Stage 2 Preliminary Assessment

California Department of Technology, SIMM 19B (Rev. 2.1), Revision 5/21/2018

2.1 General Information	
Agency or State Entity Name:	
Motor Vehicles, Department of	
Organization Code:	
2740	
Proposal Name:	
Digital eXperience Platform (DXP)	
Department of Technology Project Number:	2740-227

2.2 Preliminary Submittal Information	
Contact Information:	
Contact First Name:	**Contact Last Name:**
Darlene	Miller
Contact Email:	**Contact Phone:**
Darlene.MIller@dmv.ca.gov	(916) 657-8900
Preliminary Submission Date:	**Preliminary Assessment Transmittal:**
1/19/2021	See Attachment

2.3 Stage 2 Preliminary Assessment

2.3.1 Impact Assessment

	Yes	No
1. Has the Agency/state entity identified and committed subject matter experts from all business sponsors and key stakeholders?	☒	☐
2. Are all current baseline systems that will be impacted by this proposal documented and current (e.g., data classification and data exchange agreements, privacy impact assessments, design documents, data flow diagram, data dictionary, application code, architecture descriptions)?	☒	☐
3. Does the Agency/state entity anticipate needing support from the California Department of Technology (CDT) Statewide Technology Procurement (STP) to conduct market research for this proposal (Market Survey, Request for Information)?	☐	☒
4. Does the Agency/state entity anticipate submitting a budget request to support the procurement activities of this proposal?	☒	☐
5. Could this proposal involve the development and/or purchase of systems to support activities included in Financial Information System for California (FI$Cal) (e.g., financial accounting, asset management, human resources, procurement/ordering, inventory management, facilities management)?	☐	☒
6. Does the Agency/state entity have a designated Chief Architect or Enterprise Architect to lead the development of baseline and alternative solutions architecture descriptions?	☒	☐
7. Will the Agency/state entity's Information Security Officer be involved in the development and review of any security related requirements?	☒	☐
8. Does the Agency/state entity anticipate performing a business-based procurement to have vendors propose a solution?	☐	☒

2.3.2 Business Complexity Assessment

Business Complexity:	2.6	Business Complexity Zone:	☐ High	☒ Medium	☐ Low

Stage 2 Alternatives Analysis

2.4 Submittal Information	
Contact Information:	
Contact First Name:	**Contact Last Name:**
Darlene	Miller
Contact Email:	**Contact Phone:**
Darlene.Miller@dmv.ca.gov	(916) 657-8900
Submission Date:	**Project Approval Executive Transmittal:**
2/8/2021	See Attachment
Submission Type:	
☐ New Submission	☐ Updated Submission (Post-Approval)
☒ Updated Submission (Pre-Approval)	☐ **Withdraw Submission**
	Reason: Select...
	If "Other," specify:

Stage 2 Alternatives Analysis

Sections Updated (For Updated Submissions Only) – (check all that apply)

- ☐ 2.1 General Information
- ☐ 2.2 Preliminary Submittal Information
- ☐ 2.3 Stage 2 Preliminary Assessment
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  - ☐ 2.3.2 Business Complexity Assessment
- ☐ 2.4 Submittal Information
- ☐ 2.5 Baseline Processes and Systems
  - ☐ 2.5.1 Description
  - ☐ 2.5.2 Business Process Workflow
  - ☐ 2.5.3 Current Architecture Information
  - ☐ 2.5.4 Current Architecture Diagram
  - ☐ 2.5.5 Security Categorization Impact Table
- ☐ 2.6 Mid-Level Solution Requirements
- ☐ 2.7 Assumptions and Constraints
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- ☐ 2.9 Market Research
  - ☐ 2.9.1 Market Research Methodologies/Timeframes
  - ☐ 2.9.2 Results of Market Research
- ☐ 2.10 Alternative Solutions
  - ☐ 2.10.1 Solution Type)
    - ☐ Recommended
    - ☐ Alternative
  - ☐ 2.10.2 Name
  - ☐ 2.10.3 Description
  - ☐ 2.10.4 Benefit Analysis
  - ☐ 2.10.5 Assumptions and Constraints
  - ☐ 2.10.6 Implementation Approach
  - ☐ 2.10.7 Architecture Information
- ☐ 2.11 Recommended Solution
  - ☐ 2.11.1 Rationale for Selection
  - ☐ 2.11.2 Technical/Initial IT Project Oversight Framework Complexity Assessment
  - ☐ 2.11.3 Procurement and Staffing Strategy
  - ☐ 2.11.4 Enterprise Architecture Alignment
  - ☒ 2.11.5 Project Phases
  - ☒ 2.11.6 High Level Proposed Project Schedule
  - ☒ 2.11.7 Cost Summary
- ☐ 2.12 Staffing Plan
  - ☐ 2.12.1 Administrative
  - ☐ 2.12.2 Business Program
  - ☐ 2.12.3 Information Technology (IT)
  - ☐ 2.12.4 Testing
  - ☐ 2.12.5 Data Conversion/Migration
  - ☐ 2.12.6 Training and Organizational Change Management
  - ☐ 2.12.7 Resource Capacity/Skills/Knowledge for Stage 3 Solution Development
  - ☐ 2.12.8 Project Management
    - ☐ 2.12.8.1 Project Management Maturity Assessment
    - ☐ 2.12.8.2 Project Management Planning
  - ☒ 2.12.9 Organization Charts
- ☐ 2.13 Data Conversion/Migration
- ☒ 2.14 Financial Analysis Worksheets

Summary of Changes:

The updated submission impacts all the Project Approval Lifecycle (PAL) Stage 2 Alternatives Analysis (S2AA) sections. This submission amends the original effort of migrating the legacy front-end applications associated with Vehicle Registration (VR), Occupational Licensing (OL), and Control Cashiering (CC) to a more sustainable technology platform. The scope of the proposed DXP effort is to modern the Department's legacy applications and systems. The modernization will improve the Department's ability to support critical business operations for Drivers License (DL)/Identification (ID) cards, REAL ID, VR, OL, CC, and Customer Flow Management.

Condition(s) from Previous Stage(s):

Condition #	….
Condition Category	Select...
Other, specify	….
Condition Sub-category	Select...
Other, specify	….

Condition	
Assessment	Select...
Other, specify	….
Agency/state Entity Response	
Status	Select...
Other, specify	….
Select + to add conditions.	

2.5 Baseline Processes and System

2.5.1 Description

See Attachment

Section 2.5 S2AA DXP v1.0.docx

2.5.2 Business Process Workflow

See Attachment Above

2.5.3 Current Architecture Information

Business Function/Process(es)		Vehicle Registration (VR) Front End Processing			
Business Function/Process(es)		Control Cashiering (CC) Front End Processing			
Business Function/Process(es)		Occupational Licensing (OL) Front End Processing			
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.					
Application, System or Component		DMVA System			
		Select + to add an application, system, or component.			
COTS, MOTS or Custom		Custom application			
Name/Primary Technology:		Event Driven Language (EDL) / Event Driven Executive (EDX) Series 1			
Runtime Environment	Cloud Computing Used?	☐ Yes ☒ No	If "Yes," specify:	Select...	
	Server/Device Function	Presentation Layer			
	Hardware	IBM POWER8 Server			
	Operating System	AIX, currently out of support (Originally developed on IBM Series/1 EDX)			
	System Software	EDX Emulator			
	System Software	IBM Communications Server (SNA)			
	System Software	IBM WebSphere Application Server (WAS)			
	System Software	IBM Message Queue (MQ)			
	System Software	IBM Rational Host Access Transformation Services (HATS)			
		Select + to add system software.			
System Interfaces		DMV and Auto Clubs staff access the DMVA system via terminal screens; Business Partners (e.g. auto dealerships and salvage companies) access the DMVA system via Web Services and AAMVA net; Back end and external systems are connected to the DMVA system via the CA Motor Vehicle Data Communications System (CAMVDCS).			
Data Center Location	Other, specify	State data center operated by CDT			
Security	Access (check all that apply)	☐ Public ☒ Internal State Staff ☐ External State Staff ☒ Other, specify: Business Partners, Auto Clubs (CSAA), Auto Dealerships and Salvage Companies			
	Type of Information	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal			

	(check all that apply)	☒ Confidential ☐ Other, specify:		
	Protective Measures (check all that apply)	☒ Technical Security ☒ Identity Authorization and Authentication ☒ Physical Security ☒Backup and Recovery ☐ Other, specify:		
Data Management	Data Owner	Name:		
		Title: Data Resource Manager		
		Business Program: Registration Operations Program		
	Data Custodian	CDT Data Center		
		Title:		
		Business Program: DB2 Support, Mainframe Service		
Business Function/Process(es)		Serve both internal and external integration needs for VR/DL/OL/ABIS business processes		
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.				
Application, System or Component		CA Motor Vehicle Data Communications System (CAMVDCS) system		
		Select + to add an application, system, or component.		
COTS, MOTS or Custom		Custom application		
Name/Primary Technology:		Enterprise Integration Bus		
Runtime Environment	Cloud Computing Used?	☐ Yes ☒ No	If "Yes," specify:	
	Server/Device Function	Middle-Tier/Integration Bus		
	Hardware	Mainframe		
	Operating System	z/OS		
	System Software	Assembly/COBOL		
	System Software	IBM Message Queue (MQ)		
	System Software	Systems Network Architecture (SNA)		
Select + to add system software.				
System Interfaces		DMVA system; AAMVANET (CDLIS, PDPS, SSA, BPA); Department of Justice CLETS/NLETS; government agencies; Courts; Department of Homeland Security; Commercial Requestors (Insurance Inquiry), DL SSN Inquiry; Business Partner Automation (BPA) Virtual Clerk system; BPA Inventory system; Fee Comp; ANI and DL Address Search Processes; Internet Applications (APS, IPP, HAVA, DUI, WSI); EASE; Vintelligence; Back end systems (RTC and RTCICS); PGP Encryption; Central Customer Flow Management and Appointment System; Remittance; Direct Access (Other Government/Commercial Entities); Public Website Infrastructure (WSI); International Registration Plan (IRP); Driver Safety Application		
Data Center Location	Other, specify	State data center operated by CDT Click here to enter text.		

