



**COMMONWEALTH OF VIRGINIA
VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT)
ADMINISTRATIVE SERVICES DIVISION
1201 E BROAD STREET
RICHMOND, VIRGINIA 23219**

Note: To the extent allowed by law, this public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, § 2.2-4343.1 or against a bidder or offeror because of race, religion, color, sex, national origin, age, disability, sexual orientation, gender identity, political affiliation, or status as a service disabled veteran or any other basis prohibited by state law relating to discrimination in employment. VDOT is committed to increasing procurement opportunities for small and micro businesses, including small or micro businesses that are owned by minorities, women, or disabled veterans, and strengthening the Commonwealth's overall economic growth through the development of its IT Offerors.

REQUEST FOR QUALIFICATIONS (RFQ) 156899 for

Project Name: ***Multi-Modal Mobility Enhancement via Dynamic Incentivization***

Issue Date:	September 14, 2021
Due Date/Time:	October 20, 2021, 4:00 PM Eastern
Single Point-of-Contact ("SPOC"):	Arden Clark
Ph. No:	(804) 382-3255
E-mail Address:	arden.clark@vdot.virginia.gov

Table of Contents

1. INTRODUCTION	3
A. OBJECTIVE OF THE REQUEST FOR QUALIFICATIONS	3
B. PROJECT TERM AND OPTIONS	3
C. PROJECT OVERVIEW	3
D. INNOVATION TO GOVERNMENT	4
E. DBE AND SWAM PARTICIPATION IN PROJECT	4
F. VDOT OVERVIEW	4
G. OVERVIEW OF RM3P	5
H. RESPONDING TO THIS RFQ	5
I. PROTEST	6
2. PROPOSAL ADMINISTRATION	8
A. OVERVIEW	8
B. VIRGINIA PUBLIC PROCUREMENT ACT (VPPA)	8
C. ANTI-DISCRIMINATION - § 2.2-4310 AND § 2.2-4311, AND § 2.2-4343.1(E)	8
D. ETHICS IN PUBLIC CONTRACTING - § 2.2-4367 <i>ET SEQ.</i>	8
E. AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH - § 2.2-4311.2	9
F. PROHIBITED PRODUCTS AND SERVICES - § 2.2-5514	9
G. PROHIBITED CONTRIBUTIONS AND GIFTS - § 2.2-4376.1	9
H. LIABILITY	9
I. NONDISCLOSURE	9
J. PROPRIETARY INFORMATION	9
K. EXPRESSION OF INTEREST PROTOCOL	10
L. SINGLE POINT-OF-CONTACT	10
M. PROCUREMENT WEBSITE	10
N. TIMETABLES	10
O. EVA REGISTRATION REQUIRED	11
P. EXCLUDED PARTIES LIST	11
3. RFQ RESPONSE INSTRUCTIONS	12
A. FILE NAMING AND DOCUMENT LIMITS	12
B. MUST-HAVE FACTORS	12
C. RFQ SOLUTIONS AND EXPERIENCE SUMMARY	12
D. RESPONSE CONTENT AND POINT VALUES	13
E. OFFEROR'S SUBMISSION FORMAT	14
4. SCOPE OF PROJECT	15
SCOPE	19
OBLIGATIONS OF THE PARTIES	20
PROJECT TASKS AND DELIVERABLES	21
APPENDICES	39

1. INTRODUCTION

A. Objective of the Request for Qualifications

This Request for Qualifications (“RFQ”), issued by the Virginia Department of Transportation (“VDOT”), is to solicit Expressions of Interest (“EOI”) from qualified Offerors interested in contracting to implement, deploy, and operate a **Dynamic Incentivization (“DI”) initiative in Northern Virginia (“NoVA”)**. The purpose of this RFQ is to solicit information that will enable VDOT to determine which Offerors are best qualified to successfully execute and operate the DI project. Those Offerors determined to be best qualified will be invited to submit proposals in response to VDOT’s DI Request for Proposal.

Any Offeror capable of meeting the “**Must-Have Factors**” of the solicitation (see Section 3, Subsection B) may respond to this RFQ. The VDOT Evaluation Team will review and score all EOI responses in accordance with the evaluation criteria established in this RFQ. VDOT shall advise in writing each Offeror who submitted an EOI whether that Offeror has been prequalified. In the event that an Offeror is denied prequalification, the written notification to the Offeror shall state the reasons for the denial of prequalification. Only those Offerors pre-qualified by VDOT may then respond to the subsequent RFP, which will be issued shortly after the letters are disseminated. The evaluation of the EOI will not factor into the evaluation of the DI RFP.

In this document, “Offeror” means any entity that submits an EOI response to this RFQ. “Offeror”, “Contractor”, and “Vendor” are used interchangeably in this RFQ document.

The pre-qualification letter will pertain only to the composition of the Offeror team described in the EOI submission. “Offeror team composition” refers to the proposed organizational structure of the Offeror team that will perform the work (prime/subcontractor, joint venture, other alliances, etc.) and identification of the partner members (firms, universities, and other organizations) who will participate on the Offeror team. Changes in team composition between the EOI submission and subsequent RFP response that alter the qualifications and experience of the team may impact evaluation.

TO BE ELIGIBLE TO RESPOND TO THE RFP ON DYNAMIC INCENTIVIZATION, AN OFFEROR MUST BE THE RECIPIENT OF A SIGNED LETTER FROM VDOT STATING THE OFFEROR IS PRE-QUALIFIED (PER THE OFFEROR’S EOI SUBMISSION). A COPY OF THAT LETTER MUST BE INCLUDED IN THE PROPOSAL RESPONSE TO THE RFP.

B. Project Term and Options

The contract awarded from the subsequent RFP will include an *initial term* of 30 months, as follows:

- 18 months for development and deployment of the DI initiative, and
- 12 months for operational support of the DI initiative.

Optional renewal periods extending the DI operational support will be included beyond the initial contract term.

NO CONTRACT WILL BE AWARDED FROM THIS RFQ. THE CONTRACT AWARD WILL BE DETERMINED BASED ON THE SUBSEQUENT RFP.

C. Project Overview

The purpose of the Request for Qualifications (RFQ) is to establish a list of Offerors qualified to submit sealed proposals through the competitive negotiations to provide a Software-as-a-Service (“SaaS”) Dynamic Incentivization (“DI”) solution for travelers in Northern Virginia. The DI solution will offer incentives to the public for changing mode, route, or departure time in ways that lessen the overall impact of congestion and incidents. For example, if there was a major crash on Interstate 95 (“I-95”) that could impact travel in Northern Virginia, commuters who regularly drive that route might be offered an incentive to delay their departure or take transit. The goal of DI is to incentivize and reward a relatively small number of commuters who have the willingness and flexibility to safely

change their travel patterns in a manner that improves the efficiency of the transportation network as a whole. An additional goal of the solution is to change travel behaviors in the long-term, so the solution will also reward travelers for continued use of travel modes that reduce or eliminate Single-Occupant Vehicle (SOV) trips. While the initial deployment of DI will be limited to NoVA, the solution must be capable of scaling to other parts of the Commonwealth as well.

VDOT is seeking an innovative solution that will offer incentives that bring about behavior changes in the short- and long-term and which are financially sustainable over time. The incentives will be generated, verified, and managed by a common back-end system, and incentives will be offered to the public via one or more mobile applications (“apps”). The incentives will be organized into three complementary programs:

- *Dynamic Incentives* – Created in real time in response to incidents.
- *Challenges* – Short-term incentives in response to planned events (e.g., construction, Metro station maintenance closures) or to reinforce specific behaviors.
- *Loyalty Incentives* – Long-term incentives to reinforce the use of active and shared modes.

These incentives are intended to encourage behavior changes that reduce the impacts of incidents and planned events and decrease usage of SOVs.

D. Innovation to Government

The Commonwealth encourages all Offerors to bring innovative ideas and/or solutions to government—ideas that result in cost and operational efficiencies or improvements, while simultaneously enhancing the services that government provide its citizens.

E. DBE and SWaM Participation in Project

It is the policy of the Commonwealth to contribute to the establishment, preservation, and strengthening of small businesses and micro businesses, including those small or micro businesses owned by women, minorities, or service-disabled veterans; and to encourage their participation in Commonwealth procurement activities. The Commonwealth encourages all Suppliers to provide for the participation of these small businesses through partnerships, joint ventures, subcontracts, and other contractual opportunities.

Offerors qualified to submit sealed proposals through competitive negotiations will be subject to a Small Business Subcontracting Plan and DBE participation. Certification applications are available through the Department of Small Business and Supplier Diversity (DSBSD) online at www.sbsd.virginia.gov.

The DBE goal for this procurement is 15%.

In responding to this RFQ, Offerors shall identify their DBE and SWaM team members, the roles these members will perform on the project, and the estimated percent of total work each firm shall perform as part of their team composition. Offerors are not required to submit a Supplier Procurement and Subcontracting Plan as part of the EOI response.

F. VDOT Overview

VDOT serves the citizens of the Commonwealth and traveling public daily through its mission to plan, deliver, operate, and maintain a transportation system that is safe, moves people and goods, enhances the economy, and improves quality of life. The Commonwealth Transportation Board guides the Department’s work much like a board of directors and provides funding for roadways, airports, seaports, and rail and public transportation. The Virginia Secretary of Transportation functions as the Chair.

Virginia has the third largest state-maintained highway system in the country. VDOT maintains over 58,000 miles of roads, bridges, and tunnels, and employs over 7,700 people through a diverse workforce. VDOT has nine highway districts, divided into thirty-one residencies; the residencies are responsible for one to four counties each. VDOT also has five Transportation Operations Centers (TOCs) across the Commonwealth. These centers monitor traffic and travel conditions, dispatch

personnel to respond to incidents and events, coordinate traffic signals, manage the collection and usage of traffic data, and provide information to travelers to make informed choices about when and how they travel.

