licensed to, such Contractor (together "Works"); (b) any intellectual property rights in and to the Works; (c) any further developments, enhancements, or modifications to Contractor's intellectual property rights in the Works conceived, created, or reduced to practice in the course of performing the Services or otherwise. Contractor Intellectual Property shall not include the Works or intellectual property rights of third parties not licensed or purchased by Contractor;  </p> <p>ii) <u>Specific to the Contractor Services,</u> the following components of the Solution and any enhancements thereto will be Contractor Intellectual Property:  </p> <p>1) Large Language Model ("LLM") prompts, algorithms and models, with associated reasoning and execution engines, feedback loops, user interfaces and interaction mechanisms, and security and compliance configurations;  </p> <p>2) Configuration and integration methodologies for ingesting and indexing data, using semantic search, querying of indexed sources, augmenting the development environment, identifying patterns and similarities, and responding in accordance with compliance and security configuration;  </p> <p>3) User Interfaces created internally by Contractor; and,  </p> <p>4) Associated documentation and training materials.  </p>	ensure CapTech can continue to use those items for future clients in an unfettered manner that does not disclose DMV information or encumber DMV's use of the Solution, CapTech must retain ownership of those items, including any additional enhancements and modifications to them created during performance of this Contract, but CapTech would provide DMV with all necessary license rights to use CapTech IP included in the Solution. See Section 9 of the Contract for details of CapTech's proposal on this topic.
4.	2.N Defect	<p>N. <b>Defect</b>  Any flaw or weakness in the system or its components that causes the system to behave in an unintended or unwanted manner. <u>that has a materially adverse impact to the system.</u> This includes any <u>material fault, failure, or coding error, imperfection, or shortcoming</u> in the provided Modernized CSS Solution or provided Documentation, or standard required to be maintained under this Contract express or implied, in any manner whatsoever. <u>Defects</u><u>Material defects</u> are determined at DMV's sole discretion.  </p>	CapTech intends to deliver a fully functioning Solution that meets the Requirements. But potentially subjective standards for assessment of the Solution's performance pose unknowable and unsustainable risk to both parties. The term "Defect" should conform to the objectively reasonable and attainable performance standards used in the acceptance and warranty provisions.
5.	2.O. Solution or Modernized CSS Solution	<p>DMV's sole discretion.  </p> <p>O. <b>Solution or Modernized CSS Solution</b>  A fully integrated and automated DMV transaction processing solution jointly developed by Contractor and DMV, and fully owned by <u>or licensed to</u> DMV. Includes, but is not limited to, <u>all</u> <u>Services</u>, the Application(s), Customizations, <u>Contractor Services</u>, Documentation, all necessary hardware, software, design, development, configurations, databases, custom developed interfaces, testing, training, delivery, installation/implementation, security, and support, related to the Modernized CSS Solution and any additional related components as described in the Contract Exhibits.  </p>	<p>CapTech will only provide professional services in developing and delivering the Solution for ongoing operation by DMV. CapTech does not offer any portion of the Solution on an "as a service" basis.</p> <p>CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment necessary for DMV to host, use and operate the Solution on an ongoing basis. CapTech does not offer any portion of the Solution on an "as a service" basis, and we suggest it is much more efficient and beneficial to DMV for the State and DMV to directly procure any such items, allowing DMV and VITA, as applicable, to ensure they meet applicable State standards.</p>
6.	2.T. Requirements	<p>T. <b>Requirements</b>  The functional, performance, operational, compatibility, acceptance testing criteria and other parameters and characteristics of the Modernized CSS Solution as stated in this Contract, including all Exhibits, and any such other parameters, characteristics, or performance standards that may be agreed upon by the Parties <u>in writing in a change order or SOW to this Contract</u>.  </p>	We believe this to be consistent with DMV's intent but would like to confirm that any agreement by the Parties on parameters, characteristics or performance standards would be documented in a written change order or SOW. CapTech should only act on changes, additions or reduction in scope or Requirements that are mutually agreed and properly documented, allowing both parties to avoid any risk of future confusion or dispute and ensuring that both parties sign on to the impact of such changes, including potential impact to the cost of services (whether it is an increase or decrease).

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**(04052024)**

No.	Section / Subsection / Title	Redlined Language	Exception Explanation/Rationale
7.	2.W. Subcontractor	<p><b>W. <u>Subcontractor</u></b>  Any entity to which Contractor (or other Subcontractor of any tier) has subcontracted for performance of, or delegated any of its responsibilities under the Contract, <u>including an affiliate of the Contractor</u>.</p>	CapTech will not be subcontracting any of the services under this Contract to its parent entity.
8.	2.Z. Update	<p><b>Z. <u>Update</u></b>  As applicable, any update, modification or new release of the Application(s), Documentation or Contractor <u>Product Intellectual Property</u> that Contractor makes generally available to its customers at no additional cost. Updates include software patches, fixes, upgrades, enhancements, improvements, or access mode, including without limitation, additional capabilities to or otherwise improve the functionality, increase the speed, efficiency, or base operation of the Modernized CSS Solution and its Applications.</p>	Changed to align to edits to that definition above
9.	2.BB. Work Product	<p><b>BB. <u>Work Product</u></b>  Inventions, combinations, machines, methods, formulae, techniques, processes, improvements, software designs, computer programs, Application(s), configurations, strategies, specific computer-related know-how, data and original works of authorship discovered, created, or developed by Contractor, or jointly by Contractor and <u>an</u> DMV in the performance of this Contract. <u>except that</u> Work Product does not include <u>Contractor Intellectual Property</u> or anything developed by Contractor prior to, or outside of, this Contract.</p>	As noted in the definition of Contractor Intellectual Property and Section 9, CapTech must retain ownership of certain items that would be Work Product by the broad definition proposed by DMV, but CapTech will provide DMV with all necessary license rights to give DMV full use of the Solution for its intended purposes. See Section 9 for more detailed treatment of this topic.
10.	3.B. Contract Renewal	<p><b>B. <u>Contract Renewal</u></b>  After the expiration of the Initial Term, <u>and subject to any Contractor election to not renew, pursuant to this Section</u>, DMV, in its sole discretion, may renew this Contract annually (<u>the for successive one-year terms (each, a "Renewal Term")</u>) for the purposes of continued services and support until such time as the Modernized CSS Solution is no longer in use. The service fee(s) for renewal shall be as stated in the Contract Exhibits. DMV will issue a written notification to the Contractor stating its intent to renew at least 30 days before the expiration of any current term. <u>The notwithstanding the foregoing, Contractor shall issue or may prevent any further renewal by providing</u> a written notification to DMV stating its intent not to renew at least 12 months before the expiration of any current term. Commencing with the sixth Renewal Term, the service fee(s) shall not exceed the fee(s) charged for the preceding year's Renewal Term by more than 3%, or the</p>	Clarification: In its original form, Section 3.B included a degree of internal inconsistency regarding the nature of Renewal Terms. We have proposed revisions that we believe clarify the original intent of DMV's language.