Security	Access (check all that apply)	☐ Public ☒ Internal State Staff ☐ External State Staff ☐ Other, specify:		
	Type of Information (check all that apply)	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal ☒ Confidential ☐ Other, specify:		
	Protective Measures (check all that apply)	☒ Technical Security ☒ Identity Authorization and Authentication ☒ Physical Security ☒Backup and Recovery ☐ Other, specify:		
Data Management	Data Owner	Name: N/A		
		Title:		
		Business Program: N/A		
	Data Custodian	Name:		
		Title:		
		Business Program:		
Business Function/Process(es)		Vehicle registration and titling; driver licensing; Occupational licensing: collections, inspections, and investigations.		
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.				
		Select + to add an application, system, or component.		
COTS, MOTS or Custom		Custom application		
Name/Primary Technology:		Real Time Controller (RTC) and RTCICS for VR/DL/OL back-end processing		
Runtime Environment	Cloud Computing Used?	☐ Yes ☒ No	If "Yes," specify:	
	Server/Device Function	Back-end/business logic		
	Hardware	Mainframe		
	Operating System	z/OS		
		System Software: Assembly/COBOL		
System Interfaces		CAMVDCS; VR/DL/OL master database		
Data Center Location	Other, specify	State data center operated by CDT Click here to enter text.		
Security	Access (check all that apply)	☐ Public ☒ Internal State Staff ☐ External State Staff ☐ Other, specify:		
	Type of Information (check all that apply)	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal ☒ Confidential ☐ Other, specify:		
	Protective Measures (check all that apply)	☒ Technical Security ☒ Identity Authorization and Authentication ☒ Physical Security ☐Backup and Recovery ☐ Other, specify:		

Data Management	Data Owner	Name: N/A		
		Title:		
		Business Program: N/A		
	Data Custodian	Name:		
		Title:		
		Business Program:		
Business Function/Process(es)		Vehicle registration and titling; driver licensing; occupational licensing		
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.				
		Select + to add an application, system, or component.		
COTS, MOTS or Custom		Custom application		
Name/Primary Technology:		VR/DL/OL Master Database		
Runtime Environment	Cloud Computing Used?	☐ Yes ☒ No	If "Yes," specify:	
	Server/Device Function	Systems of Record		
	Hardware	Mainframe		
	Operating System	z/OS		
System Software: DB2.				
System Interfaces		RTC/RTCICS; VR/DL, ad OL Shadow Databases; ROS/TLP Database		
Data Center Location	Other, specify	State data center operated by CDT Click here to enter text.		
Security	Access (check all that apply)	☒ Public ☒ Internal State Staff ☒ External State Staff ☐ Other, specify:		
	Type of Information (check all that apply)	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal ☒ Confidential ☐ Other, specify:		
	Protective Measures (check all that apply)	☒ Technical Security ☒ Identity Authorization and Authentication ☒ Physical Security ☐Backup and Recovery ☐ Other, specify:		
Data Management	Data Owner	Name: Rose Smith and Deanna Wida		
		Title: Data Resource Manager		
		Business Program: ROD and LOD		
	Data Custodian	Name: CDT Data Center		
		Title:		
		Business Program: DB2 Support, Mainframe Service		
Business Function/Process(es)		Field Office customer and workload management		
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.				
		Select + to add an application, system, or component.		
COTS, MOTS or Custom		Commerical off-the-shelf (COTS)		

Stage 2 Alternatives Analysis

	Name/Primary Technology:	Centralized Customer Flow and Appointment Management System (CCFMAS)			
Runtime Environment	Cloud Computing Used?	☒ Yes ☐ No	If "Yes," specify:		
	Server/Device Function	N/A			
	Hardware	N/A			
	Operating System	N/A			
System Interfaces		Driver Safety Application; inquiry DL Data			
Data Center Location	Other, specify	Commercial Data Center Click here to enter text.			
Security	Access (check all that apply)	☒ Public ☒ Internal State Staff ☐ External State Staff ☐ Other, specify:			
	Type of Information (check all that apply)	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal ☐ Confidential ☐ Other, specify:			
	Protective Measures (check all that apply)	☒ Technical Security ☐ Identity Authorization and Authentication ☒ Physical Security ☐Backup and Recovery ☐ Other, specify:			
Data Management	Data Owner	Name: FOD			
		Title:			
		Business Program: Qmatics Inc. (vendor)			
	Data Custodian	Name: N/A			
		Title:			
		Business Program:			
Business Function/Process(es)		ABIS Automatically bills commercial (non-government) requesters for information they request and receive from DMV, including pull notices, DL, VR, and OL data.			
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.					
		Select + to add an application, system, or component.			
COTS, MOTS or Custom		Custom application			
	Name/Primary Technology:	Automated Billing Information System (ABIS)			
Runtime Environment	Cloud Computing Used?	☐ Yes ☒ No	If "Yes," specify:		
	Server/Device Function	Mainframe			
	Hardware	Mainframe			
	Operating System	z/OS			
		Software: ADABAS, Natural			
System Interfaces		Administrative Financial System; DMVA data goes to CAMVDCS, and stores in journal, then P2Daily batch job			

		extracts data and processes it in ABIS. Finally ABIS data goes to AFS.
Data Center Location	Other, specify	State data center operated by CDT Click here to enter text.
Security	Access (check all that apply)	☐ Public ☒ Internal State Staff ☐ External State Staff ☐ Other, specify:
	Type of Information (check all that apply)	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal ☒ Confidential ☐ Other, specify:
	Protective Measures (check all that apply)	☒ Technical Security ☒ Identity Authorization and Authentication ☒ Physical Security ☒Backup and Recovery ☐ Other, specify:
Data Management	Data Owner	Name: CSD
		Title:
		Business Program:
	Data Custodian	Name: CDT Data Center
		Title:
		Business Program: ADABAS Support, Mainframe Service
Select + to add business functions/processes.		

2.5.4 Current Architecture Diagram

See Attachment

DXP Current Architecture Diagram

2.5.5 Security Categorization Impact Table

DXP-ISO Classification_Categor

SECURITY CATEGORIZATION IMPACT TABLE SUMMARY

SECURITY OBJECTIVE	LOW	MODERATE	HIGH
Confidentiality	☐	☒	☐
Integrity	☐	☒	☐
Availability	☐	☒	☐

2.6 Mid-Level Solution Requirement

See Attachment

2740-218 DXP Midlevel_Requirement

2.7 Assumptions and Constraints

Assumptions/Constraints	Description/Potential Impact
Vendor will utilize agile methodology, and priority changes will be managed through the agile process.	Using an agile methodology means a shift from traditional project management methods to ones that are adapted with a focus on product management instead. This will require DMV management and staff to adopt a product-centric approach, with a willingness to adapt and evolve as product development iterates through the agile process. Vendor will establish, utilize, and transfer to the state agile metric and methods. • If agile methodology is not adopted, this will impact the project deliverables and project schedule. • Require DMV to use the waterfall approach which makes changes more challenging as needs can be difficult to define.
Transfer of knowledge from vendor to state staff.	DMV relies on the expertise of the DXP vendor to help modernize our product service delivery using PaaS. DMV expects the vendor to transfer that knowledge and expertise to the state. This will require the vendor to educate and train DMV staff while also developing the new system. • If knowledge transfer does not take place, the DMV will be dependent on the vendor to continue supporting its business operations.
DMV system will remain viable through the iterations/components of modernization.	The DMV is seeking to modernize due to the current high risk of failure from its current legacy software and hardware. The prevailing perspective is that the existing system will not have a catastrophic failure before the new system is up and running. DMV currently has continuity plan for our legacy system. If a catastrophic event was to occur , the vendor and DMV will need to reprioritize work to get business operations back up and running as soon as possible. This will require the DMV and the vendor to partner in rebaselining project priorties as needed to support resumption of business. • Failure to have systems remain viable may impact the DMV products/service deliverables.

There may be significant legislative mandates that impact the DXP Project or DMV systems while the project is in its early stages.	DMV is continuously monitoring legislative mandates to ensure that any with significant impact are reviewed responded to. DMV will also work with legislative and business partner requests to limit mandate changes during the early stages of this modernization project. The plan is for any new change requests to be handled in the new DXP system, meaning the legacy system is left as-is. Thus, the timing of mandates will be negotiated to enable development only in the new DXP system. Legislative mandate that require intergration to DXP will follow the normal change request process.
The vendor must adhere to California state government information security standards as defined in State Information Management Manual (SIMM) 5300-A and State Administrative Manual (SAM) 5300.	SIMM 5300-A provides the state-defined security parameters for NIST SP 800-53. It and SAM 5300 contain detailed security control content. Vendor access will only be provided to DMV data under Non-Disclosure Agreement during the California state entity procurement processes. [SIMM 5300-A: https://cdt.ca.gov/policy/simm/] [SAM 5300: https://www.dgs.ca.gov/Resources/SAM/TOC/5300] • Failure to adhere to these standards will result in significant risk to the delivery of services • Delivered products/services that do not meet the security standards will be rejected.
The new DXP system will provide dash boarding and reporting on key performance indicators (KPIs).	DXP will modernize DMV business processes, service delivery and underline technology. The vendor will provide reporting that automats the gathering and reporting of key business metrics that can be readily displayed to DMV executive and business operations managers to enable efficient, effective, and timely responses to changes in system, environment, and user performance. • Failure to provide KPIs will impact the iterative process improvement required for modernization. • Failure to provide KPIs will impact DMV's ability to measure the return on investment. • Failure to provide KPI's will impact DMV's ability to effectively plan and adjust to changing business needs. • Failure to provide accurate and timely reporting will impact the DMV's leadership ability to forecast and implement process improvements.

The vendor will supply qualified program and technical staff who will be available during DMV business hours (M-F, 8:00 am – 5:00 pm, PST). The vendor staff will be available to support and participate in design, configuration, testing, training, and implementation of the selected solution.	Standard availability will provide a foundation for the success of project implementation and future operations. • If the identified qualified program and technical staff are not available, the vendor will need to take the steps necessary to secure adequate staff. • Failure to follow through may have a negative impact on the project schedule and ability to provide DXP-related services.
New DMV staff positions are approved and filled in a timely manner.	This project requires a large number of new DMV staff. Delays in filling those positions means that project objectives may not be met and progress could be delayed. Adopting an agile software development approach aligns with the DMV's strategic goals of a user-centric system, which means DMV business and IT staff need to be available to work with the vendor for the successful delivery of customer value.
Vendor must be available based on the contracted terms have the required expertise to perform their roles and duties and provide knowledge transfer to their successor.	Vendor will be able to make necessary adjustments in case resources are impacted by COVID-19. • Impact deliverables and project schedule.
DMV will use the California Software Licensing Program (SLP) to secure platform licenses.	DMV plans to take advantage of the extensive software discounts are negotiated with major software publishers that are then passed on to the State, through the SLP contracts established with authorized participating re-sellers. If this is not possible, then the project costs and long-term operational costs of the DXP system could increase substantially. [https://www.dgs.ca.gov/PD/About/Page-Content/PD-Branch-Intro-Accordion-List/Acquisitions/Software-Licensing-Program]
The DMV owns its data and will own the new DXP system developed for it.	The intent of the DMV is to modernize in a way that makes it easier and simpler for it to develop, maintain, and run its business operations. The vendor must be prepared to handover the system it develops to the DMV to manage and run in the future. This means no proprietary (i.e., no copyrighted or patented) software is to be used in the development of the new DXP system.
Vendor must comply with DMV IT standards. Any software tools introduced by the vendor will be approved by the DMV before inclusion in the vendor's delivered solution.	The DMV intends to eliminate much of its technical debt in its modernization effort. Having multiple applications that essentially do the same thing results in waste in licensing and support costs. The DMV will need to validate the total cost of ownership (TCO) of any proposed new software tools.