G. Overview of RM3P

The *Regional Multi-Modal Mobility Program* (RM3P) – a partnership between the Office of the Secretary of Transportation, the Virginia Department of Transportation (VDOT), the Northern Virginia Transportation Authority (NVTA), and the Virginia Department of Rail and Public Transportation (DRPT) – is an innovative technology initiative funded under the Commonwealth of Virginia’s Innovative Technology and Transportation Fund (ITTF). This initiative aims to improve safety, reliability, and mobility for travelers in Northern Virginia and Metropolitan Fredericksburg. The intent of this technology initiative is to leverage the collaborative use of real-time data by Virginia’s public and private sectors to optimize the functioning of the transportation network, as well as to provide to customers the tools to make more informed travel choices. Stakeholders across the region are expected to participate in this important advancement, known to many as the *RM3P Initiative*.

To achieve the goals of improving travel safety, reliability, and mobility, five sets of technological projects – referred to as program elements – are being implemented under the RM3P Initiative. These include the:

- Data-Exchange Platform (DEP),
- Artificial Intelligence-Based Decision Support System for Enhancing Transportation Incident Management (referred to as AI-DSS),
- Commuter Parking Information System (CPIS),
- Multi-Modal Analytical Planner (MMAP), and
- Regional Multi-Modal Mobility Enhancement via Dynamic Incentivization (referred to as DI).

As shown in Figure 1, the RM3P Region is comprised of two tiers: a *Northern Tier* that encompasses Northern Virginia, and a *Southern Tier*, that includes Metropolitan Fredericksburg (i.e., Stafford County, Spotsylvania County, and the City of Fredericksburg). The Northern Tier is the “core area” of RM3P, where all five RM3P program elements will be implemented. Expansion to the Southern Tier was made possible by award of a federal Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grant to VDOT. Specifically, the ATCMTD grant will enable the AI-DSS and CPIS components to be deployed in the Southern Tier of the region. Additionally, limited DEP capabilities necessary to support the AI-DSS and CPIS extensions will apply to the Southern Tier.

This RFQ pertains to deployment of the DI initiative. The Loyalty and Challenge program described herein is to be implemented across the entire Northern Tier. The Dynamic Incentives program will initially be limited to specific corridors and “hot spots” within the Northern Tier but will be expanded over time. The DI initiative must be scalable for easy geographic expansion as conditions and funding allow. All travelers will be eligible to participate in the program, but rewards will only be available for travel within or through the program area.

H. Responding to this RFQ

Interested Offerors must demonstrate they have the necessary qualifications, prior relevant experience, and capabilities to meet VDOT’s requirements to implement and deploy the DI, as specified in Section 4, Scope of Project, and in Appendix B.

Offerors responding to this RFQ must certify they meet all of the *Must-Have Factors* of the DI initiative (see Section 3, Subsection B). Only those submissions that meet 100-percent of the Must-Have Factors will be further evaluated.

Responses to the core elements of the RFQ are limited to twenty (20) pages (additional pages are allotted for supplemental information, such as resumes). Detailed instructions on the required

content of the EOI response, including the associated evaluation factors, may be found in Section 3.

VDOT retains the option of inviting qualified Offerors to demonstrate their products during the RFP evaluation process.

Alliances among Offerors are acceptable to meet the requirements of this procurement. However, VDOT requires a single point-of-contact for interfacing with the Offeror team.

VDOT reserves the right to adjust the requirements or scope of this solicitation. In the event that any modifications become necessary, amendments to this solicitation will be posted on the Commonwealth's procurement portal, eVA, at: <http://www.eva.virginia.gov>.

I. Protest

The Offeror may elect to appeal the VDOT's prequalification decision as provided in [§2.2-4357](#) and [§2.2-4364](#) of the Code of Virginia.

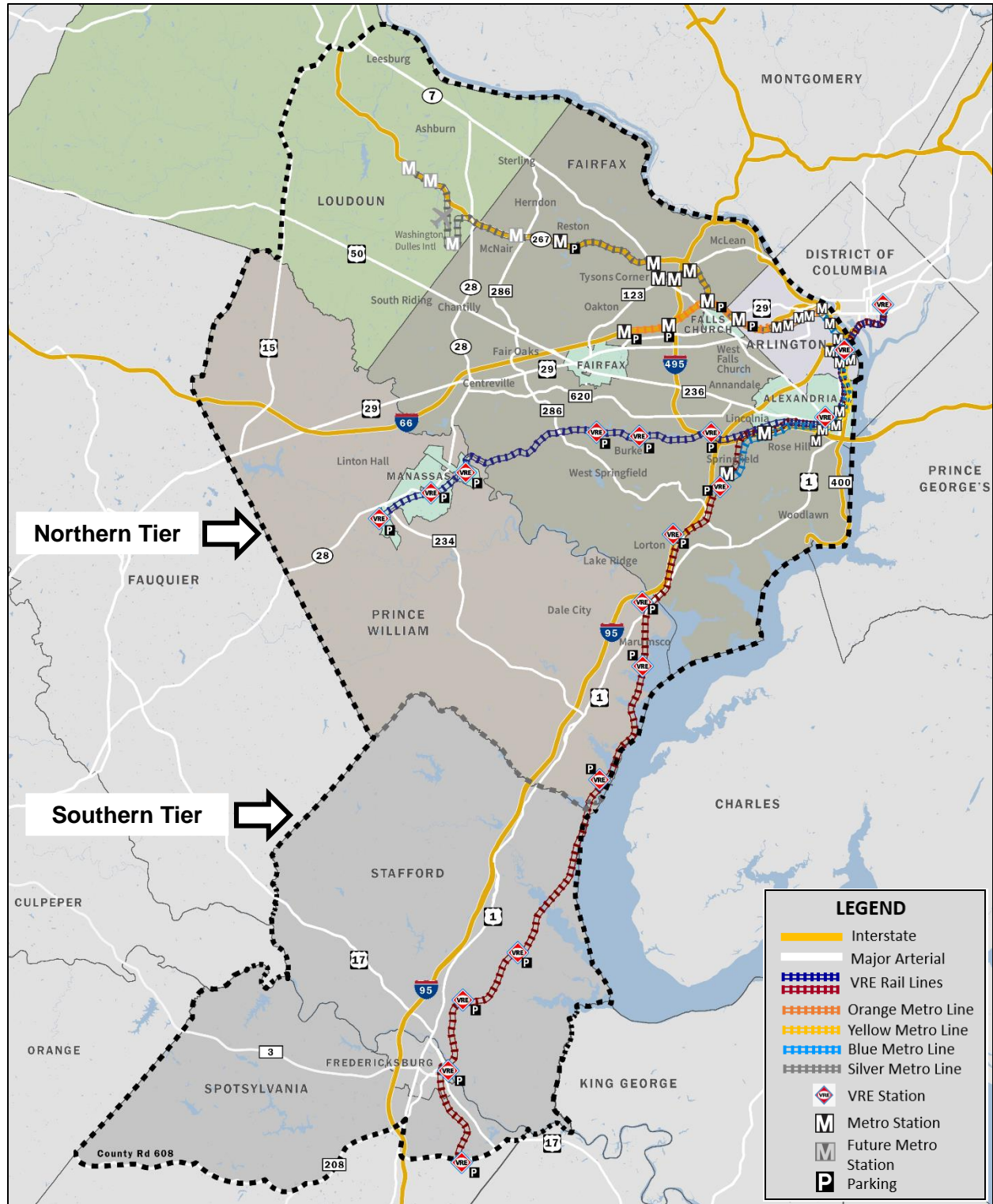


Figure 1: Boundaries of the RM3P Region

2. PROPOSAL ADMINISTRATION

A. Overview

This RFQ was developed to provide potential Offerors with the information necessary to prepare and submit an Expression of Interest (EOI). This section, together with the information in Section 3, “RFQ Response Instructions,” outlines the administrative procedures and guidelines you must use and comply with when preparing a submission. Nothing in this RFQ constitutes an offer or an intention to contract.

This RFQ consists of the following:

- The current document entitled, *Multi-Modal Mobility Enhancement via Dynamic Incentivization*. This document includes:
 - Section 1, Introduction
 - Section 2, Proposal Administration
 - Section 3, RFQ Response Instructions
 - Section 4, Scope of Project
- Appendix A – Service Level Agreements for RM3P Dynamic Incentivization
- Appendix B – System and User Requirements for RM3P Dynamic Incentivization
- Appendix C – State Corporation Commission (SCC) Form
- Appendix D – DBE/SWaM Business Subcontracting Plan **(for informational purposes only)**
- Appendix E – Enterprise Cloud Oversight Service (ECOS) and Assessment Questionnaire **(for informational purposes only)**
- Appendix F – Proprietary/Confidential Information Summary Form

Of the Appendix documents, only the SCC Form (Appendix C) and Proprietary/Confidential Information Summary Form (Appendix F) are required to be completed and submitted as part of the EOI response to the RFQ. Note that the *Proprietary/Confidential Information Summary Form* must be submitted only if there is proprietary information the Offeror proposes to delete from any public disclosure of the EOI. For additional information on the specific materials that must be submitted as part of the EOI, please see Section 3, Table 3.

B. Virginia Public Procurement Act (VPPA)

This RFQ is governed by the Virginia Public Procurement Act (“VPPA”), Code § 2.2-4300 *et seq.*, and other applicable laws.

C. Anti-Discrimination - § 2.2-4310 and § 2.2-4311, and § 2.2-4343.1(E)

By submitting its EOI, an Offeror certifies to the Commonwealth that it will conform to the provisions of the Federal Civil Rights Act of 1964, as amended as well as the Virginia Fair Employment Contracting Act of 1975, as amended; and, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the VPPA.

D. Ethics in Public Contracting - § 2.2-4367 *et seq.*

By submitting its EOI, an Offeror certifies that its submission is made without collusion or fraud; that the Offeror has not offered or received any kickbacks or inducements from any other bidder, Offeror, manufacturer, or subcontractor in connection with its submission; and that the Offeror has not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services, or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged. In addition, an Offeror will disclose any actual or perceived conflicts of interest in its submission and will notify VDOT if it becomes aware of a potential conflict of interest in the future.