11.	3.E. Contractor's Right to Terminate	<p><b>E. <u>Contractor's Right to Terminate</u></b>  Under no circumstances <u>other than for breach by DMV</u> shall Contractor have the right to terminate this <u>Contract</u>.</p>	Though the ways DMV might possibly breach the Contract are extremely limited, the possible breaches that could occur—particularly non-payment—could have significant, adverse impact on CapTech. CapTech must be able to terminate the engagement in the unlikely event of an uncured DMV breach. CapTech is open to discussing the conditions of CapTech's termination right, including a longer cure period or reasonable materiality standard, as it is not CapTech's intention to discontinue work unless it becomes absolutely necessary. But for simplicity and efficiency at this stage, we've edited the Contract to provide for a basic reciprocal right to terminate for breach, noting that the right to terminate may be limited by applicable law.
12.	3.F. Termination for Breach		In a large, complex project, cure of a breach may require a longer period of time. Termination should be avoided if CapTech promptly begins and continuously pursues the cure until complete, even if the cure unavoidably requires more than 15

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No.	Section / Subsection / Title	Redlined Language	Exception Explanation/Rationale
		<p>F. <b>Termination for Breach</b>  <b>DMV</b> Unless otherwise prohibited by applicable law, each Party shall have the right to terminate this Contract, in whole or in part, or any order issued hereunder, in whole or in part, for breach of Contract. Contractor Each Party shall be deemed in breach if Contractor such Party fails to meet any Material Obligation stated in this Contract.    If DMV one Party deems the Contractor other Party to be in breach, DMV the non-breaching Party will provide Contractor the breaching Party with notice of breach and allow Contractor breaching Party 15 days to cure the breach, or, if the breach cannot reasonably be cured within 15 days, and provided the breaching Party commences the cure within 15 days of notice and continues to diligently pursue the cure until complete, such longer period as is reasonably necessary to effect the cure. If Contractor the breaching Party fails to cure the breach as noted, DMV the nonbreaching Party may immediately terminate this Contract, in whole or in part. In addition, if Contractor is found by a court of competent jurisdiction to be in violation of or to have violated 31 USC § 1352 or if Contractor becomes a party excluded from Federal Procurement and Non-procurement Programs, DMV may immediately terminate this Contract, in whole or in part, for breach, and DMV shall provide written notice to Contractor of such termination. Contractor shall provide prompt written notice to DMV if Contractor is charged with violation of 31 USC § 1352 or if federal debarment proceedings are instituted against Contractor.  </p>	days.
13.	3.H. Effect of Termination	<p>H. <b>Effect of Termination</b>  Upon termination, neither the Commonwealth nor DMV shall have any future liability except for components of the Modernized CSS Solution delivered by Contractor and accepted by DMV before the termination date. Notwithstanding the foregoing, in the case of any DMV termination pursuant to Sections 3.D., 3.G. 22, or 23.O., DMV will pay Contractor any undisputed fees due and payable for Services performed prior to the effective date of the termination, including the applicable, pro rata amount of any hold back fees that would have otherwise been due and payable upon Final Acceptance with respect to the Services performed prior to termination. For any milestone that has been partially completed prior to termination, the applicable fees that will be due and payable will be calculated on a time and materials basis at Contractor's then-</p>	CapTech should not bear the financial risk of DMV termination for reasons that CapTech cannot control. We should be paid for work performed prior to any termination for reasons other than CapTech breach, whether or not the work contributes to fully complete components that have been accepted by DMV. And because project pricing is a milestone-based fixed fee, we've proposed a reasonable mechanism for pricing CapTech work-in-process.
14.	3.H. Effect of Termination	<p>In the event of a Termination for Breach, DMV shall not be liable for any cost related to the terminated Contract or portion thereof. Contractor shall accept return of any products or software provided to DMV; and; Contractor shall refund any monies paid by DMV for components of the Modernized CSS Solution not accepted by DMV pursuant to the Contract or portion thereof terminated for breach. All; and all costs of de-installation and return of product or software shall be borne by Contractor. Contractor agrees that DMV may pursue all remedies provided under law in the event of a breach or threatened breach of this Section, including re-procurement or transition costs or injunctive or other equitable relief.  </p>	We've made a simple revision to clarify the intent that CapTech will bear extrication costs only if termination is due to CapTech breach, not in the case of DMV's termination for convenience.
15.	4.B. New Service Offerings Not Available from Contractor	<p>B. <b>New Service Offerings Not Available from Contractor</b>  If new product or service offerings become available to DMV under the scope of the Contract, and cannot be competitively provided by the Contractor, DMV may purchase such new products or services from a third-party, and Contractor shall reasonably assist DMV to integrate such products or services if DMV elects to use such new product or service offerings.    If DMV elects to acquire new products or services as described in the above paragraph and such services replace existing Contractor-provided services, discount tiers and any commitments (as applicable per the Contract) must may be reduced to reflect reductions in purchases of the replaced products or services. If the changes in products and services impact the scope of Services, the Requirements and/or the cost of performance, the Parties will mutually agree on such changes in a change order or SOW.  </p>	We support and acknowledge DMV's need to continuously innovate but swapping products and services could actually result in an increase in pricing since the services and prices were scoped based on specific assumptions. In a project of this magnitude and complexity, adding or substituting third-party products or services may increase complexity and may increase what CapTech must do to put the new third-party products or services in place.
16.	5. Additional Description of Services		Please see Section 9 of these Exceptions. The statement of DMV's ownership should be consistent with the reservation of rights by CapTech expressed in Section 9 of the Contract.