The project budget will be approved.	Without an approved budget, the project will not be able to proceed.
DMV will work with the California Department of Technology (CDT) and the Department of Finance (DOF) to ensure that funding will be available, as planned, throughout the project's life.	The project will be conducted as a partnership with CDT and DOF whose support is required for the project to be successful.
Budget constraints may result in reductions to project scope.	If there is a reduction in the budget, then DMV will have to reduce the scope of the project.
Dedicated staff will remain in their current roles.	When new staff join the project or if project staff change roles, retire, or otherwise leave the project, it is critical to ensure transition training and knowledge transfer.
Executive sponsorship will continue through project completion.	Constant support from executive sponsors will ensure resources are continuously available for the project.
The CDT/DOF will review and approve the project.	The control agencies' support is necessary to start the project and will ensure external influences will not impact the successful completion of the project.
Qualified DMV program and technical staff will be available to participate, as needed, in design, development, testing, training, and implementation of the selected information technology (IT) solutions.	The project will not be successful if key program and technical staff are not committed to the successful completion of the project.
Suppliers, vendors, consultants, and State staff will perform their assignments related to the project in a competent and timely manner.	Delays by any of the project partners could adversely impact the project schedule.
Issues will be resolved and risks mitigated on a timely basis.	Issues and risks that are not addressed on a timely basis could impact the project scope, budget, and/or schedule.
The proposed solution shall maintain the ability to process the transactions from business partners' systems and have minimal impact to business partners (BP).	The solution shall maintain the ability to process the transactions from business partners' systems through the America Association of Motor Vehicle Administrators (AAMVA) Unified Network Interface (UNI) and web services. The solution shall not require changes to the BP systems and shall require minimal training for BP.
Select + to add assumptions/constraints.	

2.8 Dependencies

Element	Description
Development Tools	Develop a standard for the development tools that the vendors will use during the project. This will ensure that the technology transition is consistent with DMV staff knowledge and skills for ongoing system maintenance and operations, once the project is completed.

Testing Strategy	The testing strategy will serve as a guide for verifying how the major aspects of the replacement of all DMV legacy technology shall be developed.
Preparing Environments	Environments for the development, integration testing (IT), system testing (ST), user acceptance testing (UAT), and training will need to be set up and configured. The development and IT environments would need to be available before the vendor can start the analysis and design phases of the project. ST and UAT would need to be established before testing can begin. Additionally, the training environment will need to be established to allow curriculum development in order to train the users.
Business and System Requirements	The gathering and storing of the BP, AC, FO, and HQ detailed requirements will be essential in testing, troubleshooting, and building the DMVA, CAMVDCS, EASE, RTC, RTCICS, and customer flow management replacement system. Traceability from business requirements to system requirements to code and from business requirements to test cases will ensure that minimal errors are introduced into the DMV production environment.
Software Development Life Cycle (SDLC)	DMV plans to adopt an Agile Software Development framework. The project will be dependent on the specific framework that DMV chooses.
Technology Platform	The project is dependent on the technology platform used to modernize all of the legacy applications. The following technology platforms may be considered for the future of DMV: ▪ AI Platforms ▪ Analytics ▪ API Platforms ▪ Application Platforms ▪ Computing Platforms ▪ Content Management Systems ▪ Database Platforms ▪ Game Platforms ▪ Internet of Things ▪ Media Platforms ▪ Mobile Platforms ▪ Operating Systems ▪ Robotics ▪ Security ▪ Storage Platforms ▪ Web Platforms

Proof of Concepts	DMV is dependent on conducting proof of technology activities to ensure that it is progressing in the right direction.

Select + to add dependencies.

2.9 Market Research

2.9.1 Market Research Methodologies/Timeframes

Methodologies Used To Perform Market Research (check all that apply)**:**

☒	Request for Information (RFI)	☐	Trade shows
☒	Internet Research	☒	Published Literature
☒	Vendor Forums/Presentation	☐	Leveraged Agreements
☒	Collaboration with other Agencies/state entities or governmental entities	☐	Other, specify:

Time spent conducting market research:	7 months
Date market research was started:	10/1/2019
Date all market research was completed:	4/30/2020

2.9.2 Results of Market Research

Market Research Methods and Activities

DMV used several methods to perform market research. While market research into solutions to meet DXP's scope to modernize DMVA started in late 2019, DMV also leveraged earlier market research performed for the Front-End Sustainability (FES) effort to stabilize DMV's IT infrastructure.

1. Internet Research

DMV conducted extensive research on the internet to identify potential solution approaches to meet DXP requirements. DMV researched commercial off-the-shelf solutions (COTS) and modified COTS solutions, platform-as-a-solution (PaaS) providers based on cloud architecture, and custom application development vendors that might be able to meet the scale and scope of DXP requirements.

2. Request for Information to Vendor Pool

DMV developed a Request for Information (RFI) and sent it out on October 16, 2019, over the state's procurement internet portal, to reach potential vendors willing to describe their currently-available solutions to meet the objectives of DXP.

The scope of services and key requirements listed in the RFI are shown as included.

"The following are business requirements necessary for continued operation:

a) *Solution must eliminate Event Driven Language (EDL) and other legacy codes and provide same/similar business functionality as current system.*

b) *Solution must maintain interactions with outside entities such as the Social Security Administration (SSA) and the American Association of Motor Vehicle Administrators (AAMVA) network.*

c) *Solution must allow for the interaction of the department's business partners (i.e., Auto Clubs, Dealerships, etc.)*

d) *Solution must support multiple business service channels (i.e. Self-Service Kiosks, Public Self Service options, etc.)*

e) *Solution must allow for the integration of the DMV/State's enterprise resource planning (ERP) accounting system.*

f) *Solution must allow for the interaction between various State and Municipal departments, including Secretary of State, Bureau of Automotive Repair, Local Courts, and State Treasurer's Office.*
[See Appendix B – DMV External Interfaces]

g) *Solution must be compliant with State and Industry standards*
(i.e. IEEE, PCI, SIMM, SAM, NIST, Fed-RAMP, etc.)
[See Appendix A – Reference Material]"

The RFI received five responses from vendors including COTS/MOTS providers, system integration firms, and PaaS providers.

DMV reached out to an additional six vendors to enlarge the pool for market research purposes, and to see who would be willing to provide demonstrations. Table 1 shows the summary of vendor responses to the RFI.

Table 1. Vendor Responses to DMV Market Survey

Vendor Name	Solution Type	Written RFI Response	Presented Demonstrations
1. Accenture	Custom	No	Yes
2. Business Information Systems (BIS)	COTS/MOTS	Yes, full response	Yes
3. CGI	Custom	Yes, short letter	Yes
4. DXC Technology Services	Custom	Yes, full response	No
5. Fast Enterprises	COTS/MOTS	Yes, full response	Yes
6. Infosys Public Services	COTS/MOTS	No	Yes
7. Microsoft Dynamics	PaaS	No	Yes
8. Pay It Gov	PaaS	No	Yes
9. Pegasystems	PaaS	Yes, full response	Yes
10. Salesforce	PaaS	No	Yes
11. Service Now	PaaS	No	Yes

3. Vendor Demonstrations

DMV developed vendor solution criteria in January 2020 for use in vendor demonstrations, based on a list of key functional, technical, and interface requirements for DXP. DMV invited ten interested vendors to demonstrate their solution approaches. The vendor demonstrations occurred starting February 25, 2020, and concluded on May 8, 2020. The demonstrations were video-recorded.

Core members of the DXP project procurement team created vendor evaluation criteria for use in guiding demonstration content:

VENDOR EVALUATION SCORECARD

Legend: OB = Out of the Box; CU = Customization Required; EX = Extension Required			
Criteria	**OB**	**CR**	**ER**
Business Functionality			
1. Does the system contain vehicle registration (VR) features, such as registering a new vehicle and renewing a registration?	☐	☐	☐
2. Does the system contain driver licensing (DL) features, such as applying for a driver license (REAL ID or AB60) and renewing a driver license?	☐	☐	☐
3. Does the system contain occupational licensing (OL) features, such as applying for a new occupational license and renewing an occupational license?	☐	☐	☐
4. Does the system have voter registration features, such as registering to vote and updating voter information?	☐	☐	☐
5. Does the system contain payment features, such as payment card industry (PCI) compliant credit card and PayPal payments?	☐	☐	☐
6. Does the system contain cashiering features, such as aggregation and reconciliation of payments?	☐	☐	☐

7. Does the system contain inventory features, including issuing/returning virtual inventory (e.g., driver license numbers) as well as physical inventory (e.g., vehicle plates and stickers)?	☐	☐	☐
8. Does the system have back office features, such as sales forecasting, data exchange, and key performance indicator (KPI) monitoring?	☐	☐	☐
System Architecture			
9. Does the system have public facing web and mobile applications?	☐	☐	☐
10. Does the system support a cloud solution?	☐	☐	☐
11. Does the system address disaster recovery or business continuity?	☐	☐	☐
12. Does the system involve a specific technology stack including the combination of programming languages, frameworks, libraries, patterns, servers, UI/UX solutions, software, and tools used by its developers?	☐	☐	☐
13. Does the system have a business rule engine (BRE)?	☐	☐	☐
14. Is the system ADA or Section 508 compliant?	☐	☐	☐
15. Does the system provide the necessary security to protect personal identifiable information?	☐	☐	☐
16. Does the system involve a service level agreement (SLA) to address availability, performance, maintenance, support, and exit strategy responsibilities?	☐	☐	☐
17. Does the system provide an interface to American Association of Motor Vehicle Administrators (AAMVA)?	☐	☐	☐
18. Does the system provide an interface to Social Security Administration (SSA)?	☐	☐	☐
19. Does the system provide an interface to Department of Homeland Services (DHS)?			
20. Does the system provide an interface to government organizations, such as child support or tax departments?	☐	☐	☐
21. Does the system involve user and admin training?	☐	☐	☐
22. Does the system have the capability for continuous integration and continuous deployment (CI/CD)?	☐	☐	☐
22. Does the system provide device integration, such as integration with fingerprint, scanner, and photo devices?	☐	☐	☐
23. Does the system have the capability to integrate with a legacy system during the transition phase?	☐	☐	☐

Three Solution Approaches

DMV reviewed the results of the vendor demonstrations and was able identify three different solution approaches that might meet the requirements for DXP:

- COTS/MOTS
- Custom development solutions
- PaaS and PaaS providers, offering enterprise application management and client-facing services, with customizable workflow, alerts, and client-specific business rules, often with state-of-the-art client-facing communication features (email/chat/text)

4. Collaboration with other State Agencies and Governmental Organizations

Core members of the DXP procurement team reached out to a number of other states for information about their procurement and selection process for vendor solutions supporting DMV activities. Maryland, New Mexico, New York, Oklahoma, and Oregon shared information with DMV about their procurement process, solution choices, and high-level implementation results. This market feedback provided input into the Request for Information and internet research activities for the DXP project.

5. Published Literature

DMV studied the System Modernization Best Practices document, published by the AAMVA System Modernization Working Group in 2017. It provides a roadmap to agencies seeking to begin their system modernization journey. The working group drew upon the expertise of motor vehicle agencies and the industry. Key points from this roadmap include:

- System modernization projects require commitment at every level of government and necessitate a significant investment in money, time, and resources.
- There is no one-size-fits-all solution. Take the time to research other jurisdictions that have system modernization experience.
- System modernization program efforts include multiple projects, each supporting an element of the vision. Separate efforts may include a data cleansing project, a BPR project, and an infrastructure modernization project, to name a few.
- Data cleansing efforts, inherently tied to data migration, should be considered similar in size to the modernization effort.