E. Authorized to Transact Business in the Commonwealth - § 2.2-4311.2

The Offeror must submit the completed State Corporation Commission (SCC) Form as part of its RFQ response. All Offerors organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership, or registered as a registered limited liability partnership must be authorized to transact business as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code, or as otherwise required by law. In its RFQ response, Offeror must include either (i) Offeror's identification number issued to it by the State Corporation Commission; or (ii) a statement explaining why Offeror is not required to be registered. No award can be made to any Offeror without this information unless this requirement is waived. The Appendix C form includes a space for Offeror to provide the information required in (i) or (ii) of this subsection. If an Offeror anticipates the use of additional resources through a partnership or subcontracting relationship with other entities, the requirements of this Section 2.F will also apply to any entities that are engaged as partners or subcontractors of Offeror providing services directly to the Commonwealth upon award of a contract.

F. Prohibited Products and Services - § 2.2-5514

No Offeror may include as part of its EOI submission (or a future proposal), whether directly or indirectly through subcontractors, any hardware, software, or services that have been prohibited for use on federal systems by the U.S. Department of Homeland Security.

G. Prohibited Contributions and Gifts - § 2.2-4376.1

No Offeror that submits an EOI in response to this solicitation, and no individual who is an officer or director of the Offeror shall knowingly provide a contribution, gift, or other item with a value greater than \$50 or make an express or implied promise to make such a contribution or gift to the Governor, his political action committee, or the Secretary of Administration during the period between the submission of the proposal and the award of any resulting contract award with an expected value of \$5 million or more dollars.

H. Liability

The issuance of this RFQ and the receipt of information in response to this RFQ will not cause VDOT to incur any liability or obligation, financial or otherwise, to any Offeror. VDOT assumes no obligation to reimburse or in any way compensate an Offeror for expenses incurred in connection with its submission.

I. Nondisclosure

All information submitted by an Offeror will be treated as confidential prior to contract award and will not be disclosed except as required by law or by court order.

J. Proprietary Information

VDOT reserves the right to use information submitted in response to this document in any manner it may deem appropriate in evaluating the fitness of the solution(s) proposed. Ownership of all data, materials, and documentation originated and prepared for VDOT pursuant to the RFQ shall rest exclusively with VDOT and shall be subject to public inspection in accordance with the § 2.2-4342 of the VPPA and the Virginia Freedom of Information Act.

Trade secrets or proprietary information submitted by an Offeror in connection with a procurement transaction or prequalification application submitted pursuant to subsection B of § 2.2-4317 of the Code shall not be subject to the Virginia Freedom of Information Act (Code § 2.2- 3700 *et seq.*) if an Offeror:

- i). invokes the protections of this section in writing prior to or upon submission of the data or other materials,
- ii). identifies specifically the data or other materials to be protected, and
- iii). states the reasons why protection is necessary.

Please note that you may not designate as trade secrets or proprietary information (a) an entire bid, proposal, or prequalification application; (b) any portion of a bid, proposal, or prequalification

application that does not contain trade secrets or proprietary information; or (c) line item prices or total bid, proposal, or prequalification application prices.

FAILURE TO COMPLY WILL RESULT IN THE DATA OR OTHER MATERIALS BEING RELEASED TO OFFERORS OR THE PUBLIC AS PROVIDED FOR IN THE VIRGINIA FREEDOM OF INFORMATION ACT.

You should provide in your submission (per Appendix F) a list of all pages in the EOI that contain proprietary information and the reason you deem the information proprietary. The classification of the entire submission as proprietary or trade secret is not acceptable and will not be honored by VDOT or the Commonwealth. (See Section 3, Subsection E for additional instructions.)

K. Expression of Interest Protocol

In order to be considered for down-selection, you must submit a complete response to this RFQ no later than **4:00 PM local time on October 20, 2021**.

VDOT requires that all Offerors submit their Expressions of Interest (EOI) in eVA as detailed below. The size limit per file is 60MB; there is no limit, however, on the number of files that can be uploaded. All files need to be titled as specified in Section 3, Subsection A.

1. Submit one (1) complete original containing all information specified in this RFQ.
2. Submit one (1) complete original, with redactions, if necessary, consistent with the requirements of RFQ, Section 2, Subsection K and Section 3, Subsection E. (If redactions to the EOI are not being made, submission of this second file is unnecessary.)

The EOI must be signed by an authorized representative of the Offeror.

The EOI must be prepared and organized as indicated in Section 3, "RFQ Response Instructions." Emphasis should be placed on completeness and clarity of content. Responses must adhere to the specified page limits.

L. Single Point-of-Contact

It is the responsibility of the Offeror to inquire about and request clarification of any requirement in this RFQ that is not understood. No verbal inquiries will be accepted. Submit all inquiries concerning this RFQ in writing by email, subject: Questions on RFQ # 156899 to:

SPOC: Arden Clark
Email: arden.clark@vdot.virginia.gov

The deadline for submission of questions is **4:00 PM local time on September 23, 2021**. No questions will be answered after that date. **Offerors are to limit all contact**, whether verbal or written, pertaining to this RFQ to the designated SPOC for the duration of this RFQ/RFP process. It is not permissible for any Offeror, or any entity working on behalf of an Offeror, to solicit information from any individual or government source other than from the official SPOC listed above. Any unauthorized solicitations for information from anyone other than the SPOC may be grounds for disqualification of Offeror's EOI.

M. Procurement Website

The Commonwealth's procurement portal, <http://www.eva.virginia.gov>, provides information about Commonwealth solicitations and awards. Offerors are encouraged to check this site on a regular basis and, in particular, prior to submission of their EOI responses to identify any amendments to the RFQ that may have been issued.

N. Timetables

The table, below, summarizes key milestone dates associated with submitting an EOI in responses to this RFQ.

Table 1: Milestone Dates for RFQ #[insert number]

Milestone	Date
RFQ posted to eVA	September 14, 2021
Deadline for submitting written questions	September 23, 2021, 4:00 PM
Deadline for submitting electronic Expressions of Interest in response to this RFQ	October 20, 2021, 4:00 PM
Issuance of Pre-Qualification Determination Letters to Offerors	November 22, 2021 (Targeted Date)

O. eVA Registration Required

By the date of award, the selected Offeror(s) must be registered and able to accept orders through eVA. To register with eVA, select the "Vendor" tab at the eVA website, <http://www.eva.virginia.gov>, for registration instructions and assistance.

P. Excluded Parties List

An Offeror will not be awarded a contract if it, or any of its affiliates or subcontractors, is an excluded entity on the federal government's System for Award Management ("SAM") at <https://www.vita.virginia.gov/supply-chain/scm-policies-forms/#sam>, or the Commonwealth's Debarment List as provided by Code § 2.2-4321 at the time of award.

3. RFQ RESPONSE INSTRUCTIONS

Interested Offerors must demonstrate that they have the necessary qualifications, prior relevant experience, and capabilities to meet VDOT's requirements to implement and deploy the Dynamic Incentivization (DI) initiative, as specified in Section 4, Scope of Project, and in the Appendices.

Offerors submitting Expressions of Interest (EOI) in response to this RFQ must adhere to the specific format set forth in [Table 3](#) below. VDOT will reject any EOI submission not in the specified format, or that does not address all the content requirements of this RFQ.

It is essential that the EOI submission be thorough and concise. Avoid broad, unenforceable, or unmeasurable responses. Include all requested information in each section as indicated below. EOI responses should be written specifically to answer this RFQ.

A. File Naming and Document Limits

In order to facilitate VDOT's review of the submitted proposals, you must label the files using the following naming convention: [RFQ#].[Submission Date in format YYYYMMDD].[Name of Lead Offeror].Tab[#].

Each tab should be saved as a separate computer file and contain the information specified for that tab in Table 3. If you are not redacting any parts of your submission, you do not need to submit Tab 5.

In the event that the size of any single file size exceeds 60MB, an additional file should be created so that all files are within the size limits. If, for example, the "Response Content" (Tab 3) of your submission is greater than 60MB, break the content into two files, labeling them Tab3A and Tab3B, respectively.

Submit the EOI response as an MS Word document. Font size must be 11-pt. or larger; top, bottom, and side margins must be one-inch or larger. The page limits, noted in Subsection E, must be strictly adhered to.

The optional EOI Redaction File (identifying proprietary information), if submitted, should be in portable document format (PDF).

The EOI response must be submitted electronically through the procurement portal. Go to www.eva.virginia.gov. Navigate to this RFQ opportunity. Then select "Respond Online."

B. Must-Have Factors

Offerors responding to this RFQ must certify they meet all of the Must-Have Factors listed in Table 2:

Table 2: Must-Have Factors

No.	<i>Must-Have Factors (M)</i>
1.	(M) The Expression of Interest must be received by the due date and time. Late submissions will not be reviewed.
2.	(M) The team members have experience successfully implementing at least two transportation incentivization projects for commuters.

VDOT will review each proposal to confirm that these Must-Have Factors are met. All Must-Have Factors will be evaluated on a met-or-not-met basis. Any EOI response that does not meet all of the Must-Have Factors will be set aside and receive no further consideration.

Only those submissions that meet 100 percent of the Must-Have Factors will be further evaluated.

C. RFQ Solutions and Experience Summary

In the EOI, interested Offerors will prepare and submit the requested information describing their approach, capabilities, and qualifications to address the requirements of the DI initiative as specified in Section 4 and Appendix B.

Those responses meeting all Must-Have Factors will be reviewed and scored using the maximum point values associated with each content item below. Offerors' aggregate scores will then be rank ordered, and those Offerors with the highest rankings will be invited to prepare technical and cost proposals in response to the RFP.

EOI Responses to this RFQ are **limited to twenty (20) pages** in length. This limit is exclusive of cover letter, "Must Haves" sheet, and resumes. Resumes should be presented in Tab 4—a maximum of four (4) resumes may be included, with individual resumes each limited to two (2) pages or less.