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		<p>5. <b>ADDITIONAL DESCRIPTION OF SERVICES</b></p> <p>During the term of this Contract, Contractor and DMV shall jointly custom develop the Modernized CSS Solution and its Application(s) described in the Contract Exhibits on hardware (including all necessary servers, workstations, solution components, consoles, etc.) provided, owned, operated, and maintained by DMV and/or the Commonwealth and shall make such Solution and its Application(s) available to DMV's designated Application Users through such methods as specified in the Contract Exhibits.</p> <p><u>Except as expressly provided in and subject to Section 9 herein,</u> Contractor hereby waives and releases any ownership rights to the Modernized CSS Solution, solution components, its Application(s), all Work Product, Documentation, and Content and full ownership rights shall be held solely by DMV.</p>	
17.	8.A. Incorporated Privacy and Security Provisions	<p>8. <b>PRIVACY AND SECURITY COMPLIANCE</b></p> <p>A. <b>Incorporated Privacy and Security Provisions</b></p> <p>Contractor agrees to comply at all times with all applicable federal, state, and local laws and regulations. To the extent that any policy(ies), standard(s), or guideline(s), as incorporated below, conflicts with any such law(s) or regulation(s), the applicable law(s) and/or regulation(s) shall take precedence.</p> <p>Contractor shall review the incorporated provisions above periodically for revisions and provide all necessary services and support to make such modifications to the Modernized CSS Solution as are necessary to maintain compliance during the life of the Contract and any Renewal Terms, provided that Contractor will be entitled to an equitable adjustment to its fees and time for performance, to be mutually determined by the Parties in a written change order or SOW under this Contract, if the necessary services and support materially affect the scope or cost of Contractor's performance of Services. If a change is made to the policies, standards and guidelines, a new effective date will be noted on the document cover page. DMV shall not incur any additional costs associated with Contractor providing additional services and support to maintain privacy and security compliance.</p>	Changes in applicable laws, regulations and standards can have a material impact on scope and pricing of these Services. If data privacy standards evolve or change in a manner that necessitates redesign or reconfiguration of a significant component of the Solution or a change in CapTech's delivery of Services, CapTech must be entitled to an equitable adjustment to pricing and time for performance.
18.	8.B.ii.2) Privileged Information	<p>ii) <b>Privileged Information</b></p> <p>Contractor acknowledges and agrees that:</p> <ol style="list-style-type: none"> <li>1) Content obtained and work performed under this Contract will involve Privileged Information contained in or derived from DMV records;</li> <li>2) DMV alone will determine and convey to Contractor in writing the purposes for which and the manner in which all Privileged Information maintained by DMV and processed by Contractor, in connection with this Contract, will be processed under any applicable data privacy laws and regulations;</li> </ol>	we agree that DMV must make this determination but ask that any such determination be properly memorialized in writing. It is in both parties' interests to eliminate any potential miscommunication about the processing of Privileged Information.
19.	9. Proprietary Rights and Rights to Work Product	<p>9. <b>PROPRIETARY RIGHTS AND RIGHTS TO WORK PRODUCT</b></p> <p>Any license to pre-existing work Contractor Intellectual Property will be held, and all rights in, title to, and ownership of Work Product will vest, pursuant to the terms of the "Licensing Within the Commonwealth" section of this Contract below.</p> <p><b>A. Rights to Work Product</b></p>	Clarification: Using the defined term for consistency in the Contract's treatment of pre-existing materials.
20.	9.A. Rights to Work Product		As CapTech proposes to define its Contractor Intellectual Property, the "proprietary information relating to the Work Product" referred to in this sentence could be read to extend to information that constitutes Contractor Intellectual Property. Furthermore, DMV acknowledges, in Section 9.D, the right of CapTech personnel to use knowledge and skills gained in

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		<p>A. <u>Rights to Work Product</u></p> <p>DMV and Contractor mutually acknowledge that performance of this Contract will result in Work Product. Contractor shall promptly and fully disclose to the Commonwealth or DMV any and all Work Product generated, conceived, reduced to practice, or learned by Contractor or any Contractor Personnel, either solely or jointly with others, during the term or performance of this Contract, which in any way relates to the business of the Commonwealth or DMV. Contractor and Contractor Personnel shall not make use of, or disclose to others, any proprietary information relating to the Work Product other than Contractor Intellectual Property and Retained Rights.</p>  <p>PAGE 02/2</p> <p>MODERNIZED-CITIZEN-SERVICES-SOLUTION EMERGENCY-PROCUREMENT EPD-154-24-CSS</p> <p>(defined below), other than as is required in the performance of this Contract. All Services performed pursuant to this Contract will include delivery of all source and object code and all executables and documentation for all Work Product. At no time may Contractor deny DMV or DMV access to the Work Product, regardless of form.</p>	performance of the Contract (which we've proposed to define as "Retained Rights" for simplicity of necessary cross-references), and we suggest that those Retained Rights need to be excluded from the prohibition in this sentence in order to preserve the intent of the Retained Rights clause in Section 9.D.
21.	9.B. Ownership of Work Product	<p>B. <u>Ownership of work Product</u></p> <p>All Except for Contractor Intellectual Property and Retained Rights (defined below), all Work Product discovered, created, or developed under this Contract, or in the course of executing a change order or SOW issued pursuant to this Contract, is and will remain the sole property of DMV, regardless of whether the Deliverable or Services are considered "works made for hire" or "hired to invent". Subject to the previous sentence, Contractor agrees that DMV will have all rights with respect to any Work Product discovered, created or developed under this Contract, or any change order or SOW issued hereunder, without regard to the origin of the Work Product.</p> <p>Contractor irrevocably transfers, grants, conveys, assigns and relinquishes exclusively to DMV, any and all right, title and interest it now has or may hereafter acquire in and to the Work Product under patent, copyright, trade secret and trademark law in perpetuity, or for the longest period otherwise otherwise permitted by law. If any moral rights are created, Contractor expressly waives all moral rights created in the Work Product. Contractor shall assist DMV in every reasonable way to obtain and, from time to time, enforce patents, copyrights, trade secrets and other rights and protection relating to the Work Product. Upon the reasonable request by DMV with respect to the Work Product, Contractor and any required Contractor Personnel shall execute all documents necessary for use in applying for and obtaining patents, copyrights, and other rights and protection, and in protecting trade secrets with respect to the Work Product.</p> <p>Contractor agrees that the provisions of this section will survive any termination of this Contract by DMV, or the termination of any change order or SOW issued hereunder by DMV. With the exception of the State's breach of its payment obligations hereunder, Contractor also agrees that in the event of a breach of this Contract by DMV, Contractor's remedy will not include any right to rescind, revoke, or otherwise invalidate the provisions of this section.</p>	While CapTech understands the critical nature of this project to DMV and the State, payment to CapTech is a fundamental condition of CapTech relinquishing any rights to the products of its services.
22.	9.D. Pre-existing Work		The changes to this license grant are meant to align with the position expressed above, recognizing that CapTech will furnish to DMV, as part of the Solution, Contractor Intellectual Property that is proprietary to CapTech. While DMV should have a right to use that proprietary material for all purposes for which the Solution is intended, CapTech does not grant the right to create derivative works from its IP, in recognition of the proprietary nature of those materials.