6. Summary of Findings from Market Research

California is the largest state in terms of its population of 40 million, its 27.5 million licensed drivers, and its 36.4 million registered motor vehicles. Many of the states researched in the AAMVA study modernized their systems with a custom-development approach. Larger states tend to modernize their systems with a more modern technology platform upgrade. The complexity of the California DMV is substantial, and the bigger the state, the more complex its DMV systems environment, and the bigger impact and risk of DMV system modernization.

One of the key findings in the market researched performed for DXP, and earlier for FES, is that there is no one-size-fits-all solution. Each state chooses a solution that best fits their needs and unique situation, and implements it in a phased approach—generally two to three phases. The breakdown in phases is also unique to each state, with consideration of the logical components, services supported, risk, and overhead.

DMV plans to incorporate what it learned from its market research into the project planning, detailed requirements development, solution configuration, and procurement strategy for DXP.

7. Summary of Solution Approaches and Differences

Vendors providing a demonstration of custom development approaches focused on the architecture approach as the key solution element, as well as their reference sites for similar work. The custom development approach has the opportunity to provide a full solution meeting DMV's needs for DXP. However, the technology array is not necessarily state-of-the-art, and both cost and timelines would increase using this type of solution.

Likewise, in reviewing the presentations conducted by two large system integration firms offering custom development approaches, it became clear that the time to production for a custom solution would take the longest of the solution alternatives, with at least one vendor citing up to four years as a timeframe for implementation.

DMV noted, in reviewing the demonstrations presented by COTS/MOTS vendors, that the business process workflow presented in their products are quite different from DMV's workflow and business

processes. DMV would need to undergo extensive gap analysis to assess the variance between how its business processes work and how the COTS/MOTS might address the DMV workflow.

COTS products are not always easy to change, and changes (modified COTS, or MOTS) can require reconfiguration or product extension of the core offering. One risk to customizing a COTS/MOTS solution is that the product vendor may lose the ability to continue to support the product with automatic upgrades and bug fixes, if changes are major. Offerings in this category also did not show products using a best-of-breed technology layer:

- FAST Enterprise's MOTS offering, FASTDS-VS, is based on the .Net technology framework while this product offers fairly complete and configurable features for a state DMV enterprise.
- InfoSys Public Services' offering, Infosys Celtic Vehicle and Licensing Solution, uses Java technology (which DMV has been using) and offers a more modern technology architecture framework, but the product functionality is less complete. It is tailored to support DMV enterprises across VR and DL functions.
- Business Information Systems (BIS) has a good VR solution and kiosk, but their VR solution is only implemented in Tennessee. Its functionality and integration would need further development to be more flexible and complete to fit DXP needs.

PaaS solution providers offer pre-built modules and features to address a number of DMV's DXP objectives, including a unified view of customer data, business intelligence/data mining capabilities, integration across modules, flexibility for product customization, modern interface capabilities, and streamlined reporting. Time-to-implementation is shorter for such platforms, as DMV would define its workflow components into these highly-automated applications, more swiftly than in a COTS/MOTS scenario. Operational silos of data can be minimized using modern APIs and underlying data structures provided by the solutions. This alternative provides workflow automation, built-in features and functionality to take care of back-end concerns such as security, infrastructure, and data integration, and combines the power of no-code builders and pro-code tools into one family for development to meet variety of business needs.

Further market research was performed on the internet to identify the extent to which PaaS solutions provide flexibility for their underlying data model, and any normalization issues that exist among these products. A potential risk for the surveyed PaaS solutions, as well as COTS/MOTS solutions, does exist in terms of the underlying data model not being normalized or extensible to the degree that may be required to match DMV's requirements. In some cases the data model underlying the product is not available to staff on client sites that would maintain the solution; in other cases it does not show a normalized structure, leading to potential data integrity problems.

The PaaS solutions surveyed, offering flexible workflow-enabling applications, are briefly characterized below. All offer state-of-the-art features for enterprise application management and client-facing services, with customizable workflow, alerts, and client-specific business rules. Salesforce describes its solution as a customer resource management (CRM) system, while Microsoft Dynamics describes its solution as a customer data platform (CDP). PEGA Systems describes its government platform as offering "enterprise business process management and case management." Service Now is another customizable workflow development solution. Pay It Gov offers predesigned motor vehicle front-end service functionality, out of the box. DMV also reviewed Salesforce and ServiceNow PaaS solutions, which, along with MS Dynamics, show as a market leader in the "magic quadrant" of the Gartner Group's 2020 report on customer relationship management solutions.

Most of the PaaS solutions shown in vendor demonstrations included customizable options and features, like these for Salesforce:

- Flexible customization using a standard user interface, requiring little code to write
- Automatic email notifications or new task creation through triggers/workflow rules
- Roles and permissions configured as needed for enhanced security
- Tools provided to set up complex sequences of steps for business logic
- Schedulers with the ability to run jobs at predefined intervals
- Ability to build custom objects to store business-specific data
- Ability to define rich HTML email templates
- Integration with apps like Amazon Web Services, DocuSign, chat services, and more

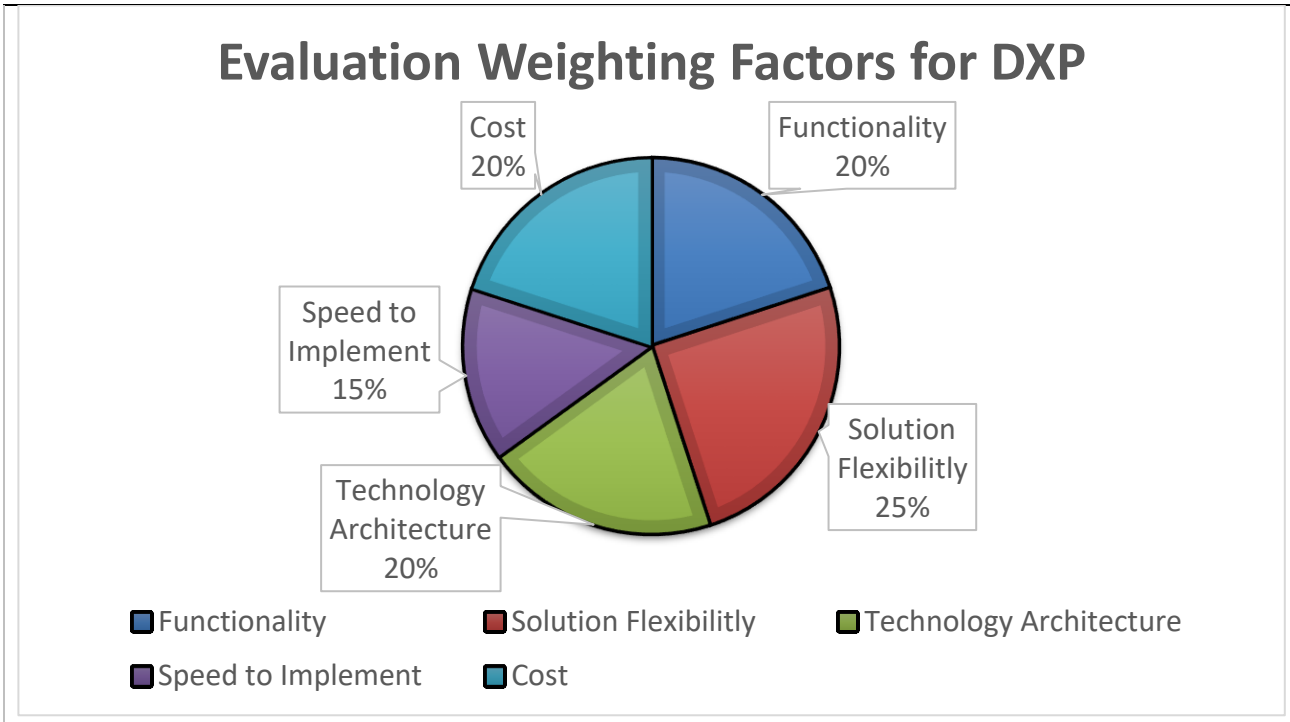
Pay It Gov's solution offers a Motor-Vehicle set of front-end VR and DL applications, including renewals of registrations and licenses, ordering customized plates. However, it does not include occupational licensing or cashiering functions. It aims to provide a seamless front-end experience for DMV customers, "free of charge" to government, providing:

- Customized data integration, compatible with REST and SOAP APIs
- Direct database connections
- Real-time linking of front-end data to back-end existing data sources
- Configurable business rules for handling specific use-cases for each supported client
- Various payment options available (debit/credit cards, ACH)
- Simplified reconciliation
- Ability to run reports and view real-time analytics
- Digital wallets to store digital registrations, payment info and receipts

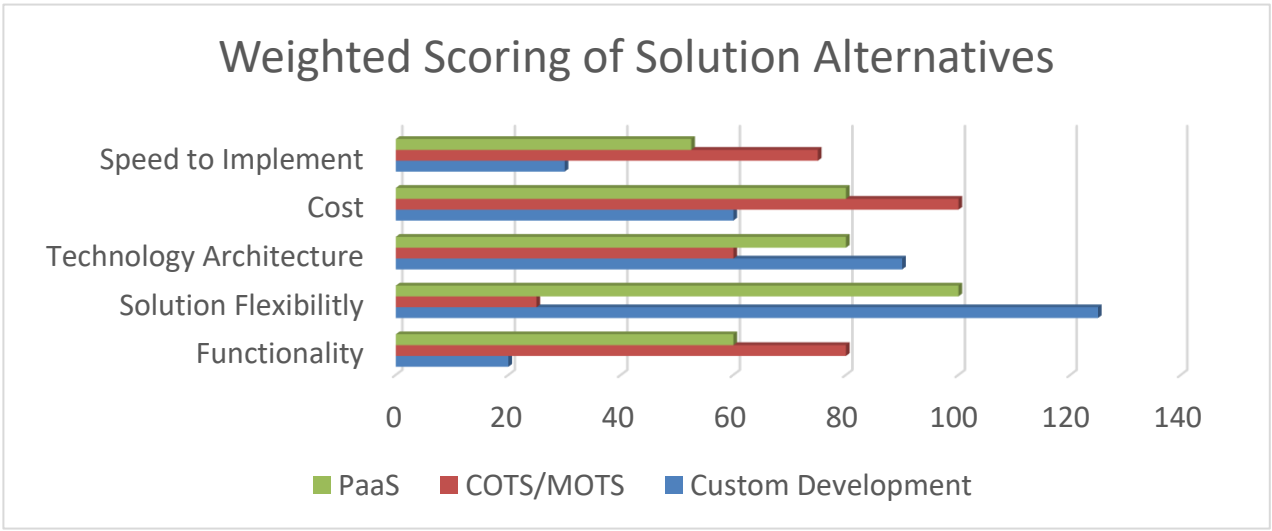
Vendor presentations also made it clear that documenting DMV business processes in detail, performing data cleansing and migration, and decisions about replacing or avoiding various existing system interfaces would be required for all three alternatives.