D. Response Content and Point Values

The following content items must be included in the EOI response. The maximum number of evaluation points associated with each item are shown in parentheses:

- 1. Project Approach (25 points):** Provide a high-level description of your planned approach, methodology, and phasing to develop/deploy the DI initiative. Identify pertinent Offeror products you will utilize and discuss your plans for implementing a Software-as-a-Service (SaaS) solution. The goal of this content item is to evaluate the Offeror's capabilities to develop, deploy, and operate a state-of-the-art incentives program for commuters.
- 2. Team Composition (10 points):** Identify the organizations comprising the Offeror team, highlighting roles and qualifications for each. Identify the planned organizational structure (prime/subcontractors, joint venture, etc.). Identify team members certified as Small, Women-Owned, and Minority-Owned (SWAM) businesses and Disadvantaged Business Enterprises (DBEs); specify the estimated percent of total work to be performed by these firms.
- 3. Pertinent Experience (20 points):** Describe your team's experience performing comparable projects. To the extent applicable, please be precise about experience in the following areas: (a) implementing and administering comparable transportation incentives/loyalty programs, (b) developing and operating comparable back-office services, (c) developing and administering comparable mobile apps, (d) organizing and managing comparable consumer engagement activities, and (e) achieving financial sustainability of incentives/loyalty programs. When citing "example" projects that the Offeror team has performed, identify specific and quantifiable outcomes and current program status.
- 4. Staffing (10 points):** Furnish resumes for a maximum of four (4) key personnel to be assigned to the project. For each staff, identify at a minimum: (a) name, (b) firm, (c) position within firm, (d) proposed role on project, (d) relevant project experience, and (e) percent time that the staff will be available to work on this project beginning in the first quarter of 2022. Resumes are limited to a maximum of two (2) pages each.
- 5. Agile Project Management (10 points):** Summarize your methodology, process, qualifications, and experience managing systems and software development projects using an Agile-based process. Identify your approach to using Agile in a Software-as-a-Service (SaaS) project. What is your expectation regarding VDOT's involvement and partnership in the Agile process?
- 6. Quality Assurance (5 points):** Describe your methodology and practices for verification and validation testing. Identify the phases of testing you propose to perform in this project and how you will build QA/QC into the Agile process.
- 7. Approach to Financial Sustainability (10 points):** Public money to fund incentives will not be available indefinitely. Describe your team's strategy for making the program financially self-sustaining over time.
- 8. Innovation (10 points):** Identify and describe specialized innovations that the team will bring to the project. These may include technological innovations that may not otherwise be available to VDOT,

etc. Explain how these innovations will contribute to the success and sustainability of the project. The goal of this content item is to evaluate the Offeror's skills related to innovation planning.

E. Offeror's Submission Format

Responses should include all elements and information identified above and be organized as specified below.

The EOI submission should be organized by "Tab" number in a single electronic file, as indicated in Table 3.

Table 3: EOI File Organization and Content

Tab No.	Section Title	Content Summary
Tab 1	Transmittal (Max. 1 page)	<ul style="list-style-type: none"> • A signed letter, including identification of the name, title, affiliation, phone, and email of the Offeror's point-of-contact for this effort. • Acknowledge any Addendums to the RFQ. • Include a copy of the completed eVA registration confirmation.
Tab 2	Forms and Documents (Max. 2 pages)	<ul style="list-style-type: none"> • Respond to the "Must-Have Factors" in Subsection B. List all factors, certifying for each whether the Offeror Team satisfies the factor. • Include SCC Form (Appendix C).
Tab 3	Response Content (Max. 20 pages)	<ul style="list-style-type: none"> • Project approach. • Team composition and commitment to DBE goal. • Pertinent experience. • Agile project management. • Quality assurance. • Financial sustainability. • Innovation.
Tab 4	Resumes (Max. 8 pages)	<ul style="list-style-type: none"> • Include a maximum of 4 resumes. • Individual resumes may not exceed 2 pages each.
Tab 5	EOI Redaction File (Optional)	<ul style="list-style-type: none"> • Include this file only if there is proprietary information you propose to delete from any public disclosures of your EOI. The file should be in PDF format. • Mark those sections deemed "proprietary." • Complete the Appendix F form.

If any material in your EOI is proprietary, you should include Tab 5 in your EOI. Please review the guidance in Section 2, Subsection K on proprietary information. Create a new file, duplicating the entire content of the EOI (Tabs 1-4) and follow the instructions for Tab 5 in Table 3.

By responding to this RFQ, the Offeror certifies that all information provided in the submission is true and accurate.

4. SCOPE OF PROJECT

This scope of work is a general guide and is not intended to be a complete list of all the work necessary to complete the project. This scope is provided for informational purposes only, to assist Offeror’s in developing their EOI submissions. Therefore, no specific response is required for this section, beyond the content called for in Section 3, above.

Northern Virginia and other parts of the state have several successful Transportation Demand Management (TDM) programs already in operation. These programs include manually managed programs (see Figure 2) as well as the following app-based solutions:

- incenTrip – managed by Metro Washington Council of Governments (MWCOCG) and active in NoVA
- AgileMile – managed by DRPT and active in other parts of Virginia under the Commute!VA brand



Figure 2: NoVA Existing TDM Portfolio

The goal of the DI solution is to work with regional stakeholders to enhance and complement these programs and, where appropriate, share infrastructure and technology. For automated systems DI will support technical integration, and for manual systems DI will encourage local TDM program managers to provide input into the business rules guiding incentive offers. There are many active TDM programs in the region including those shown in Table 4.

Table 4: Existing TDM Programs

Commuter Assistance Program Name	Operating Agency/Agencies	Service Area
Arlington County Commuter Services (ACCS)	Arlington County Department of Environmental Services	Arlington County
Fairfax County Commuter Services	Fairfax County Department of Transportation	Arlington and Fairfax County
GO Alex	Alexandria Department of Transportation and Environmental Services	City of Alexandria

Commuter Assistance Program Name	Operating Agency/Agencies	Service Area
LiveMore	Dulles Area Transportation Association	City of Manassas and Manassas Park, Parts of the counties of Fairfax, Loudoun and Prince William around the Dulles International Airport
Loudoun County Commuter Services	Loudoun County Department of Transportation and Capital Infrastructure	Loudoun County
OmniRide Rideshare	Potomac and Rappahannock Transportation Commission	Prince William County; Cities of Manassas and Manassas Park
Tysons TMA	Tysons Partnership, Inc.	Tysons area

This scope pertains to deployment of the DI back-end system and customer-facing app. The DI solution will offer incentives to the public for changing mode, route, or departure time in ways that lessen the overall impact of congestion and incidents. The core of this project is to offer dynamic incentives in response to transportation network conditions and two complementary components – loyalty program and challenges. The dynamic incentives will induce behavior changes, and the loyalty program will reinforce behavior changes. Challenges will provide opportunities to induce behavior changes by setting specific goals that a user would have to meet.

Financial sustainability is an important aspect of this element. Program sponsors cannot provide financial backing for incentives indefinitely, and must find ways to reduce or eliminate the long-term need for using public dollars to fund incentives and rewards. This could include agency partners contributing in-kind incentives such as discounted parking or transit passes, cultivating new relationships with private-sector vendors who can provide incentives in exchange for the exposure it offers them and their partners, or any other creative solution the Offeror can offer to reduce or eliminate the need for public funding of incentives. In addition, the program must establish and grow a significant adoption rate among travelers. This will require ongoing marketing efforts and focus groups to identify ways to tailor the program to provide real value to commuters.

Dynamic Incentivization

Dynamic incentives will be offered in real-time based on the current transportation conditions as a part of an incident and congestion management operation strategy. For example, if there were a major crash on I-95, commuters who regularly drive that route might be offered an incentive to delay their departure or take transit instead of an SOV. The goal of DI is to incentivize and reward a relatively small number of commuters who have the willingness and flexibility to safely change their travel patterns in a way that improves the efficiency of the transportation network as a whole and benefit all travelers.

DI will offer incentives to the public using one or more mobile apps, with a strong focus on those who drive alone. The system architecture will be structured to allow multiple app providers to access the incentive solution, and the goal is that over time multiple app providers will join in the system, giving consumers a choice in how they access DI rewards.

Incentive Loyalty

The loyalty program will function much like a loyalty program for hotels or airlines, but will encourage use of active or shared modes. Within the loyalty program, travelers will be able to gain status and progress toward long-term rewards for consistent use of non-SOV travel. The user interface will use gamification principles to keep users engaged. The dynamic incentives will induce behavior changes, and the loyalty program will reinforce behavior changes.

Challenges

The challenge program will offer incentives for highly targeted short-term behavior changes. An offer might be valid for a week or a month and be based on very specific behavior such as taking a particular Metro line five times in a week. The goal may be to respond to an ongoing event (such as construction or

promotion of Virginia's Try Transit Week) or to encourage behavior change for those users who need a stronger or more targeted nudge. Planning for challenges will be closely coordinated with program managers for existing TDM programs.

The three programs (dynamic, loyalty, and challenge) will all work together to consistently change traveler behavior to adopt more desirable travel choices. The incentives are part of a TDM strategy and should be designed to encourage and sustain non-SOV choices.

Ecosystem

VDOT is leading the development of an Artificial Intelligence-Based Decision Support System (AI-DSS), which will act as the trigger for offering dynamic incentives. The AI-DSS will generate a complete response to an incident and one part of that may send a trigger to the DI back-end to generate and issue a dynamic incentive. DI will also be connected with the regional Data-Exchange Platform (DEP); the DEP will store aggregated numbers for responses to dynamic incentive offers so that planners and the system can accurately estimate how many travelers will respond to dynamic offers.

Multiple agencies operating within the region, shown in Figure 2, currently provide incentives through their manually operated TDM programs. DI will provide those agencies opportunities to define business rules within the DI back-end, which promote their demand management goals, consistent with regional goals.

The Loyalty and Challenge program described herein is to be active across the entire Northern Tier (Figure 1). The Dynamic Incentives program will initially be limited to specific corridors and "hot spots" within the Northern Tier but will expand over time. The DI initiative must be scalable for easy geographic expansion as conditions and funding merit.