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		<p>D. <b>Pre-existing Work</b></p> <p>If, and to the extent that, any <u>pre-existing rights are Contractor Intellectual Property is</u> embodied or</p> <p> Virginia Department of Motor Vehicles</p> <p>PAGE 02/2</p> <p> MODERNIZED CITIZEN SERVICES SOLUTION EMERGENCY PROCUREMENT EPD-154:24-CSS</p> <p>APPENDIX PROPOSED CONTRACT</p> <p>reflected in the <u>Work-Product</u><u>Solution</u>, Contractor grants to the Commonwealth or DMV the irrevocable, perpetual, non-exclusive, worldwide, royalty-free right, <u>non-transferable</u> and <u>non-sublicensable</u> license to (i) use, execute, reproduce, display, <u>perform, perform and</u> distribute copies of, and prepare derivative works based upon such pre-existing rights and any derivative works thereof; and (ii) authorize others to do any or all of the foregoing. Contractor will retain all ownership rights in any <u>pre-existing works</u><u>Contractor Intellectual Property</u>.</p>	
23.	9.E. Return of Materials	<p>E. <b>Return of Materials</b></p> <p>Upon termination of this Contract or in the event DMV terminates any change order or SOW issued pursuant to this Contract, Contractor shall immediately return to DMV all copies, in whatever form, of any and all Confidential Information, Work Product, Documentation, and other properties provided by DMV that are in Contractor's possession, custody, or control <u>provided</u>. <u>Contractor may retain copies as required for legal purposes or otherwise on backup tapes and</u> any such copies shall be retained in accordance with the terms in this Contract.</p>	CapTech requests a customary carve-out for legal purposes and for copies that reside on back-up and archival systems in the ordinary course of operations.
24.	10. Transition Assistance	<p>10. <b>TRANSITION ASSISTANCE</b></p> <p>Prior to or upon expiration or termination of this Contract, Contractor shall provide all assistance as DMV may reasonably require <u>in writing</u> to transition the Contractor's contractual obligations, or any portion thereof, to DMV and any other <u>Contractor</u><u>Contractor</u> with whom DMV contracts for provision of same. This Transition Period obligation may extend beyond expiration or termination of the Contract for a period of up to 2 years. <u>Provided all applicable fees are paid when and as required by this Contract</u>, Contractor shall provide all reasonable transition assistance requested by DMV to allow for the Services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such Services to DMV. The transition assistance will be deemed by the parties to be governed by the terms and conditions of this Contract, except for those terms or conditions that do not reasonably apply to transition assistance.</p>	CapTech can support a smooth transition of support for the Solution but asks that DMV request this assistance in writing, to eliminate miscommunication and allow CapTech to properly staff and plan for the work. And though it is unlikely, CapTech should not be asked to continue working if DMV has not timely paid for prior work according to the terms of this Contract.
25.	11.B. Component Acceptance Criteria	<p>B. <b>Component Acceptance Criteria</b></p> <p>Each component of the Modernized CSS Solution, as stated in the Contract Exhibits, shall be accepted by DMV when DMV determines that the component <u>materially</u> conforms to its applicable Requirements. Acceptance of any one component shall not imply DMV's concurrence that the component functions properly with or within any other component of the Modernized CSS Solution.</p>	We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.
26.	11.C. Component Cure Period	<p>C. <b>Component Cure Period</b></p> <p>If any component is not accepted by DMV, DMV will identify the <u>material</u> deficiencies in writing and by the end of the first review period. Contractor shall submit a remedied version of the component within 7 business days of receipt of written notice of deficiencies unless a longer time period is mutually agreed to by the Parties. If the <u>material</u> deficiency identified in writing by DMV is the inability of DMV and its Application Users to access the functionalities of the Application(s), the remedy supplied by the Contractor shall be the provision of all required access to DMV and its Application Users.</p>	We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.

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27.	11.C. Component Cure Period	period is mutually agreed to by the Parties. If the <u>material</u> deficiency identified in writing by DMV is the inability of DMV and its Application Users to access the functionalities of the Application(s), the remedy supplied by the Contractor shall be the provision of all required access to DMV and its Application Users.  	Clarification: CapTech requests clarification of DMV's intent for the last sentence of Section 11.C. We expect that component acceptance testing and corrections will occur only in Test or Dev environments and not in the Production or live environment, meaning the deficiencies contemplated by this Section should not impact Application Users. We suggest that any access to Production or live environments should be controlled by DMV, not CapTech.
28.	11.D. Final Acceptance of the Modernized CSS Solution	D. <u>Final Acceptance of the Modernized CSS Solution</u> Final Acceptance of the Modernized CSS Solution will be achieved when DMV provides written notice that the full Modernized CSS Solution successfully operates in <u>material</u> conformance with the Requirements. DMV will provide written notice of Final Acceptance or identify any <u>material</u> deficiencies within 30 days of the deployment of the full Modernized CSS Solution by Contractor. If DMV does not provide written notice of Acceptance or identify any <u>material</u> deficiencies within the 30-day Final Acceptance period, Contractor shall escalate the approval request to the DMV Project Sponsor and/or the DMV Oversight Committee pursuant to the mutually agreed upon Project Escalation Process.  	We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.
29.	11.E. Modernized CSS Solution Cure Period	E. <u>Modernized CSS Solution Cure Period</u> Contractor shall correct any <u>material</u> non-conformities and deficiencies identified pursuant to Section 11(D) and shall thereafter re-submit such previously non-conforming components for re-testing within 15 days of written notice of <u>material</u> non-conformance to Contractor, unless a longer time period is mutually agreed to by the Parties.   Contractor shall, as needed, correct any <u>material</u> non-conformities and deficiencies identified hereunder and shall thereafter re-submit such previously non-conforming components for re-testing within 15 days of the second written notice of non-conformance to Contractor, unless a longer time is mutually agreed to by the Parties.  Should Contractor fail to deliver a Modernized CSS Solution that <u>materially</u> meets the Requirements after the third set of Acceptance tests, DMV may, without prejudice to any other remedy, cure or make good any deficiencies, including securing the services of third-parties at Contractor's sole expense, at rates to be no more than market rates and with reasonable limits on the total amount incurred. In such case, Contractor shall either suspend services with regard to the Modernized CSS Solution immediately until the deficiencies have been cured or continue to work and assume the risk of any re-work required as a result. The expense incurred by DMV to independently cure the deficiencies shall be deducted from the amount due Contractor for the Modernized CSS Solution.  	We propose to harmonize acceptance standards with the materiality standards used in DMV's proposed warranties for the Solution and its components.