SOLUTION EVALUATION CRITERIA

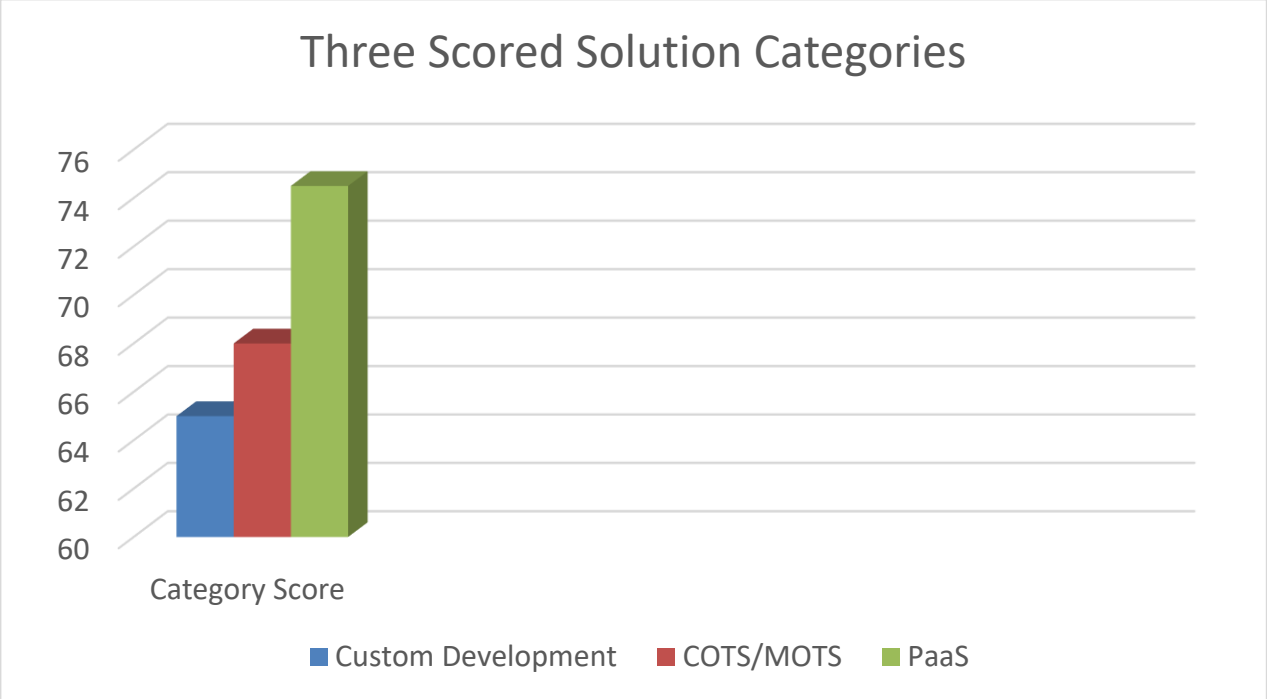
DMV scored the three solution approaches using weighted criteria factors as shown in the chart below.



Solution approaches received scores for each category (cost, speed to implement, technology architecture, and solution flexibility) based on a 1-to-5 rating scale, with 5 being high, as shown in the following chart. Based on evaluations of the three solution approaches, the DMV selected the SaaS model technology as the preferred solution.



DMV multiplied each solution factor score by the weighting factor percentage, as shown in the chart above, to obtain an average weighted score. Results using these weighting factors to compare and select the preferred solution are shown in the two-dimensional column chart below.



Based on the scoring method and weighting factors, the highest score went to PaaS providers, about 9.5% higher than for COTS/MOTS vendors, and 12% higher than custom development vendors.

PROCUREMENT VEHICLE CHOICES

Based on the market research, vendor demonstrations, and subsequent scoring, DMV expects to select an PaaS provider offering as the preferred solution.

This approach would require a "challenge-based" procurement, DMV has learned in communications with the California Department of Technology. DMV has earlier issued such solicitations based on acquisitions of two recent projects, and has therefore some experience with this alternative approach, including for custom-development solutions.

The challenge-based procurement approach enables a three-phased solicitation process. First a solicitation document is released, with bidder questions and answers to follow, and bidders develop Phase 1 responses. The state evaluates the Phase 1 responses, and selects at least three bidders to move to Phase 2. In Phase 2, proof-of-technology (POT) solutions are developed by bidders based on state-provided scenarios. The POTs are evaluated by the state, and bidders provide Phase 2 responses. Following evaluation of the Phase 2 responses by the state, the best-value bidder moves forward to Phase 3, for negotiations. Bidder(s) make their best and final offer at this time, for state evaluation and contract award.

2.10 Alternative Solutions
2.10.1 Solution Type
☒ **Recommended**
2.10.2 Name
Platform as-a-Service (PaaS)
2.10.3 Description

The Platform-as-a-Service (PaaS) option involves having a service provider deliver a cloud service that provides environments for the development and running of software applications, enabling the DMV to develop, run, and manage business applications without the need to build and maintain the infrastructure such software development processes typically require. PaaS can support the complete web application lifecycle: building, testing, deploying, managing, and updating. Many PaaS solutions provide pre-built modules and application programmatic interfaces enable no-code and low-code custom development processes, with flexible workflow configuration. This allows the DMV to avoid the expense and complexity of buying and managing software licenses, the underlying application infrastructure, middleware, the development tools, and other resources. DMV would manage the applications and services it develops, and the cloud service provider would manage everything else.

The proposed PaaS solution will require migrating DMV applications and systems to a cloud-based platform that is managed by an PaaS vendor. This should allow DMV to:

- Deliver products and services earlier and enable continuous delivery of updates.
- Provide DMV customers with high-quality services that meet their needs and allow them to interact with DMV in the manner that serves them best (i.e., in-person, online, mobile, chat ...)
- Facilitate better teamwork, collaboration, and communication both within DMV and with its business partners.

The core services provided by PaaS vendors include:

- Development tools
- Middleware
- Operating systems
- Database management
- Infrastructure

PaaS offerings may also include facilities for application design, application development, testing and deployment, as well as services such as team collaboration, web service integration, and marshalling, database integration, security, scalability, storage, persistence, state management, application versioning, application instrumentation, and developer community facilitation. Besides the service engineering aspects, PaaS offerings include mechanisms for service management, such as monitoring, workflow management, and discovery.

PaaS allows developers to create large scale applications that would otherwise exceed their own hardware's capacity or that they lack the tools to develop. This enables startups and less seasoned developers to create apps with little coding and without the large initial investment required for the alternative of on premise cloud. PaaS also saves the ongoing costs of employing skilled workers to build and maintain the environment and infrastructure. Most PaaS vendor solutions include the ability to use:

- Low code/no code (LCNC) development tools - allowing less experienced developers to build and test applications quickly
- Rapid application development (RAD) – includes using strategies such as iterative development, prototyping, time boxing and re-use of existing software

PaaS also offers easier management of applications once they have been released. It will allow the DMV to make updates available across different types of devices as soon as changes are

made, streamline ongoing integration with web services, and scale conveniently as DMV's services expand.

To assist with developing a modernized DMV system using PaaS, DMV will hire a system integrator to assist DMV staff in learning to use PaaS methods in general as well as specifically how to develop applications using the chosen PaaS platform and framework.

Approach (Check all that apply)**:**

☒	Increase staff – new or existing capabilities
☒	Modify the existing business process or create a new business process
☒	Reduce the services or level of services provided
☒	Utilize new or increased contracted services
☒	Enhance the existing IT system
☒	Create a new IT system
☒	Perform a business-based procurement to have vendors propose a solution
☒	Other, specify: Staffing for in-person services will be reduced due to the increase automation as we all as a shift in how services are provided, allowing customers and partners to utilize the communication channel (online, mobile,…) of their choice.

2.10.4 Benefit Analysis

Benefits/Advantages

COST SAVING: Reduce infrastructure cost and maintenance workload, since the DMV would purchase the resources it needs from an PaaS service provider on a pay-as-you-go basis and access them over a secure Internet connection.

REDUCE M&O SPENDING:

- Multiple applications can be deployed on the same PaaS platform and framework. Additionally, unlike COTS solutions, these applications can serve virtually any function that DMV performs.
- Integration components are shared by developers, which ultimately reduces the level of effort to tie new applications into an existing legacy environment.
- By leveraging PaaS for development, DMV can easily build and deploy native mobile applications, removing the responsibility for maintaining and testing code against multiple mobile operating system versions.
- Deploying DMV applications on a managed, Fed RAMP-certified cloud reduces the need to spend on IT security to maintain the environment.

LICENSING MANAGEMENT: Lessens (or removes) the ongoing maintenance of license management, as the PaaS provider will handle all licensing for operating systems, development tools, and everything else included in their platform.

DMV CONTROL: DMV maintains control of software deployment while the PaaS provider delivers all the major IT components needed to host the applications, including servers, storage systems, networks, operating systems, and databases.

ABILITY TO MEET UNIQUE NEEDS OF DMV:

- Developing with an PaaS vendor/system integrator will help meet DMV's unique, specific goals and allow for applications modification on an on-going basis, which may not be possible with a COTS/MOTS solution.
- Using PaaS will allow DMV to develop a solution that will include everything DMV needs and nothing it does not, while removing some of the heavy labor and headaches that arise from building a custom solution.

ABILITY TO DEVELOP INTERNAL EXPERTS: Training and technology transfer will be provided by the PaaS contractor, to help build internal expertise in modern technologies among DMV staff.

MAINTAIN DMV FLEXIBILITY:

- Faster ability to implement new changes (e.g., legislative mandates) based on business needs.
- Flexible no-code and low-code development and deployment environment.

PRODUCTIVITY BOOST: Faster development and delivery of applications, as DMV gains an environment in which to create and deploy new applications without the need to spend time and money building and maintaining an infrastructure that includes servers and databases.

ABILITY TO LEVERAGE NEW METHODS, TECHNIQUES, TECHNOLOGIES: Potential to leverage built-in features of the PaaS platform (such as database management, MDM, backup, and recovery).

FASTER IT MODERNIZATION AND DELIVERY:

- DMV can test the use of new languages, operating systems, databases, and other development technologies quickly, because it does not have to stand up the supporting infrastructure for them.
- PaaS makes it easier and faster to upgrade DMV tools.

AVAILABILITY & MOBILITY: Professionals involved in the tasks of development, testing, maintenance, delivery, and support can collaborate without losing sync, even if they are in different locations.

SCALABILITY: The PaaS structure is resilient in terms of scale, allowing the DMV to grow sustainably or meet peak business performance demands, doe to its flexible in structure.

LESS STAFF REQUIRED: With PaaS, DMV will not need a massive team to perform tasks, because PaaS solutions significantly reduce team time spent on coding change requests, infrastructure management, and workflow reconfiguration.

Select + to add benefits/advantages.

Disadvantages

DEPENDENCY ON VENDOR:

- DMV would be highly dependent on the PaaS platform and framework; it might find itself linked to a particular platform without the possibility of changing it.
- Any breakdowns or changes in the system integrator development roadmap can compromise DMV projects.
- If the PaaS provider changes their pricing model, an application may suddenly become more expensive to operate.

POTENTIAL STEEP LEARNING CURVE: PaaS and related cloud technologies constitute new technology and development methods to DMV and may involve a substantial learning curve.