The DI solution is designed to work with multiple apps, so that a user may access the system from more than one app. However, a given user will have a single account in the back-end, and any app(s) participating in the DI ecosystem will connect to the same back-end account. No matter how many apps someone uses, progress towards incentive goals will accrue in a single place in the back-end, so that users do not receive double credit if a single trip is reported by multiple apps, or receive multiple incentives for the same trip.

The Offeror is required to provide an app as part of the primary solution. The Offeror is encouraged to make use of an existing app as the primary solution app. There are branding requirements described below in the project scope and in the system requirements, but it is ideal if those requirements can be satisfied by branding a white label app or otherwise customizing an existing app.

Some third-party app owners may choose to participate in the DI ecosystem. Access for additional apps will be allowed only with approval from the VDOT oversight committee. All apps (including the primary solution app which Offeror will provide) must use a common, well-defined application programming interface (API) to interact with the rest of the solution. The Offeror will work with 3rd party app developers (provide documentation, assist with access, answer questions, etc.), including the aforementioned app-based incentive systems already active in the region, to assist integration with the system as described in Task 8 of the scope. The Offeror is not responsible for necessary changes to the third-party app(s).

Methodology

Innovation is one of the primary principles of the DI solution, and VDOT will provide an environment where Offerors have the flexibility to pursue innovative approaches to problems. However, VDOT is committed to delivering certain functionality on a fixed budget within a tight timeframe. To meet both of these objectives, VDOT's expected approach is an Agile/Waterfall Hybrid methodology. The approach is intended to establish fixed boundaries within which the project will operate but allow maximum flexibility within those boundaries. Figure 3 shows the overall process.

Steps already completed by VDOT and other stakeholders

The concept for the DI solution has already been developed and is described within the Appendix B to this document. Similarly, the high-level requirements have been prepared and are included as Appendix B. However, the requirements are not as detailed as those necessary for a traditional waterfall approach since there is no expectation for a full waterfall.

The goal of these requirements is to give Offerors a clear statement of minimal functionality for the solution so they can consider resources and capabilities necessary to deliver within the budget and schedule constraints.

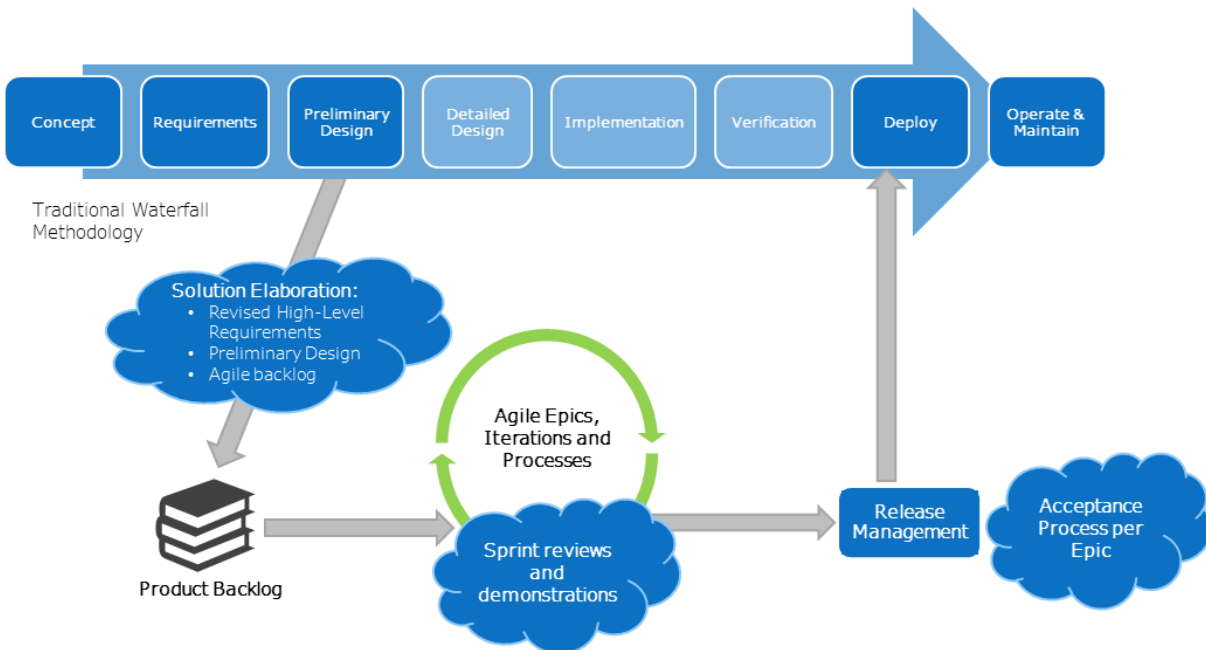


Figure 3: Agile/Waterfall Hybrid Process

Solution Elaboration

One of the first phases of the project under this procurement will be solution elaboration. This phase will be carried out jointly by the Offeror and VDOT and will serve as the transition from the Waterfall method to the Agile method. There are two key deliverables within this phase:

- Revised high-level requirements: The requirements will be updated to provide additional detail and to take advantage of features available from Offeror commercial-off-the-shelf (COTS) products or special capabilities. The goal of this document is to provide mutual assurance to both VDOT and the Offeror that the solution can be delivered on time and within budget. It will also serve as the foundation of the Requirements Traceability Matrix which will be used to verify deliverables.
- Preliminary design: This document will describe the following aspects of the system:
 - High-level logical architectures – Identify the major components of the system and how they interact (including components in other RM3P program elements).
 - Data flows for major use cases – Identify what types of data flow to which components through the workings of the system. This will not include detailed data formats but should identify the nature of all data exchanges.
 - Plans or mockups of user experience for major workflows – This will give VDOT a clear picture of the user experience, but it will not include details such as look and feel.

The goal of this document is to mitigate risks which might endanger delivery:

- The schedule does not have enough time to cope with re-architecting or major re-factoring. Architectural issues must be thoroughly examined and resolved early.
- Changes to data flows or locations of data residence (particularly regarding personally identifiable data) may force a reevaluation of the project data management processes per VDOT policy.
- Having a clear picture of the user experience will establish boundaries for all stakeholders and reduce scope creep caused by stakeholders wanting to add pet features.

The Offeror is responsible for these deliverables, but VDOT will work closely with the Offeror and stakeholders to provide input and review and approve them. A critical goal of the solution elaboration phase is to clearly communicate and document which requirements and features must be delivered within the given schedule and budget. Additional requirements and features may be described as well, but both the revised requirements and the preliminary design document should clearly distinguish between the 'must haves' and the recommended.

Development

The Offeror will use the deliverables from the solution elaboration phase to develop the initial product backlog. VDOT expects that the Offeror will use industry best practices for Agile development and the expected framework is Scrum. VDOT expects that the Offeror will provide the following:

- Visibility into the product backlog and its current state.
- Access to the current sprint schedule, including epics and (if determined) user stories for each sprint.
- Regular VDOT participation in sprint reviews.
- Any modifications to the requirements arising from the agile process must be documented through a process agreed to by VDOT and the Offeror.

Release Management

VDOT expects that, per the Agile methodology, there will be multiple releases of the system as new functionality is added. Any release that will be deployed to production will have to go through a release management process. VDOT expects a production release for each epic. For these releases the Offeror will provide:

- Acceptance test plan.
- Acceptance test scripts.
- Requirements Traceability Matrix.
- Outcomes of tests performed by Offeror and VDOT.

The acceptance process must cover all new functionality for each production release. VDOT would like to minimize the amount of retesting of existing features but must also guard against regressions. VDOT will work with the Offeror to determine the best and most efficient process for verification and regression testing.

Agile Principles

VDOT fully embraces the principles motivating the agile approach and places particular priority on the following:

- Flexibility to Change: Innovation cannot be perfectly planned in advance. The DI solution will break new ground, and VDOT and the Offeror need to be prepared to learn and adapt along the way.
- Communication: Candid and effective communication between the Offeror and all stakeholders is a foundational element for a successful project.
- Performing Software: While the DI solution will be innovative, it is not a research project or a pilot. It is critical that the software is reliable and performant.
- Attention to Detail: This is a public facing solution and will be part of an ecosystem which includes many excellent mobile applications. It is essential that the solution meets the needs and desires of the traveling public and maintains user engagement.
- Being Lean: VDOT will work with the Offeror to identify which requirements and features are absolutely essential and ensure that the solution fulfills them.
- Continuous Improvement: The consumer environment and expectations are constantly changing. To remain relevant and effective the solution must continuously improve.

Scope

The Offeror shall implement a Dynamic Incentivization solution that satisfies the functions and requirements detailed in Appendix B. The Offeror is encouraged to leverage existing apps and business relationships with reward offerors to meet the DI requirements. If the Offeror intends to use an existing app, then it is preferable that the submission includes screenshots and a detailed description of the functions of the app.

If the Offeror has existing business relationships with reward offerors, these shall be listed and explained in the submission.