30.	13.A. Ownership	A. <u>Ownership</u> Contractor has the right to provide all components of the Modernized CSS Solution, including access to the Solution and its Application(s), <u>and necessary hardware and operating system software</u> , by DMV and its Application Users, <u>without violating or infringing any law, rule, regulation, copyright, patent, trade secret or other proprietary right of any third-party</u> .  	As noted with respect to the definition of "Solution" above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment or any third-party software or hosting services necessary for DMV to host, use and operate the Solution on an ongoing basis. CapTech does not offer any portion of the Solution on an "as a service" basis, and we suggest it is much more efficient and beneficial to DMV for the State and DMV to directly procure any such items, allowing DMV and VITA, as applicable, to ensure they meet applicable State standards.

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			CapTech offers clients a customary covenant to indemnify and defend against third-party claims of infringement or misappropriation, in lieu of general warranties of non-infringement. We believe the indemnification covenant is standard in the industry and provides clients with appropriate protection against infringement allegations without exposing the parties to unwanted disputes over the veracity of the third-party infringement claims. Please note that we have not added the standard indemnity to this draft due to DMV's instructions not to propose or modify liability provisions, which we interpret as extending to indemnification provisions. We will be happy to provide the proposed indemnity as part of the indemnification and limitation of liability discussions in the event of an award.
31.	13.B. Services, Application and Documentation	B. <u>Services, Application, and Documentation</u> <u>During the Initial Term, Contractor</u> warrants the following with respect to the Services and Application(s):  i) → The Application(s) is pursuant to a particular EPD, and therefore the Application(s) shall <u>be fit for the particular purposes conform in all material respects to the requirements</u> specified by DMV in the EPD and set forth and/or incorporated in this Contract. Further, Contractor possesses superior knowledge with respect to the Application(s) and is aware that DMV is relying on Contractor's skill and judgment in providing the Services, including the Application(s);  ii) → Contractor represents and warrants (a) that it shall perform the Services in <u>material conformity</u> to the specifications stated in Contract Exhibits in a professional and workmanlike manner and (b) that the Services shall not infringe any third-party proprietary rights including (without limitation) any trademark, trade name, trade secret, copyright, moral rights, patents, or similar intellectual property rights;  iii) → Contractor shall not use any equipment, software, or other materials that are not in compliance with applicable laws, regulations, and standards.	CapTech proposes to confine all performance warranties to the Initial Term, giving DMV full confidence in the Solution for a full year after Final Acceptance. Thereafter, CapTech would continue to support the Solution on a paid basis, through 1-year support and maintenance periods to be implemented during Renewal Terms of this Contract.
32.	13.B.i) Services, Application and Documentation	i) → The Application(s) is pursuant to a particular EPD, and therefore the Application(s) shall <u>be fit for the particular purposes conform in all material respects to the requirements</u> specified by DMV in the EPD and set forth and/or incorporated in this Contract. Further, Contractor possesses superior knowledge with respect to the Application(s) and is aware that DMV is relying on Contractor's skill and judgment in providing the Services, including the Application(s);  ii) → Contractor represents and warrants (a) that it shall perform the Services in <u>material conformity</u> to the specifications stated in Contract Exhibits in a professional and workmanlike manner and (b) that the Services shall not infringe any third-party proprietary rights including (without limitation) any trademark, trade name, trade secret, copyright, moral rights, patents, or similar intellectual property rights;  iii) → Contractor shall not use any equipment, software, or other materials that are not in compliance with applicable laws, regulations, and standards.	As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a "fit for purpose" standard shifts to CapTech a scope of responsibility that DMV is uniquely and exclusively situated to fulfil, and it introduces a subjective measure of evaluation that threatens both parties' ability to timely and efficiently achieve a fully functioning Solution for the benefit of Virginia's citizens. DMV has other more appropriate, comprehensive rights under the Contract to ensure that CapTech delivers the Solution that DMV seeks.
33.	13.B.ii) Services, Application and Documentation	ii) → Contractor represents and warrants (a) that it shall perform the Services in <u>material conformity</u> to the specifications stated in Contract Exhibits in a professional and workmanlike manner and (b) that the Services shall not infringe any third-party proprietary rights including (without limitation) any trademark, trade name, trade secret, copyright, moral rights, patents, or similar intellectual property rights;  iii) → Contractor shall not use any equipment, software, or other materials that are not in compliance with applicable laws, regulations, and standards.	As noted in Section 13.A, CapTech offers a customary non-infringement indemnification and defense covenant in lieu of a warranty of non-infringement.  We will provide the proposed indemnity as part of the indemnification and limitation of liability discussions in the event of an award.
34.	13.B.iii) Services, Application and Documentation		The reference to "equipment" in this warranty implies that CapTech was the provider of the equipment. As noted above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment, so we propose to clarify that the referenced "equipment" is the equipment with which CapTech

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		<p>iii) Contractor warrants that the Application(s) and Services will conform in all material respects to the Requirements stated in this Contract. Contractor warrants that the Application(s) and Services will conform to the applicable specifications and Documentation, not including any post-Acceptance modifications or alterations to the Documentation which represent a material diminishment of the functionality of the Application(s), Services or Contractor Product Intellectual Property. Contractor also warrants that such Application(s) and Services are compatible with and will operate successfully when used on the equipment specified in the Requirements or Documentation (if any) and in accordance with the Documentation and all of the terms and conditions hereof.¶</p>	designs the Solution to operate, as specified in the Requirements or the Documentation.
35.	13.B.iv) Services, Application and Documentation	<p>iv) No corrections, work-arounds or future Application(s) releases provided by Contractor shall materially degrade the Application(s), cause any other warranty to be breached, or require DMV to acquire additional hardware equipment or software;¶</p>	We propose to harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft warranties.
36.	13.B.v) Services, Application and Documentation	<p>v) Contractor warrants that all post-Acceptance Updates, changes, alterations or modifications to the Application(s), Services, and Documentation by Contractor shall be compatible with, and shall not materially diminish the features or functionality of the Application(s), Services, and/or Contractor Product Intellectual Property when used on the equipment specified in the Requirements or Documentation (if any) and in accordance with the Documentation and all of the terms and conditions hereof; and¶</p>	CapTech anticipates an unavoidable need for the Documentation to make reference to external materials, including appropriate third-party documentation like operating system manuals or terms of use over which CapTech and DMV have no control.
37.	13.C. Performance Warranty	<p>C. → <b>Performance Warranty</b>¶  During the life of the Contract, Contractor warrants that the Modernized CSS Solution shall not contain any material errors and shall function properly and in conformity with the Requirements. Contractor shall correct, at no additional cost to DMV, all material errors identified during the life of the Contract that result in a failure of the Modernized CSS Solution to function properly or to meet the Requirements in accordance with the cure provisions of this Contract.¶    Contractor warrants and represents¶  that, at the following with respect to Performance:¶</p>	CapTech proposes to confine all performance warranties to the Initial Term, giving DMV full confidence in the Solution for a full year after Final Acceptance. Thereafter, CapTech would continue to support the Solution on a paid basis, through 1-year support and maintenance periods to be implemented during Renewal Terms of this Contract.