DATA SECURITY: It is the function of the cloud manager to protect and take care of the data, so the trust in the provider is something that is very critical. While most PaaS vendors are large companies with strong security in place, this makes it difficult to fully assess and test the security measures protecting DMV applications and their data.

PROVIDER LOCK-IN: A different PaaS provider may require rebuilding or heavily altering DMV applications.

CLOUD LIMITATIONS: Not every part of the DMV's existing infrastructure may be built for the cloud -- if some elements cannot be cloud-enabled successfully, DMV might have to switch various apps and programs to integrate fully, or it may need to leave some of these things out of the cloud and within its existing infrastructure.

MIGRATION/INTEGRATION: Data and external interfaces need to be migrated to work with the new solution. DMV's existing website infrastructure would need to be migrated to work with the new solution.

Select + to add disadvantages.

Anticipated Time to Achieve Objectives After Project Go-Live

Objective Timeframe

Objective Number	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
1.1	☒	☐	☐	☐	☐
1.2	☐	☒	☐	☐	☐
1.3	☒	☐	☐	☐	☐
2.1	☒	☐	☐	☐	☐
2.2	☒	☐	☐	☐	☐
2.3	☒	☐	☐	☐	☐
2.4	☒	☐	☐	☐	☐
3.1	☒	☐	☐	☐	☐
3.2	☒	☐	☐	☐	☐
3.3	☒	☐	☐	☐	☐
3.4	☒	☐	☐	☐	☐
4.1	☒	☐	☐	☐	☐
4.2	☒	☐	☐	☐	☐
4.3	☒	☐	☐	☐	☐

4.4	☒	☐	☐	☐	☐
4.5	☒	☐	☐	☐	☐
4.6	☒	☐	☐	☐	☐
4.7	☒	☐	☐	☐	☐
5.1	☐	☐	☐	☒	☐
5.2	☒	☐	☐	☐	☐
6.1	☒	☐	☐	☐	☐
6.2	☒	☐	☐	☐	☐
6.3	☒	☐	☐	☐	☐
7.1	☒	☐	☐	☐	☐
7.2	☒	☐	☐	☐	☐
7.3	☒	☐	☐	☐	☐
7.4	☒	☐	☐	☐	☐
7.5	☒	☐	☐	☐	☐
7.6	☒	☐	☐	☐	☐
7.7	☒	☐	☐	☐	☐
8.1	☒	☐	☐	☐	☐
8.2	☒	☐	☐	☐	☐
8.3	☒	☐	☐	☐	☐
8.4	☒	☐	☐	☐	☐
9.1	☒	☐	☐	☐	☐
9.2	☒	☐	☐	☐	☐
9.3	☒	☐	☐	☐	☐

Select + to add objectives.

Anticipated Time to Achieve Financial Benefits After Project Go-Live

Financial Benefit	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
Increased Revenues	☐	☐	☐	☐	☐
Cost Savings	☐	☐	☐	☒	☐
Cost Avoidance	☐	☒	☐	☐	☐
Cost Recovery	☐	☐	☐	☐	☐

2.10.5 Assumptions and Constraints

ASSUMPTIONS:

- Staged implementation based on application and high functional priority will be planned in the initial iteration.
- Core functionality will be built lightweight to start with to meet immediate business needs -- the core will be evolved to accommodate long-term DMV needs.
- Customer service level agreements and time-to-market objectives will be established.
- The COVID-19 situation will be slow to resolve, requiring physical distancing and remote work to remain the way business gets done.
- Extensive vendor support, DMV business area staff, and Information Systems Division (ISD) staff resources can be provided for requirements gathering, design, development, testing, and implementation

CONSTRAINTS:

- As DMV implements changes to its applications and systems, it must continue to support its daily business workload and changes necessitated as the result of legislative mandates.
- Changes imposed on DMV's field office technicians must be minimized. Such changes can be very expensive and disruptive to deploy. Training 4000 DMV employees and another 2000 auto clubs employees to use a new system, coordinating the technology rollout with the training, and mitigating the productivity impact of the field office learning curve are major events with very high probability of negative impact to the public.
- VR/DL/OL systems interface with multiple external entities, and some of them use legacy protocols, which may not be able to work with modern technology in the new solution, thus external entities may need to change their systems to work with the new solution

Select + to add assumptions/constraints

2.10.6 Implementation Approach

Identify the type of existing IT system enhancement or new system proposed (check all that apply):

- ☐ Enhance the current system
- ☐ Develop a new custom solution
- ☐ Purchase a Commercial off-the-Shelf (COTS) system
- ☐ Purchase or obtain a system from another government agency (Transfer)
- ☐ Subscribe to a Software as a Service (SaaS) system
- ☒ Other, specify: Develop a solution on selected Paas platform.

Identify cloud services to be leveraged (check all that apply):

- ☐ Software as a Service (SaaS) provided by OTech
- ☐ Software as a Service (SaaS) provided by commercial vendor
- ☐ Platform as a Service (PaaS) provided by OTech
- ☒ Platform as a Service (PaaS) provided by commercial vendor
- ☐ Infrastructure as a Service (IaaS) provided by OTech
- ☐ Infrastructure as a Service (IaaS) provided by commercial vendor
- ☐ No cloud services will be leveraged by this alternative. Provide a description of why cloud services are not being leveraged:

Identify who will modify the existing system or create the new system (check all that apply):

- ☒ Agency/state entity IT staff
- ☒ A vendor will be contracted
- ☐ Inter-agency agreement will be established with another governmental agency. Specify Agency name(s):
- ☐ Other, specify:

Identify the implementation strategy:

- ☐ All requirements will be addressed in this proposed project in a single implementation.
- ☒ Requirements will be addressed in incremental implementations in this proposed project.
- ☐ Some requirements will be addressed in this proposed project. The remaining requirements will be addressed at a later date.
  Specify the year when the remaining requirements will be addressed:

Identify if the technology for the proposed project will be mission critical and public facing:

- ☒ The technology implemented for this proposed project will be considered mission critical and public facing.

2.10.7 Architecture Information

Business Function/Process(es)		Vehicle registration; driver licensing; occupational licensing; control cashiering, accounting, invoice processing; and customer flow management.		
Select + to add a business process with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and, security.				
Application, System or Component		VR/CC/DL/OL Digital Platform		
		Select + to add an application, system, or component.		
COTS, MOTS or Custom		PaaS		
Name/Primary Technology:				
Runtime Environment	Cloud Computing Used?	☒ Yes ☐ No	If "Yes," specify:	Select...
	Server/Device Function	PaaS		
	Hardware	unknown		
	Operating System	unknown		
	System Software	unknown		
Select + to add system software.				
System Interfaces		**Accounting** - Oracle Administrative and Financial System (AFS); **Internal DMV** – Driver safety and testing, printing (Exstream), Automated Name Index System (ANI), various databases, Motor Carrier Permit system, remittance system, customer relationship management (CRM tool, chatbot, and live agent chat); **External DMV** - AAMVAnet (CDLIS, PDPS, SSA, BPA), Business Partners and Autoclubs, Commercial Requestors (e.g., insurance and DL SSN inquiries, driver record and vehicle registration monitoring), Legal (e.g., municipal and county courts, DHS, FBI, Dept of Justice CLETS/NLETS, Federal and State Jury Commissioners), Government Agencies [Cities, Counties, State (ARB, BAR, CDPH, CDTFA, CHP, DADP, DCSS, DOF, FTB, DGS, SOS, ...), Federal (Army Corp of Engineers, Army National Guard, INS, IRS, NCIC, NMVTIS, SSA), parking/toll road agencies]; **DMV Infrastructure** – CalPhoto Retrieval, eGov, website infrastructure (WSI); **Public** (directly or via public website infrastructure)		
Data Center Location	Other, specify	Commercial Data Center		
Security	Access (check all that apply)	☒ Public ☒ Internal State Staff ☒ External State Staff ☒ Other, specify: Business Partners and Auto Clubs		
	Type of Information (check all that apply)	☒ Personal ☐ Health ☒ Tax ☒ Financial ☒ Legal ☒ Confidential ☐ Other, specify:		
	Protective Measures (check all that apply)	☒ Technical Security ☒ Identity Authorization and Authentication ☒ Physical Security ☒ and Recovery ☐ Other, specify:		

Data Management	Data Owner	Name: Lance Everett
		Title: Chief Data Officer
		Business Program: Executive Division
	Data Custodian	Name: Hosting Commercial Data Center
		Title:
		Business Program:

2.11 Recommended Solution

2.11.1 Rationale for Selection

The proposed PaaS solution best meets the needs to modernize DMV applications and systems, as it allows for higher-level programming with dramatically reduced complexity. PaaS provides a set of assets, resources, and capabilities designed to facilitate and accelerate application development. With PaaS, the DVM can build applications more quickly than would be possible if its developers had to worry about building, configuring, and provisioning their own platforms and backend infrastructure. With PaaS, all developers need to do is create functionality using a no-code or low-code development framework, and test the application, and the PaaS provider handles the rest. This allows DMV to address two pressing problems – modernizing faster and reducing the high costs of maintaining obsolete software and hardware.

The recommended solution, obtaining a DXP PaaS vendor solution, is the most viable option for this proposal. While minimizing the risk of failure and interruption to DMV's business processes, it not only addresses the need to replace the aging and obsolete DMVA front-end and back-end systems, but also provides significant advancement towards the adoption of new technologies that will enable DMV's customers and partners to interact with it in the communication styles they prefer (in-person at a field office, or online through the virtual field office, via mobile phone, tablet, or other device).

(1) PAAS CAN IMPLEMENT 100% OF THE REQUIREMENTS

The recommended solution fully meets the objectives identified in the Stage 1 Business Analysis (S1BA) as well as those identified in this S2AA. It will convert DMV applications and systems to modern software and hardware, utilizing new programming languages, tools, and platforms. This will reduce the DMV's dependency on scarce programming resources, and will enable existing staff positions to be re-directed. Additionally, it meets the objective of quickly establishing sustainability and stability of the DMV systems, as well as providing DMV with the flexibility and agility to rapidly respond to future business change requests.

(2) LONG-TERM SOLUTION FOR DMV CATASTROPHIC HARDWARE FAILURE AND THE SOURCE OF PROBLEMS

DMV legacy systems currently runs on obsolete technology and technical architecture which places California at risk, not only for driver licenses, vehicle registrations, and occupational licensing, but also for the revenue streams that other government agencies and departments rely on. The legacy system limitations make it difficult to implement mandated changes and challenges DMV's efforts in recruiting and retaining staff with the required skills. The PaaS proposal represents DMV's long-term solution to retire these obsolete technologies and resolve the source of current system problems, while also enabling DMV to reduce its overall operations and maintenance spending. It also allows

DMV to more quickly take advantage of new technologies and software development practices, thereby reducing development time and cost, since DMV can leverage the resources and skills of the platform vendor.