Obligations of the Parties

General Obligations of the Offeror

The Offeror shall, at a minimum, be responsible to:

- A. Manage and coordinate DI-related topics and activities.
- B. Develop DI product brand, logo, marketing materials and messaging
- C. Work with the project management team and DI oversight staff to ensure activities are aligned with program goals.
- D. Perform marketing and outreach functions to promote public adoption and use of the system.
- E. Develop relationships and agreements with retail vendors and transportation providers to establish sources of travel incentive rewards.
- F. Integrate with the AI-DSS system for dynamic triggers or provide alternate method of dynamic triggering based on the current transportation conditions, consistent with VDOT goals.
- G. Develop and deliver shared back-end incentive services capable of integrating with multiple mobile apps.
- H. Develop and deliver the primary mobile app for both Android and iOS which is integrated with the back-end services and provides all required public-facing features.
- I. Integrate back-end services with third-party incentive app(s).
- J. Work with other technical teams on integration tasks including, but not limited to: MWCOG technical resources, DSS vendor, DEP vendor, and third-party app providers.
- K. Develop and deliver live and on-demand training and training materials for VDOT-designated personnel on operating and managing the shared service back-end.
- L. Test functional capabilities of the system in accordance with the approved test plan.
- M. Maintain and support the system as required under the agreement.
- N. Provide standard warranty services for the duration of the agreement.
- O. Perform additional activities necessary to ensure successful DI implementation, operation, and adoption.
- P. Provide reports on end-user (i.e., travelers) progress towards loyalty program goals. Deliver reports to end users; deliver reports and data to the VDOT evaluation team.
- Q. The proposed approach shall comply with the Commonwealth Enterprise Architecture (EA) policies (EA 200) and standards (EA 225) as published by VITA at <https://www.vita.virginia.gov/policy--governance/itrm-policies-standards/>
- R. The Offeror shall review and comply with all relevant Commonwealth Adopted Data Standards. A complete list of all adopted data standards. https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/psqs/pdf/COV_Adopted_Standards.xlsx
- S. Identify additional transportation data sets necessary for DI that are not initially made available from the Data-Exchange Platform (DEP), and work with the VDOT project manager to prioritize adding the new data sets to DEP.
- T. Submit required documents to the Virginia Information Technology Agency (VITA) in a timely manner for obtaining the Enterprise Cloud Oversight Service (ECOS) approval as a condition for contract award. This process will need to occur if VITA deems ECOS approval necessary.
- U. Maintain an on-line collaboration site for the storage and maintenance of DI project documents.
- V. Provide all necessary data to VDOT's independent evaluator and auditor.

General Obligations of VDOT

VDOT shall, at a minimum, be responsible to:

- A. Facilitate partnering with transit providers and other regional and local agencies.
- B. Establish a DI oversight committee to coordinate and facilitate interactions with other entities. Other agencies, such as DRPT and NVTA, will provide input through the oversight period.
- C. Coordinate and facilitate interactions with the AI-DSS development team, as necessary.
- D. Coordinate and facilitate interactions with the DEP development team.
- E. Approve third-party app for inclusion in the solution. Coordinate and facilitate interactions with the third-party app development team.
- F. Provide oversight for DI program management.

- G. Provide input on priorities and participate in requirements reviews, including Agile sprint requirements sessions and Agile sprint completion demonstrations, integration, and acceptance testing and implementation, training, and status meetings.
- H. Review, comment on, and approve deliverables and documentation delivered by the Offeror in a timely fashion.
- I. Provide independent verification and validation (IV&V) support to system testing.
- J. Conduct independent evaluation.
- K. Facilitate communications and coordination with the VITA, when applicable.

Project Tasks and Deliverables

Overview of Tasks

- Task 1: Project Management – Coordinate the project as a whole to ensure that all goals and deadlines are met within project constraints.
- Task 2: Marketing and Consumer Engagement Management – Develop, implement, and manage public outreach and ensure that the technical approach is aligned with consumer demand.
- Task 3: Solution Elaboration – Collaborative task between VDOT and the Offeror to refine requirements and establish a framework for solution design.
- Task 4: Implement Shared Services Loyalty and Challenge Programs – Develop and deploy back-end services to support loyalty and challenge programs.
- Task 5: Implement Primary Mobile App for Loyalty and Challenge Programs – Develop and rollout primary mobile app supporting loyalty and challenge programs.
- Task 6: Implement Shared Services Dynamic Incentives – Develop and deploy back-end services to support dynamic incentives.
- Task 7: Implement Primary Mobile App for Dynamic Incentives – Develop and rollout primary mobile app supporting dynamic incentives.
- Task 8: Support Integration for Third-Party Mobile Apps – Provide support (documentation, answer questions, etc.) to third-party developers integrating additional apps.
- Task 9: Warranty Service, Solution Revision and Operations – Adjust configuration to align with consumer demand and feedback.

This project includes multiple tasks associated with different components of the solution which will be developed in parallel. The Offeror will be responsible for managing all necessary communications between tasks to ensure that development is smooth and efficient. Figure 4 shows the relationships of tasks to system components.

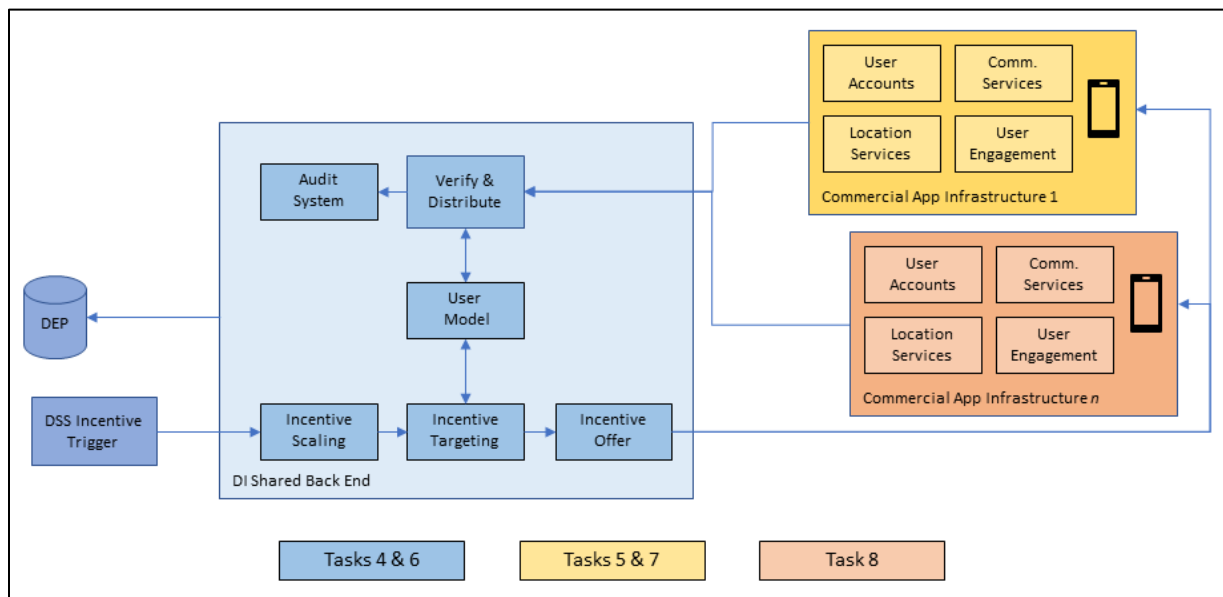


Figure 4: Relationship of Tasks to Components

Anticipated Schedule of Tasks**Table 5: Task Schedule**

Task Name	Start	Finish
Task 1: Project Management	NTP	NTP + 30 months
Task 2: Consumer Engagement Management	NTP	NTP + 30 months
Task 3: Solution Elaboration	NTP + 1 month	NTP + 4 months
Task 4: Shared Services Loyalty	NTP + 2 months	NTP + 7 months
Task 5: Mobile App Loyalty	NTP + 2 months	NTP + 7 months
Task 6: Shared Service DI	NTP + 6 months	NTP + 16 months
Task 7: Mobile App DI	NTP + 7 months	NTP + 16 months
Task 8: Integration Support	As needed	
Task 9: Warranty Support, Revisions and Operations	NTP + 7 months	NTP + 30 months

Task 1: Project Management

At a minimum, Offeror's project manager will be responsible for:

- Organizing a project team and managing key team members and their specialties.
- Providing periodic updates (no more than 3 months) to the work plan and schedules. Changes to the work plan and schedules that exceed 10 percent of the baseline require approval by the VDOT Change Management Board through a change management process.
- Submitting monthly project status reports detailing the following:
 - A brief overall project status
 - Action item updates from the previous meetings
 - Technical activities and accomplishments during the preceding month
 - Accomplishment vs. schedule
 - Technical problems or other issues
 - Schedule status
 - Critical path issues
 - Spending to date, spending vs. percent complete
 - Plans for the coming month
 - Risk management status
 - Offeror report and supporting data on compliance with service level agreements (SLA). See Appendix A.

Administrative Reports

VDOT requires the deliverables indicated below from the Offeror in order to monitor progress and ensure compliance.

- Project Management Plan
- Software Development Plan
- Change Management Plan

Project Management Plan

The Offeror shall develop a Project Management Plan which, at a minimum, includes the following sections:

- a) *Risk Management Plan* – The Offeror shall develop a risk management plan that identifies initial project risks and possible ways to mitigate those risks. The OFFEROR shall report on the status of each identified risk in the monthly progress report until that risk is fully mitigated. Risks shall be classified as: 1) cost, 2) schedule, and/or 3) scope. Even though the contract is limited to a maximum budget; task budget, scope, and schedule may be adjusted through an amendment process, it is critical that the Offeror keep VDOT informed of any potential impacts to cost allocations and what steps the Offeror is taking to mitigate the cost impact. It is in VDOT's best interest for the Offeror to meet their cost and schedule commitments, and VDOT will actively support the Offeror in achieving those commitments. When new risks are identified, revisions to

the risk management plan section shall be issued. The Offeror shall, at a minimum, address the following potential risk areas:

- Development of new software modules
 - User adoption
 - Platforms for integration and testing
 - Stability of cloud hosting Offerors
 - System security
- b) *Staffing Plan* – The Offeror will identify the key individuals to be involved in the project during negotiations and indicate in the staffing plan the number of personnel assigned to each element of the Tasks. A key individual is defined as a person who is a task leader or individual contributor with specialized knowledge applicable to the project. Any changes to key personnel on the project will require notification and approval by VDOT. Offeror shall maintain a personnel transition plan for key roles and staff with plans for replacement of personnel over the life of the project. Offeror shall ensure staff availability to meet the scope, schedule and budget of their proposed solution.
- c) *Detailed Schedule* – The Offeror shall develop a detailed schedule in Microsoft Project based on the WBS and work plan. This will be described in and referenced by the Detailed Schedule Section. The Project Schedule will be delivered as a separate deliverable.
- d) *Requirements Traceability Verification Matrix* – The Offeror shall develop a Requirements Traceability Verification Matrix to map the functional requirements to their service offering.
- e) *Document Management Plan* – The Offeror shall develop a plan describing a standard process for document review and approval by VDOT and document archiving.