38.	13.C. Performance Warranty	<p>Requirements. Contractor shall correct, at no additional cost to DMV, all material errors identified during the life of the Contract that result in a failure of the Modernized CSS Solution to function properly or to meet the Requirements in accordance with the cure provisions of this Contract.¶</p>	We propose to eliminate potential subjective evaluations and harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft warranties.
39.	13.C.i. Performance Warranty	<p>i) → Alltime of performance, all contractual obligations shall be performed with care, skill and diligence, consistent with or above applicable professional standards currently recognized in Contractor's profession, and Contractor shall be responsible for the professional quality, technical accuracy, completeness, and coordination of all plans, information, specifications, Services and Modernized CSS Solution furnished by the Contractor under this Contract.¶</p>	Because performance of contractual obligations will necessarily occur on an ongoing basis, both during and after the Initial Term, we seek to distinguish the timing of this performance warranty from the other warranties applicable to Solution functionality and performance. While the Solution warranties must be limited to the Initial Term, the warranty applicable to any given contractual obligation should apply at the time of performance of the obligation. Warranty claims in either case remain available after the time the warranty is given; the key question would be whether the warranty violation occurred at the time the warranty was given.
40.	13.C.ii. Performance Warranty	<p>ii)→All contractual obligations pursuant to the EPD shall be fit for the particular purposes specified by DMV in the EPD and in this Contract and Contractor is possessed of superior knowledge with respect to its contractual obligations and is aware that DMV is relying on Contractor's skill and judgment in providing its contractual obligations.¶</p>	As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a "fit for purpose" standard shifts to CapTech a scope of responsibility that DMV is uniquely and

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			exclusively situated to fulfil, and it introduces a subjective measure of evaluation that threatens both parties' ability to timely and efficiently achieve a fully functioning Solution for the benefit of Virginia's citizens. DMV has other more appropriate, comprehensive rights under the Contract to ensure that CapTech delivers the Solution that DMV
41.	13.D. Interoperability Warranty	D. <del>→ Interoperability Warranty</del> <del>During the Initial Term, Contractor warrants that each component of the Solution, regardless of the origin of the component, delivered under this Contract shall be interoperable with other components of the Solution delivered under this Contract, so as to meet or exceed the performance specified in the requirements of the EPD Requirements.</del>	As provided elsewhere in these warranties, CapTech warrants all work to a uniform standard of material conformance to the objective requirements of the EPD and the resulting post-award Contract. We suggest that a "fit for purpose" standard shifts to CapTech a scope of responsibility that DMV is uniquely and exclusively situated to fulfil, and it introduces a subjective measure of evaluation that threatens both parties' ability to timely and efficiently achieve a fully functioning Solution for the benefit of Virginia's citizens. DMV has other more appropriate, comprehensive rights under the Contract to ensure that CapTech delivers the Solution that DMV seeks.  Interoperability is a reasonable expectation that CapTech fully supports, but we ask to clarify that the universe of components being referenced in the warranty is clearly limited to the components of the Solution for which we are responsible.
42.	13.E. Documentation and Deliverables	E. <del>→ Documentation and Deliverables</del> <del>During the Initial Term, Contractor warrants the following as applicable to the Contract:</del>	CapTech can only provide its warranties during the Initial Term as defined in that section of this Contract.
43.	13.E.i. Documentation and Deliverables	i) <del>→ The Solution is provided pursuant to a particular EPD, and therefore such Solution shall be fit-for-conform in all material respects to the particular-purposes-specified-by-DMV-requirements in the EPD of document and in this Contract. Further, Contractor possesses superior knowledge with respect to the Solution and is aware that all Application Users are relying on Contractor's skill and judgment in providing the Solution.</del>	We propose to harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft warranties.
44.	13.E.iii. Documentation and Deliverables	iii) <del>No corrections, work-arounds or future releases provided by Contractor under the warranty provisions or under maintenance shall materially degrade the Solution, cause any other</del>	We propose to harmonize all performance warranties to the materiality standard used elsewhere in DMV's draft
45.	13.E.iv. Documentation and Deliverables	iv) <del>→ Contractor warrants that the Documentation and all modifications or amendments thereto, which Contractor is required to provide under this Contract shall be sufficient in detail and content to allow a user to fully understand and operate the Solution without reference to any other materials or information.</del>	This is a duplicate of Section 13.B.vi above.
46.	13.G Ownership of Intellectual Property		For consistency, we suggest using the appropriate defined terms vi above.

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		<p><b>G. → Ownership of Intellectual Property</b>  All copyright and patent rights to all papers, reports, forms, materials, creations, or inventions created or developed in the performance of this Contract shall become the sole property of the Commonwealth. On request, the contractor shall promptly provide an acknowledgment or assignment in a tangible form satisfactory to the Commonwealth to evidence the Commonwealth's sole ownership of specifically identified intellectual property created or developed in the performance of the contract.  <b>G. → Intentionally Omitted</b></p>	
47.	13.H. Privacy and Security	<p><b>H. → Privacy and Security</b>  Contractor warrants that Contractor and its employees, subcontractors, partners, Contractor Personnel and third-party providers have taken all necessary and reasonable measuresSubcontractors will use best efforts through quality assurance procedures to ensure that the Modernized CSS Solution does not include any degradation, known security vulnerabilities, or breach of privacy or security. Contractor agrees to notify DMV of any occurrence of such as soon as possible after discovery and provide DMV with fixes or upgrades for security vulnerabilities within 90 days of discovery.</p>	The warranties in Sections 13.H and 13.J overlap in scope and substance with the warranties requested by DMV in Section 13.F. CapTech proposes to align the standards applicable to all three sections with the reasonable and customary standard established by DMV in Section 13.F.
48.	13.I Operating and Software Supportability	<p><b>I. → Operating System and Software Supportability</b>  Contractor warrants that Contractor and its employees, subcontractors, partners, and third-party providers have taken all necessary and reasonable measures to ensure that the components of the Modernized CSS Solution do not have dependencies on other operating systems or software that, at the time of Acceptance of the applicable components, are no longer supported by their providers.</p>	We can only warrant to the state of facts in existence at the time of delivery of the Services and applicable components of the Solution. CapTech cannot warrant in advance to what might be discontinued by third parties after delivery.