(3) MOST FEASIBLE CONSIDERING THE AVAILABILITY OF RESOURCES

Critical DMV legacy system developers are reaching retirement age and, due to attrition, other technical and business areas are also losing institutional knowledge of the over 40-year-old legacy systems. The COTS/MOTS alternative would require extensive internal and external resources for requirements gathering, gap analysis, data modeling, data migration, development, testing, and implementation tasks. A new custom solution would similarly require extensive resources to re-design the front-end and back-end systems. Even if DMV leverages an Infrastructure-as-a-Service (IaaS) vendor to provide virtual hardware with adjustable scalability, DMV would still have to manage the server, whereas with PaaS the server management is done by the provider. Further, opting for an PaaS solution allows DMV to take advantage of modern technology, tools and infrastructure without having all of the upfront implementation and recurring maintenance costs. It can leverage the PaaS vendor to quickly improve the overall reusability, maintainability, reliability, application security, scalability, and performance of DMV systems. Compared to the other two alternatives, the PaaS option is most feasible considing the availability of internal and external resources.

(4) USES PROVEN TECHNOLOGY SOLUTONS AND MINIMIZES RISK

The recommended PaaS solution has a higher likelihood of success, as evidenced by previous successful incremental enhancement efforts at DMV. This approach minimizes the risk of disrupting 24/7 access to DMV systems by both internal and external entities. It also reduces the risk of system failure resulting from unmanageable complexity and obsolete components.

(5) MITIGATE IMPACT TO THE STAKEHOLDERS

Research indicates that the COTS/MOTS products available in the marketplace require adoption of the whole system (including front-end, mid-tier, and back-end database). This will require changes to the communication interface for both internal and external systems, which could pose a significant impact to DMV's stakeholders. With an PaaS solution, initial disruption to stakeholders can be mitigated and should also be assuaged by its potential to provide better responsiveness and faster delivery of quality services to those stakeholders.

(6) DISADVANTAGES DO NOT ELIMINATE THE RECOMMENDED ALTERNATIVE

If DMV chose a COTS/MOTS solution, DMV would be at the mercy of the solution vendor for future changes. The State of California may not have control over what changes (such as legislative mandates) can be made, or when to make those changes. Further, choosing a COTS/MOTS solution is essentially the technical starting point of outsourcing California's whole VR, DL, and Identity business to a private vendor.

Choosing a custom development solution will require the most resources to develop and maintain, and will likely take considerably longer to implement. Since the full burden of development and deployment is DMV's responsibility, custom development would continue the delivery risks associated with having the right skill sets and technologies available to the DMV.

Choosing to pursue an PaaS solution provides the DMV with the best of all possible worlds. It can more quickly advance to modern technologies and methods, as instead of having to build all of this up from scratch, it can leverage the expertise and resources of the PaaS vendor. It also allows the DMV to concentrate on development and let the system integrator handle the burden to

deployment and maintenance. This frees DMV resources to concentrate on what they know best, the unique business processes and services required by the California DMV. Responsiveness to future business change requests should be significantly improved with an PaaS solution, as there is no need to negotiate change requests with a COTS/MOTS vendor, nor is there a heavy uplift burden on state development staff to learn new software and hardware. An PaaS solution is the best path forward for the DMV to acquire a highly automated, highly available platform service that reduces customer deployment problems and infrastructure maintenance.

In summary, an Paas solution can help DMV take powerful applications from concept to finished product — far quicker than if they were to develop on PaaS or IaaS solutions. For an organization like DMV that is struggling to balance time and budgetary constraints with the need to deploy purpose-built applications that can delight customers and meet rapidly changing business demands, PaaS offers a compelling argument over SaaS, COTS/MOTS, or custom-built alternatives, as it better addresses a balanced mix in terms of cost, resource needs, and flexibility.

Attachment: Attach file to email submission.

2.11.2 Technical/Initial CA-PMM Complexity Assessment

Complexity		Complexity Zone	
Technical Complexity Score:	3.4	☐	Zone I — Low Criticality/Risk
		☒	Zone II/III — Medium Criticality/Risk
		☐	Zone IV — High Criticality/Risk

Attachment: DXP Complexity Assessment v1.0.pdf

2.11.3 Procurement and Staffing Strategy

Activity

Solicitation Development

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☒ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☒ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Select...	**Contract Type**	Select...
If "Other," specify:		If "Other," specify:	

Requirements Elicitation

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☐ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Cost Estimating

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☐ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☒ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Business Analysis

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Technical Analysis

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Project Management

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Conduct Procurement

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☒ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☐ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☒ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Testing

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Project Oversight

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☒ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☐ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☒ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☐ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Organizational Change Management

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Design

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Training

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Integration/Development

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☐ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Contract Management

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☐ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☐ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☐ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Enterprise Architecture

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☒ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Quality Assurance

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☒ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☒ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Technical Installation of Hardware

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☐ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☐ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Technical Installation of Software

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Maintenance

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)
☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity			
Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Operations

Responsible (check all that apply)	**When Needed** (check all that apply)	**Cost Estimate Verification** (check all that apply)

☒ Agency/state entity staff ☐ STP staff ☐ CDT Project Approvals and Oversight staff ☐ CA-PMO staff ☐ DGS staff ☒ Contractor ☐ Other, specify:	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☒ After project is approved (after Stage 4 Project Readiness and Approval)	☐ Market research conducted (MR) ☒ Cost estimate provided (CE) ☐ CDT CE ☐ DGS CE ☐ Request for Information (RFI) conducted ☒ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle		**Contract Type**	
If "Other," specify:	Click here to enter text.	If "Other," specify:	Click here to enter text.

Select + to add activities.

	Yes	No
Will any of the activities identified above result in a competitive or non-competitive solicitation that will be over the Agency/state entity's DGS delegated purchasing authority?	☒	☐

2.11.4 Enterprise Architecture Alignment

DMV's project and architecture roadmap uses different projects and efforts as building blocks to reach the target architecture. The vision is to leverage the technologies and infrastructure built in other efforts to maximize our investment. This proposal is consistent with DMV's target enterprise architecture.

Information Technology Capability Table

Information Technology Capability	Existing Enterprise Capability to be Leveraged	New Enterprise Capability Needed
Public or Internal Portal/Website	☒	☒
Public or Internal Mobile Application	☒	☒
Enterprise Service Bus	☐	☒
Identity and Access Management	☒	☒
Enterprise Content Management (including document scanning and eForms capabilities)	☒	☒
Business Intelligence and Data Warehousing	☒	☒
Master Data Management	☒	☒
Big Data Analytics	☐	☒

2.11.5 Project Phases

Phase	1
Description	**Phase Deliverable**
The first Phase, Phase 1 Platform Readiness (OL) Bakeoff will involve the selection of two or three system integrators providing one of three leading PaaS products. The OL Bake-off will serve as a proof-of-technology phase for DMV's Digital eXperience Platform. The bakeoff will result in a selected system integrator contract to build a full OL solution including modernization of the following OL business activities: • Licensing, regulating, and monitoring motor-vehicle-related businesses • Perform background checks and compliance inspections on location for occupational licensing applicants and license holders • Maintaining records on occupational licenses, permits, and authorizations; • Investigating consumer complaints relating to individuals and organizations involved in motor vehicle industries; and • Initiating administrative and legal remedial actions against non-compliant individuals and organizations in motor vehicle industries, including processing hearing request and legal decisions.	The development and deployment of a new business and client-focused system that provides a modernized system to DMV and its customers for a complete set of OL business activities.

Phase	2
Description	**Phase Deliverable**

The 2nd Phase, Phase 2 Vehicle Registration (VR) and Control Cashier (CC) will involve the selected vendor candidate identified who can provide a Digital eXperience Platform. The DMV Automation (DMVA) (VR and CC Front-end) requirements include the modernization of the following VR/CC business activities: **Vehicle Registration (VR)** • Issuance of new vehicle (and vessel) registration and renewal of registration • Titling and transfers of vehicle and vessel title • Perform verification that registration requirements are met, including financial responsibility (insurance), safety recalls, and tax compliance • Collect and distribute fees through the Control Cashier process • Allocate revenue received (to state and local government) • Collect delinquent accounts (unpaid parking/toll violations, dishonored checks/credit card payments) • Issue specialty license plates (including disabled person (DP) plates, personalized plates, and special program plates such as Yosemite, Lake Tahoe protection, etc.) • Issue DP placards • NMVTIS • IRP **Business Partner Automation (BPA) Program include:** • Maintain requirements for business partner applications • Verify BPA applicant meets requirements for participation	The development and deployment of a new business and client-focused system that provides a modernized system to DMV and its customers for a complete set of VR/CC/BPA/SB611 and Vessel Fee business activities.

- Approve and maintain business partners in BPA program
- Accept and monitor information from BPA partners on processed transactions
- Oversee communication between DMV and BPA participants related to statutory and policy changes
- Ensure BPA systems meet DMV system and processing requirements

Control Cashier (CC)

- Process revenue
  - Calculate amount due based on business rules for fees and fines
  - Collect revenue due from fees and fines
  - Reconcile collections
  - Allocate and distribute collected revenue to state and local agencies
  - Perform end-of-day transactions, including balancing cash received with bank deposits, and resolving any office-level financial discrepancies
  - Balance payments and receivable amounts
  - Deposit funds
- Submit information to financial systems
- Disburse funds to receiving entities (via SCO using EFT to state agencies)
- Create files for DMV employees to permit them to access the system and to establish the types of transactions they are authorized to perform
  - Maintain local data files regarding inventory,

employee data, workstations, customer names and addresses, bundle logs, etc. o Perform end-of-day transactions, including balancing cash received with bank deposits, and resolving any office-level financial discrepancies **SB611** • Ensure the deployment of SB611 business needs in new system meet DMV system and processing requirements **SB210** • Ensure the deployment of SB210 business needs in new system meet DMV system and processing requirements **VESSEL FEE** • Ensure Vessel Fee deployment systems meet DMV system and processing requirements for Vessel fee processing	
Phase	**3**
Description	**Phase Deliverable**

The 3rd Phase, Phase 3 Driver License and Control Cashier (CC), will involve the selected vendor candidate identified who can provide a Digital eXperience Platform. The DMV Automation (DMVA) (DL and CC Front-end) requirements include the modernization of the following DL/CC business activities:
 	
Driver's License (DL)
• Manage requests for drivers' licenses and ID cards
  ○ Accept applications for DL and ID, including REAL IDs and Federally Non-Compliant
  ○ Verify identity requirements are met for DL or ID card categories
  ○ Test drivers to determine qualifications
  ○ Issue DL and ID cards
  ○ Accept DL and ID payments and distribute refunds
• Record, verify, and handle complaints against drivers
  ○ Record and verify complaints
  ○ Record adverse actions against licenses
  ○ Revoke privileges and licenses
  ○ Review appeals and monitor results
• Maintain DL and ID records as well as category requirements
• Process record requests and reporting on license status
 	
Control Cashier (CC)
• Process revenue
  ○ Calculate amount due based on business rules for fees and fines
  ○ Collect revenue due from fees and fines
  ○ Reconcile collections
	The development and deployment of a new business and client focus system that provided a modernized system to DMV and customer for complete the DL/CC business activities.

- Allocate and distribute collected revenue to state and local agencies
- Perform end-of-day transactions, including balancing cash received with bank deposits, and resolving any office-level financial discrepancies
- Balance payments and receivable amounts
- Deposit funds

- Submit information to financial systems
- Disburse funds to receiving entities (via SCO using EFT to state agencies)
- Create files for DMV employees to permit them to access the system and to establish the types of transactions they are authorized to perform
  - Maintain local data files regarding inventory, employee data, workstations, customer names and addresses, bundle logs, etc.
  - Perform end-of-day transactions, including balancing cash received with bank deposits, and resolving any office-level financial discrepancies

Select + to add project phases.