Project Risk Register

The Risk Management Plan section in the Project Management Plan describes how risks are managed; the project risk register contains identified risks and is updated throughout the project. The Project Risk Register will be maintained online with a tool, such as a SharePoint, so the project team and the management team can work with this register collaboratively.

Project Schedule

The Offeror shall develop and maintain a detailed schedule in Microsoft Project based on the WBS and work plan that, at a minimum, identifies:

1. Milestones – including those tied to payments
2. Earliest start dates for a tasks
3. Latest start dates for tasks
4. Earliest finish dates for task
5. Latest finish dates for tasks
6. Schedule float time in days
7. Duration of tasks in days, where the minimum increment is one day
8. Task names and task numbers
9. Resource loading
10. Critical path information

VDOT anticipates that there will be some changes to the schedule as the project progresses. The initial schedule should cover the first six months of the project in detail and the remainder of the project in broader strokes. The schedule shall be updated quarterly to account for any changes to the baseline and to add detail as later milestones approach.

Software Development Plan

The Offeror shall develop a Software Development Plan (SDP) to describe the technical management of their proposed services, which includes the following:

- Organization of the development team, along with their physical location and facilities needs
- Technical environments for a project and how they will be managed. It should also discuss the interaction with the pre-production and production environments.

- Description of the evaluation and decision-making process to be used when resolving technical questions
- Agile Development Methodology:
 - i. User Story Development: Describe the process for developing user stories from use cases.
 - ii. Configuration Management: Include a description of how project configuration items (e.g. software versions, COTS components, configuration options, etc.) will be managed.
 - iii. Requirements Verification and Validation: Include a description of how the Use Cases will be clarified and expanded, requirements validated, and updated requirements reviewed and approved by the project office.
 - iv. The Architecture and Design Process (both logical and physical design), including how issues will be discussed and resolved.
 - v. The software development methodology to be used that reflects the requirements (for iterative builds and incremental releases).
 - vi. The hardware development and configuration methodology to be used that reflects the requirements (for iterative builds and incremental releases).
 - vii. The build management process used to create and manage builds.
 - viii. The testing process to be used that encompasses the requirements.
- Description of how external interfaces will be developed and managed.
- Description of how data conversion development will be performed and managed.
- Implementation Planning to include a description of how you will manage the deployment of system functionality, the training required for both end-users and technical staff, the coordination/communication needed to prepare the target environments.
- Production Support strategy
 - i. Description of how the production environment will be maintained to ensure system reliability.
 - ii. Description of how production support will be done concurrently with development, given the incremental release requirements for the project.
 - iii. Description of how end users will be supported as system functionality is being built out and deployed.

Monthly Progress Reports

The Offeror shall prepare a progress report each month to be provided to VDOT by the fifth day of the next month. The progress report shall include the following items at a minimum:

- 1 Work completed
- 2 Work planned
- 3 Budget expended vs. plan (Earned Value)
- 4 Risks and issues
- 5 Schedule deviations

The progress report may be incorporated into the monthly project update report (see above).

Administrative Meetings

The Offeror shall organize and host the following administrative meetings. In-person or virtual meetings will be held for:

- Kickoff Meeting
 - The kickoff meeting shall occur within 30 days of Notice-to-Proceed (NTP) for the project
- Monthly Status Meetings
 - The Offeror shall provide monthly status to VDOT via virtual or in-person meeting/teleconference

- Weekly Standup Meetings to address technical matters as input to the Scrum Masters and Product Owners. During the week that monthly status meeting is scheduled, two meetings can be combined.
- Project Closeout and Post-Mortem Meeting
 - Near the end of the project, Offeror shall provide a project closeout and post-mortem meeting to provide lessons learned from each phase of the project

Meeting agenda shall be provided 3 business days prior to all meetings.

Meeting supporting materials shall be provided 1 business day prior to all meetings.

Meeting minutes shall be provided within 3 business days after all meetings.

Document Deliverables

Document deliverables are an important tool to contain work plans, products, and important decisions made between VDOT and the Offeror and shall conform to the following process for consistent, timely development.

Document Deliverable Planning:

1. The Offeror and VDOT agree on deadlines for the document deliverable submittal activities (described below) that fit within the project schedule.
2. Offeror submits the completed document according to the submittal procedure below.
3. The Offeror shall provide a finalized document after all comments have been completed by the deliverable final due date. A final document shall have the DRAFT watermark removed and the version number of the document incremented to the next whole number.
4. VDOT shall mark the document as final in the document library and email the Offeror that the final document has been accepted.

Document Deliverable Submittal and Review Procedure:

1. Offeror submits draft deliverable to VDOT by the draft deliverable due date in an editable Microsoft format, preferably via a platform supporting collaborative editing.
2. VDOT reviews the deliverable and provides comments to the Offeror by the deliverable review due date. Comments will be provided as comment balloons and tracked changes if using Microsoft Word; else, Offeror will provide a comments table that will track each comment's text, reference location within the deliverable, and a place for the Offeror's response, and a status of the comment.
3. Offeror addresses comments by modifying the submittal and answering questions by the revision due date. Changes to the deliverable shall be tracked using the tracked changes feature of Microsoft Word if the deliverable is in that format, else, a list of changes made to the deliverable shall be provided with the comments' responses.
4. VDOT reviews the Offeror's comment responses and deliverable changes by the revision review due date. All comments shall be marked as completed using the "Mark as Completed" function of the comment balloon if using Microsoft Word, else by indicating in a comments table.
5. Steps 3 and 4 will repeat until VDOT marks all comments as completed.

Change Management Plan

The Offeror shall prepare and deliver a *Change Management Plan (CMP)* that defines the criteria which trigger the change management process, and how changes will be requested, reviewed, approved, and scheduled. The draft CMP shall be submitted to VDOT within 30 calendar days of NTP. The final CMP will be due within 10 calendar days of receipt of VDOT's comments on the draft document.

Task 1 Deliverables

1. Draft, Baseline, and Updated PMPs
2. Baseline Project Schedule and Updates (when reaching milestones, otherwise quarterly)
3. Risk Register
4. Draft and Final CMP

5. Draft and Final SDP
6. Meeting Agendas, supporting materials, and Post-Meeting Action Summaries
7. Monthly Status Reports with Invoices (when milestones have been reached)

Task 2: Marketing and Consumer Engagement Management

The goal of this task is to ensure that the incentivization program achieves widespread user adoption and is financially sustainable in the long-term. This task will run for the duration of the contract and its activities will be coordinated closely with the other tasks (especially those related to mobile app rollout and update).

The Offeror will work under the oversight and guidance of the VDOT project manager in coordinating with the oversight committee. Together they are responsible for building the program and ensuring that the technical task work is aligned with RM3P and regional TDM program goals.

Marketing

A successful DI program relies on sufficient numbers of commuters embracing the solution and ultimately becoming regular users. Marketing plays a significant role in creating program awareness, driving app downloads, usage and changing commuter behavior. The Offeror will be responsible for marketing the solution to maximize public adoption and use of the system. The Offeror will develop and implement a marketing plan, which will include:

- Market assessment including goals for mobile app downloads and public usage statistics.
- Branding materials including the program brand name, logos, images, and slogans to promote the system while incorporating RM3P branding.
- Promotional campaign plans including, but not limited to, advertising, social media promotions, publicity and public relations.
- Budget and schedule for all marketing activities.

The marketing effort will develop key messages for the system and all campaigns will be coordinated with the oversight committee so that VDOT and partner agencies can also broadcast those messages.

The Offeror will provide all branding materials using common, high-resolution graphics formats so that VDOT and its partners can easily reuse the materials as deemed necessary. All branding materials must be approved by VDOT. All branding materials become VDOT property regardless of the status of the Offeror contract.

The marketing plan and process will be closely associated with the solution rollout process (Tasks 5 & 7) to ensure marketing efforts have the maximum impact on solution rollout.

Consumer Focus

To be successful, the program must appeal to consumer needs and desires. The Offeror is responsible for conducting focus groups, surveys, social listening (analysis of social media) and additional market research to determine what approach and features will maximize user adoption and engagement. Offeror responsibilities include:

- Recruiting participants for focus groups.
- Hosting focus groups.
- Gathering feedback at focus groups.
- Analyzing focus group results.
- Designing and distributing surveys.
- Analyzing survey results.
- Research and analyze other incentive programs in the region
- Creating a social listening strategy.
- Analyzing social listening results
- Sharing results and analysis with VDOT.
- Synthesize consumer feedback from all channels and provide input to incentive strategy and business rules.

The structure for the loyalty program and approach to dynamic incentives and challenges must be driven by consumer desire and project goals, rather than technical capabilities. This task is responsible for developing the structure of three core public-facing features including:

- Loyalty program structure and reward schedule.
- Challenge program conditions, rewards, and schedule.
- Guidelines for dynamic incentive triggers and reward levels.

These elements should work together to change traveler behavior in the short-term and long-term, reduce the impacts of incidents and planned events in the short-term, and reduce SOV usage in the long-term.

Financial Sustainability and Progress

To be viable in the long-term the program must develop partnerships capable of providing incentives for the solution. Sources of incentive reward providers could include:

- Retail vendors and other vendors offering goods and services in exchange for exposure and customer engagement.
- Transportation agencies offering services to promote usage furthering their mission.
- Other entities (e.g., flexible shared workspace owner, libraries) offering infrastructure to support non-driving travel choices.
- Private transportation service providers.

All partnering agreements are subject to VDOT approval, but the Offeror is primarily responsible for:

- Identifying potential providers.
- Dialogue and relationship building with providers.
- Developing and executing partnering agreements.

The VDOT Project Manager will be available to facilitate engagement with potential agency partners.

The Offeror will provide VDOT with current information and statistics on the state and progress of the program. This can be in the form of monthly summary reports or (preferably) a web-based dashboard with query capabilities. The progress information will include:

- App download numbers.
- App usage statistics.
- API usage statistics broken down by app (assuming multiple apps are active).
- Loyalty program rewards awarded.
- Challenge program rewards awarded.
- Dynamic incentives awarded.
- Breakdown of rewards awarded by source (retail vendors, transit providers, etc.)