49.	13.J. Access to Product and Passwords	<p><b>J. → Access to Product and Passwords</b>  Contractor warrants that Contractor will use its best efforts through quality assurance procedures to ensure that the Modernized CSS Solution does not contain disabling code or any program routine, device, or other undisclosed feature, including but not limited to, viruses, worms, Trojan horses, or other malicious code that is specifically designed to permit unauthorized access, delete, disable, deactivate, interfere with, or otherwise harm the Modernized CSS Solution or the hardware or software of DMV or its Application Users. In addition, Contractor warrants that DMV and its Application Users will have uninterrupted access to the Application(s) and that Contractor shall not cancel or otherwise terminate access to the Application(s) by disabling passwords, keys, or tokens that enable continuous use of the Application(s) by DMV and its Application Users during the term of this Contract. Contractor further warrants that the Application(s) and Licensed Services are compatible with and will operate successfully on the equipment provided as part of the Modernized CSS Solution specified in the Requirements or Documentation (if any).</p>	The warranties in Sections 13.H and 13.J overlap in scope and substance with the warranties requested by DMV in Section 13.F. CapTech proposes to align the standards applicable to all three sections with the reasonable and customary standard established by DMV in Section 13.F  CapTech would like to discuss DMV's expectations with respect to uninterrupted access. CapTech will not create mechanisms to disable use, but post-delivery and during the day-to-day use of the Solution after Final Acceptance, CapTech will not have control over DMV's access, tokens and encryption keys and cannot warrant what CapTech does not fully control.  As noted above, CapTech does not expect to sell to DMV, or purchase on DMV's behalf as part of CapTech's delivery of the Solution, any hardware or equipment, so we propose to clarify that the referenced "equipment" is the equipment with which CapTech designs the Solution to operate, as specified in the Requirements or the Documentation.
50.	13.K. Open Source	<p><b>K. → Open Source</b>  Contractor shall notify DMV if the any component of the Modernized CSS Solution provided by Contractor contains any Open Source code and identify the specific Open Source License that applies to any embedded code dependent on Open Source code, provided by Contractor under this Contract.</p>	We believe this was DMV's original intent but would like to clarify that CapTech can only address the existence of open-source software in components of the Solution that CapTech provides.

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51.	NEW SECTION 13.N. Warranty Exclusions	<p><u>N. Warranty Exclusions</u></p> <p>In the event that any component or result of Contractor's Services or performance under this Contract fails to conform to any applicable warranties in this Section 13 in any material respect, Contractor will, at its expense, use its commercially reasonable efforts to cure or correct such failure as soon as reasonably practical, where such failure is capable of being cured or corrected. If, after repeated attempts, Contractor is unable to cure or correct such failure, Contractor shall refund all amounts paid by DMV for such nonconforming component of the Services. The warranties and associated obligations and remedies set forth in this Section 13 are conditioned upon: (a) DMV providing Contractor with prompt written notice of any claim; (b) DMV's full cooperation with Contractor in all reasonable respects; (c) the failure not being caused by the use of Services, Solution, or any component thereof, in combination with any non-Contractor approved equipment, software, or data, the use of the non-current version of any component or in any manner for which the Services, Solution and applicable component thereof were not designed; and (d) the absence of any alteration or other modification by any person or entity other than Contractor. Notwithstanding anything in this Contract to the contrary, Contractor provides no warranty relating to the content, accuracy or completeness of DMV's or DMV's third parties' documentation or the accuracy of DMV's or DMV's third-parties' Content or other data that existed prior to Contractor's performance of the services or documentation or Content or other data that is introduced into DMV's environment or created by DMV or DMV's third parties (including Application Users) independent of Contractor.</p>	These are CapTech's warranty exclusions - these are the circumstances under where CapTech does not have direct control. CapTech can warranty to correct something that is caused by the actions DMV, the State, DMV's users or DMV 3rd parties. Often the actions of others can cause non-conformance.
52.	14. Training and Documentation	<p><u>14. TRAINING AND DOCUMENTATION</u></p> <p>The Modernized CSS Solution fee includes all costs for the training and coaching detailed in the Contract Exhibits.</p> <p>Contractor shall deliver to DMV hard and/or electronic copy(ies) of Documentation, as requested by DMV. With the exception of Contractor Intellectual Property, DMV shall have full ownership and have the right to make additional copies of the Documentation, in whole or in part, for its own use as required. To the extent necessary to use the Documentation as described in this Contract, Contractor hereby grants a perpetual, non-exclusive, non-transferable (except where permitted pursuant to Section 23.K), non-sublicensable right to use the Contractor Intellectual Property incorporated in the Documentation.</p>	We propose revisions consistent with the intellectual property covenants more fully developed in Section 9 of the Contract.
53.	15.C. Payment Terms	<p>Contractor is responsible for the accuracy of its billing information. Contractor agrees not to issue invoices hereunder until items, components, and/or milestones have met Acceptance criteria. Charges for services accepted more than 90 days before receipt of a valid invoice may not be paid. Should Contractor repeatedly over-bill DMV, DMV may assess a 1% charge for the amount over-billed for each month that such over-billing continues.</p>	The milestone-based, fixed fee pricing model required by this EPD increases the risk of misinterpretation or misapplication of any invoicing rules that are tied to acceptance of "services." While CapTech is open to discussing a prompt invoicing covenant that is more appropriate for this project, we cannot accept the risk created by imprecise invoicing rules.
54.	16.B. Performance Reporting	<p><u>B. Performance Reporting</u></p> <p>Once each calendar month during the life of this Contract, Contractor shall provide DMV with a written report that shall contain information with respect to the performance of the Modernized CSS Solution components as well as the performance of the project. Representatives of Contractor and DMV shall meet as often as may be reasonably requested by either Party, but no less often than once each calendar quarter, to review Contractor's performance of the components of the Modernized CSS Solution and project and to discuss technical plans, financial matters, system performance, project performance, quality of services performed, staffing/personnel issues, and for any other matters related to this Contract.</p>	Clarification: CapTech would propose consolidating all performance reporting into a single section or Exhibit to the Contract, to eliminate any overlapping requirements and ensure consistency of timing expectations for all reporting mechanisms.
55.	16.B. Performance Reporting	<p>In addition to the reporting requirement of this Section, Contractor shall ensure that use commercially reasonable efforts to provide DMV has with access, as needed reasonably required, to the data on which each report is based in order for DMV to prepare its own reports or otherwise use such data to support the ongoing operation and evaluation of the Modernized CSS Solution and project.</p>	CapTech promotes transparency and close collaboration throughout the project. But the absolute nature of the on-demand access proposed by DMV in this clause could put CapTech in breach of the Contract for reasons that CapTech cannot reasonably control.