2.11.6 High Level Proposed Project Schedule

Proposed Project Planning Start Date:	2/3/2020	**Proposed Project Planning End Date:**	6/30/2021
Proposed Project Start Date:	7/1/2021	**Proposed Project End Date:**	7/31/2026

Activity Name	Start Date	End Date
Updated S1BA Completed	2/3/2020	8/28/2020
Update S2AA – In progress	2/3/2020	2/1/2021
Update S3SD – - Tentative	10/1/2020	6/22/2021

Complete S4 Approval – Contract Award - Tentative	6/23/2021	7/28/2021
Spring Finance Letter (BCP) – For FY 21/22	8/3/2020	1/29/2021
BPR 1 – VR/CC/OL – Front-end (on-board)	10/1/2019	1/29/2021
BPR 2 – DL/VR/CC/OL – Front-end and Back-end (on-board)	6/29/2020	8/19/2022
Phase 1 RFP – Procurement & Bake off	9/1/2020	6/7/2021
Phase 2 RFP – Procurement – Primary Vendor Contract	6/8/2021	12/30/2021
Phase 3 RFP – Procurement	6/1/2022	12/27/2022
Phase 1 – Platform Readiness – OL/CC	6/21/2021	7/14/2022
Phase 2 – VR/CC/SB 210	12/31/2021	12/31/2024
Phase 2a – SB 611	3/13/2024	8/28/2024
Phase 2b – Vessel Fee	8/28/2024	12/31/2024
Phase 3 – DL/CC	1/2/2023	12/31/2025
OL – M&O	7/19/2023	7/16/2024
VR/CC – M&O	1/1/2025	12/31/2025
DL/CC – M&O	1/1/2026	12/30/2026
Select + to add activities/		

2.11.7 Cost Summary

Total Proposed Planning Cost:	$13,427,080
Total Proposed Project Cost:	$414,687,863
Total Proposed Future Operations IT Staff & OE&E Costs (Continuing):	$20,186,436
Total Proposed Annual Future Operations IT Costs (M&O):	$0

2.12 Staffing Plan

2.12.1 Administrative

The DMV Administrative sections have the capacity of providing the project support necessary for this project.

DMV Budget and Fiscal Analysis Branch (BFAB)
The proposed project workload is part of the existing duties of the Budget Office staff. An analyst from the Budget and Fiscal Analysis Branch, with the support of the Budget Office management team, will provide budget-related assistance and guidance to the proposed Information Technology project team. Responsilbities include consulting with the programs areas in determining the costs associated with staffing and operational needs for the project and acting as a liaison between the Department of Finance (DOF) and other control agencies in preparing and submitting the Budget Change Proposal. The Budget Office staff has 1 to 20 years of budgeting experience.

DMV IT Acquisitions Unit

The DMV IT Acquisitions assists with procuring a contract by assisting with:

- Solicitations
- Contacting prospective contractor
- Developing or reviewing the solicitation packages (including the Statement of Work)
- Coordinating the encumbrance of funds for the contract
- Distributing copies of the signed executed contract to the appropriate parties

The DMV IT Acquisitions Official coordinates final approval of the contracts with the DMV's Procurement and Contracting Officer and advises the project of new or modified state procurement policies and regulations. Throughout the project life cycle, the DMV IT Acquisitions Official continues to serve the project with contract amendments and staff replacement and must work with the Department of Technology Statewide Procurement (CDT STP) Office as required.

The DMV Acquisitions Official is a subject matter expert on the State of California's Solicitation process and acts as an advisor to members of the Evaluation Team.

Specific duties related to the evaluation and selection process include:

- Coordinating with CDT STP on a regular basis
- Assisting the CDT STP with training the Evaluators on the review process and the use of the evaluation materials such as worksheets and evaluation sheets.
- Assisting the CDT STP in preparation of the Evaluation and Selection Report

This position is the primary point of contact for CDT STP, Project Team and Evaluation Team in regards to the solicitation.

Contract Management

The Contract Manager administers all contracts for the project to ensure compliance with appropriate regulations and policies, researches contract issues, and monitors the contractor's performance against the requirements of the contract. The Contract Manager works with the Project Manager to ensure the expectations and due dates for each deliverable set forth in the contract or SOW is clear and complete. The Contract Manager also monitors the contract in accordance with Disabled Veterans Business Enterprise (DVBE) contract requirements. The Contract Manager tracks all contract deliverables and milestones, and validates deliverable acceptance prior to authorization of payment.

The Contract Manager will have full responsibility and oversight of the contract and knowledge of:

- Contract administration
- Maintaining a working copy of the contract file
- The elements of the contract
- When to notify the contractor to begin work
- Monitoring the contractor to assure the compliance with contract provisions are met
- Approving the final product/service
- Monitoring expenditures and approving/disputing invoices for payment/nonpayment
- Requesting modifications, renewals, or a new contract as required.

2.12.2 Business Program

The business programs do not have the capacity to absorb the substantia workload this project is anticipated to generate. Therefore, the business programs most impacted by the project (ROD, LOD, FOD, CSD, INV) have requested additional temporary resources (at the same level as those expected to participate in the project) to augment the existing staff. This will alleviate any resources contention created by the project and allow selected staff to participate fully. Once the project is implemented, the business program workload will return to the normal levels.

2.12.3 Information Technology (IT)

DMV's Information Systems Division has conducted a thorough analysis of the current resource capacity and determined DMV does not have the capacity to absorb the additional workload without assistance. Contract resources, along with temporary state staff, will augment the current ISD staff.

2.12.4 Testing

DMV's Product Quality Assurance (PQA) Section will assign a test manager and contract services to provide guidance for the overall testing. Responsibilities for the Test Manager include review and approval of a strategy and scope of testing, review and approval of the test approach, defining a defect management plan, providing the defect severity classification, providing the pass/fail criteria for test cases, identifying and raising any risks related to testing throughout the effort and monitoring all test phases (e.g. – Unit, Integration, System, etc.) and types of testing (e.g. – Black Box, White Box, Regression, Stress, etc.) throughout the DXP project. The PQA test manager will also have responsibility for reviewing and approving the overall Test Strategy and test plan for the project. The PQA test manager, with over five years of experience acting as test manager on multiple types of projects, will accomplish this by eliciting guidance if necessary from other PQA resources.

2.12.5 Data Conversion/Migration

Data conversion is within the scope of the SI statement of work. SI will coordinate with DMV subject matter experts to ensure that data conversion is planned and executed in a manner that address data accuracy and integrity. DMV will be a collaborative with the SI and provide subject matter experts to support the effective and successful data conversion efforts.

DMV, as the contract holder, is responsible for converted data validation. Deviations from expected data conversion accuracy and quality will be address through the defect management and contract deliverable acceptance process.

2.12.6 Training and Organizational Change Management

The DXP Project Change Management team will support the SI in the planning, design, and development of delivered functionality training content and video guides. The SI's training content and video guides will adhere to DMV communication / training standards. The DXP Change Management team will work with the DMV Enterprise Organizational Change Management (OCM) and Office of Public Affairs (OPA) to disseminate project information regarding the changes introduced by DXP. The DXP Change Management team will be the conduit of information regarding Enterprise training needs provided by OCM, Departmental Training Branch (DTB) and the Divisions to the SI. DMV also plans to leverage consultant services for the OCM and DMV's existing Training Branch. The team will work in conjunction with the DXP Project stakeholders to ensure that the stakeholders are educate about the changes, are given opportunity to buy-in to the vision and are able to adopt the change.

2.12.7 Resource Capacity/Skills/Knowledge for Stage 3 Solution Development

DMV staff has extensive knowledge and experience with contract procurement, management, the business programs and processes. DMV's Information Systems Division (ISD) has the information technology knowledge to support the project and systems. However, the project plans to use existing and new requested state staff to partner with consultant staff to perform Stages 3 and 4 activities.

The DMV IT Acquisitions official will aid with procuring a contract by assisting with:

- Solicitations
- Contacting prospective contractor
- Developing or reviewing the solicitation packages (including the Statement of Work)
- Coordinating the encumbrance of funds for the contract
- Distributing copies of the signed executed contract to the appropriate parties

The IT Acquisitions official coordinates final approval of the contracts with the DMV's Procurement and Contracting Officer and advises the project of new or modified state procurement policies and regulations. Throughout the project life cycle, the DMV IT Acquisitions official continues to serve the project with contract amendments and staff replacement and must work with CDT STP as required.

The DMV Acquisitions official is a subject matter expert on the State of California's Solicitation process and acts as an advisor to members of the Evaluation Team.

Specific duties related to the evaluation and selection process include:

- Coordinating with CDT STP on a regular basis
- Assisting CDT STP with training the Evaluators on the review process and the use of the evaluation materials such as worksheets and evaluation sheets.
- Assisting CDT STP in preparation of the Evaluation and Selection Report

This position is the primary point of contact for CDT STP, Project Team and Evaluation Team in regard to the solicitation.

The DMV's Acquisition official, assigned to this project, has experience using the proposed procurement methodologies identified in Section 2.11.3 Procurement and Staffing Strategy. Additionally, the DMV Acquisition official has worked with STPD on various contracts using the STPD Streamlined Template, is familiar with protest types or use of Public Contract Code (PCC) 6611, and has participated with STPD in the negotiation of various contracts.

2.12.8 Project Management

2.12.8.1 Project Management Risk Assessment

Project Management Risk Score:	1.2
Attachment:	SIMM 45 PM Risk Assessment v1.0.pdf

2.12.8.2 Project Management Planning

Are the following project management plans or project artifacts complete, approved by the designated Agency/state entity authority, and available for Department of Technology review?

Project Charter	No	In Progress
Scope Management Plan	No	In Progress
Risk Management Plan	No	In Progress
Issue and Action Item Management Plan	No	In Progress
Communication Management Plan	No	In Progress
Schedule Management Plan	No	In Progress
Human Resource Management Plan	No	In Progress
Staff Management Plan	No	In Progress
Stakeholder Management Plan	No	In Progress
Governance Plan	No	In Progress

2.12.9 Organization Charts

See Attachments

DXP S2AA - All Org Charts.pdf

Project Org Chart v2.0.pdf

2.13 Data Conversion/Migration

Identify the status of each of the following data conversion/migration activities:

Data Conversion/Migration Planning	In Progress	Data Quality Assessment	In Progress
Data Conversion/Migration Requirements	In Progress	Data Quality Business Rules	In Progress
Current Environment Analysis	In Progress	Data Dictionaries	In Progress
Data Profiling	In Progress	Data Cleansing and Correction	In Progress

Attachment: Attach files to email submission.

2.14 Financial Analysis Worksheets

Attachment: DXP Modernization FAWs (V2.0) 020321.xl

Preliminary Assessment – Department of Technology Use Only

Original "New Submission" Date	1/15/2021
Form Received Date	2/16/2021
Form Accepted Date	2/16/2021
Form Status	Completed
Form Status Date	5/14/2021

Main Form – Department of Technology Use Only

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Form Status	Completed
Form Status Date	5/14/2021
Form Disposition	Approved
Form Disposition Date	5/14/2021