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56.	17. Competitive Pricing	<p>17. <b><u>COMPETITIVE PRICING</u></b></p> <p>Contractor warrants and agrees that each of the charges, economic or product terms or warranties granted pursuant to this Contract are comparable to or better than the equivalent charge, economic or product term or warranty being offered to any commercial or government customer of Contractor. If Contractor enters into any arrangements with another customer of Contractor to provide services under more favorable prices, as the prices may be indicated on Contractor's current U.S. and International price list or comparable document, then this Contract shall be deemed amended as of the date of such other arrangements to incorporate those more favorable prices, and Contractor shall immediately notify DMV of such change, for a substantially similar scope of services.</p>	We believe DMV will find our proposed pricing very competitive with that of others, but CapTech does not have a GSA schedule or any publicly facing US or Intl. pricing schedule. CapTech prices its services based on the specific scope and services being provided to each Customer and depending on all of the factors impacting such pricing.
57.	18.A Contractor Performance Measures	<p>Contractor agrees to provide to DMV a report of its performance against the performance measures no less than once every six (6) months throughout the Contract Term. Contractor's report must include a comparison of its performance measures against the agreed-to targets and, in the event of any shortfall by Contractor, proposed remediation measures. Contractor will report its performance for the Contract in aggregate and for each change order or SOW over \$1,000,000. Any instances of Contractor non-compliance will be recorded in Contractor's Contract file and shared with Contract stakeholders. Contractor further agrees that any degradation or failure of Contractor's performance obligations may result in, according and subject to the terms and conditions of this Contract, failure to renew the Contract, termination for convenience of the Contract or termination for breach of the Contract. DMV will have all rights and remedies available at law.</p>	We acknowledge that non-renewal or termination may result from deficient performance but would like to clarify that this sentence is not intended to create separate rights of non-renewal or termination. Those rights are established by the appropriate terms in Section 3 of the Contract.
58	RESERVED 19. Indemnification and Liability	<b>RESERVED</b> Pursuant to DMV's instructions in Section 8.1 of the EPD, deferring revisions related to liability to post-award discussions, CapTech reserves the right to present revisions and exceptions to this Section 19 following award.	
59.	20.v. Insurance	<p>v) → <u>Performance Surety Bond: Equal to a minimum of the value of the Contract.</u>  v) → <u>Intentionally omitted.</u></p>	We suggest that a Performance Bond raises both Parties' costs of performing this project without adequate benefit to DMV. DMV's 20% hold back of fees until Final Acceptance should provide DMV adequate security for full performance, in lieu of asking CapTech to incur (or price into its proposal) the additional expense a Performance Bond.
60.	21. Import/Export	<p>21. <b><u>IMPORT/EXPORT</u></b></p> <p>In addition to compliance by Contractor with all applicable export laws and regulations, DMV requires that any data deemed "privileged," "restricted," or "sensitive" by either federal or state authorities or law, must only be collected, developed, analyzed, or otherwise used or obtained by persons or entities working within the boundaries of the continental United States.</p>	CapTech adds an applicability standard to all references to law and regulation in order to avoid any impression of extending the reach of any law or regulation beyond its existing boundaries. CapTech certainly intends to comply with all law and regulation that does apply to CapTech and its performance under the Contract.
61.	22. Bankruptcy		CapTech understands the need for DMV to expressly reserve the right to suspend its performance to avoid undesirable impacts of federal law, but suspension should not affect CapTech's right to be paid for conforming services performed prior to the suspension.

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		<p>22. <b>BANKRUPTCY</b></p> <p>If Contractor becomes insolvent, takes any step leading to its cessation as a going concern, fails to pay its debts as they become due, or ceases business operations continuously for longer than 15 business days, then DMV may immediately notify Contractor and terminate this Contract unless Contractor immediately gives DMV adequate assurance of the future performance of this Contract. If bankruptcy proceedings are commenced with respect to Contractor, and if this Contract has not otherwise terminated, then DMV may suspend all further performance of this Contract until Contractor assumes this Contract and provides adequate assurance of performance thereof or rejects this Contract pursuant to Section 365 of the Bankruptcy Code or any similar or successor provision, it being agreed by DMV and Contractor that this is an executory contract. Any such suspension of further performance by DMV pending Contractor's assumption or rejection shall not be a breach of this Contract and shall not affect the rights of DMV to pursue or enforce any of its rights under this Contract or otherwise. <u>Suspension of performance by DMV pursuant to this Section does not absolve DMV of any obligation to pay undisputed fees due and payable up to the effective date of the suspension and the applicable amount (pro-rated) of the hold back fees that would have otherwise been due and payable upon Final Acceptance. For any milestone that has been partially completed prior to suspension, the applicable fee that is due and payable will be pro-rated and calculated on a time and materials basis.</u></p>	
62.	23.G. Dispute Resolution	<p>In the event of any breach by DMV, Contractor's remedies shall be limited to claims for damages and Prompt Payment Act interest and, if available and warranted, equitable relief, all such claims to be processed pursuant to this Section. In no event shall Contractor's remedies include the right to terminate any license or support services <u>for the licensed items</u> hereunder. Nothing herein shall be construed to prevent DMV from instituting legal action against Contractor.</p>	CapTech would like to discuss, in conjunction with Section 3, a reasonable accommodation for CapTech to discontinue performance of obligations that require CapTech to incur additional costs and expenses if DMV breaches this Contract, particularly if the breach involves nonpayment. CapTech acknowledges the critical nature of the Solution and can accept any perpetual license remaining in place, along with remaining committed to giving DMV the ongoing benefit of any maintenance and support for the portions of the Solution provided by CapTech to the extent it involves updates, bug fixes, and similar activities undertaken by CapTech for its client base generally (i.e., does not require undue, incremental cost for servicing DMV).
63.	RESERVED 23.P. Remedies	<b>RESERVED</b> Pursuant to Section 8.1 of the EPD, deferring revisions related to liability to post-award discussions, CapTech reserves the right to address the cumulative or exclusive nature of particular remedies/liability as part of the negotiation regarding indemnification and liability at the point of award.	
<b>Contractor Performance Standards</b>			
64.	6. EPD 5.F.8.13 Performance	<p>The Modernized CSS Solution shall complete 95% of online transactions within three (3) seconds (real time) and 100% within ten (10) seconds (near real time).</p>	To be discussed. Although CapTech understands the criticality of this measure there is no industry standard for 100% performance - there are too many factors beyond CapTech's control once a system is in production that may impact transaction time. CapTech can design the solution to complete to the timing, but not to a 100% standard.