Engagement with Local TDM Managers

Local TDM managers will have an opportunity to provide input and recommendations to the business rules and structures for incentives so that they advance both local and regional goals. The VDOT TDM coordinator will lead this process and make final decisions on incentive strategies and business rules. The Offeror will be involved to advise how TDM Managers input can effectively translated into the solution, and provide details of an associated costs impacts.

VDOT will periodically examine individual user progress reports for the loyalty program to determine whether travelers are using multiple incentive programs in a way that is counter-productive to regional goals. The Offeror will provide VDOT with individual user progress reports and associated data (as described in the requirements) upon request.

Guidance of Technical Tasks

This task will provide guidance for all of the technical tasks. It will determine the structure of incentive programs based on consumer preferences and communicate that structure to the technical task leads. The program management task will solicit data on system usage from the technical tasks and use that

information to refine program structures. A sampling of the touchpoints between the program management and technical tasks is shown in Figure 5.

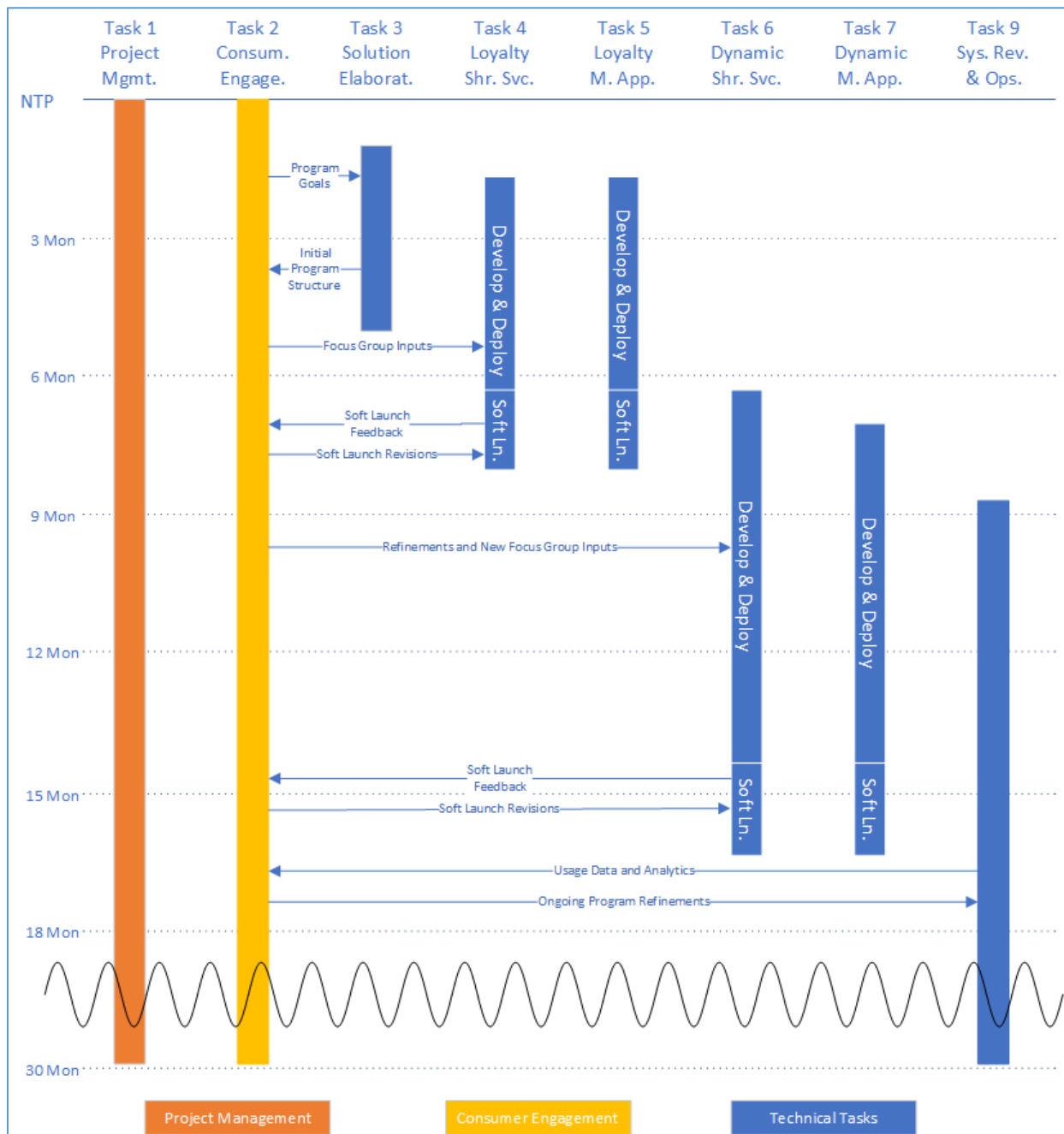


Figure 5: Task Schedules and Connection Points

Should VDOT elect to integrate the DI solution with third-party mobile apps, the VDOT project manager and oversight committee will coordinate marketing efforts with the third-party integration and rollout.

Task 2 Deliverables

1. Marketing Plan
2. Branding Materials
3. Focus Group Meetings
4. Market Research outcomes (focus groups, surveys, social listening)
5. Incentive Program Plans (loyalty, challenges, dynamic)

6. Incentive Agreements with Transportation Providers
7. Incentive Agreements with Retail Providers
8. Program Progress Reports or Dashboard (app, API and program usage)
9. Individual User progress reports upon request

Task 3: Solution Elaboration

The goal of this task is to plan everything needed to put system developers in a position to work efficiently to build the system.

The Offeror will work with VDOT to enhance the system requirements, adding detail and revising to take advantage of Offeror capabilities. This will be a dialogue between VDOT and the Offeror and culminate in an updated system requirements document. The Offeror will conduct a requirements walkthrough with VDOT and its representatives to ensure that both have a common understanding of what will be built and what capabilities the system will include. VDOT has sole discretion of the acceptance of any changes to the requirements.

The Offeror will create the initial iteration of the System Design Document (SDD). The goal is that throughout the project the Offeror will add detail to the SDD so that when the project is complete there is a full and coherent description of the system. The intent is NOT to develop a detailed design prior to development; the SDD will ultimately serve as an as-built document. However, VDOT does want the Offeror to write and update the document during the project rather than after all the work is complete. Throughout the life of the project, the SDD will serve as a record of what has been established and achieved to date by VDOT and the Offeror. At this stage, the SDD will describe the:

- Logical architecture of the system as a whole.
- General purpose of each component.
- Implementation technology.
- Deployment environment.
- Connectivity to other components.
- Major data flows and use cases utilizing the component.

Having a well-defined interface to the shared services is critical to the success of the solution. The Offeror will develop an Interface Control Document (ICD) which defines the interface between the shared services and:

- Mobile app infrastructure
- DEP
- AI-DSS

The ICD is a critical part of making the multi-app architecture a success, so the ICD will be sufficiently detailed and accurate so that other approved system participants can successfully code to it.

The process for document development for the ICD will be the same as that described above for the SDD. As the interface is fleshed out additional features and details will be added to the ICD. At this stage, the details of the data exchanges will not be known, but the ICD should identify the functions of all necessary data exchanges between the shared services and other system elements.

The Offeror will prepare a Data Management Plan, describing the solution approach to data storage, governance and retention. It will describe security measures and user protections for Personally Identifiable Information (PII) that is part of the system and will adhere to relevant Commonwealth laws and policies.

The Offeror will use the requirements, solution architecture, and high-level design document to develop the initial product backlog. An additional asset available during this process are the use cases already developed by VDOT and other stakeholders. Many of these can lead directly to the development of user stories.

Task 3 Deliverables

1. Requirements Walkthrough
2. Revised Requirements

3. Initial Draft of SDD
4. ICDs for all Shared Services APIs
5. Data Management Plan
6. User Stories
7. Initial Product Backlog

Task 4: Implement Shared Services for Loyalty and Challenge Programs

This task will cover the shared back-office functions necessary to support the loyalty and challenge programs.

The shared back-office components provide the foundation of the incentive solution, but do not have any direct connection with the public. The primary functions of the shared services include:

- Management of user interface for creating and configuring loyalty and challenge programs.
- API for interacting with public-facing mobile apps.
- Business logic and data storage to implement back-end services exposed via API.

For the life of the contract VDOT expects that the shared services back-office will be delivered as software-as-a-service (SaaS). However, the back-office software must be open source, or the Offeror must place their source code (along with build instructions and operational documentation) in escrow. VDOT will gain access to the escrowed materials in the event of Offeror failure or market exit.

All data necessary to perform and support the back-office services must be resident within the back-office infrastructure. All data relevant to the shared services back office (including historical data) shall be the property of VDOT and Offeror will make that data available to VDOT in a usable electronic form on a monthly schedule and upon request.

The loyalty and challenge programs will be available over the Northern Tier RM3P region (Figure 1) and will be scalable to the extended RM3P region and beyond.

Solution Elaboration

VDOT must have a clear picture of the user experience early in the process. The Offeror will prepare information on all of the following items which were not already described during Task 3:

- User interface screens for solution management functions (wireframes or other graphics).
- Workflows, use cases, and/or user stories for major system tasks.
- Descriptions or examples of system reports.
- Additional detail for shared services ICD (e.g., identify individual data elements for those functional data exchanges identified in Task 3).

The Offeror will update the SDD from Task 3 with all new information. VDOT and the Offeror will review the SDD updates together and confirm that the user experience is on the right track. It is understood that there may be modifications to the design throughout the agile development process. This review serves as a checkpoint about the user experience.

Agile Development

VDOT anticipates that the Offeror will use an agile development process and supports this approach, provided the Offeror understands that the final delivery dates for this project are firm. VDOT expects to be informed of the epic/sprint schedules and to participate in sprint review and sprint planning meetings periodically. If VDOT is not satisfied with the sprint review/planning process, then VDOT will request, and the Offeror will organize brief weekly meetings with VDOT's selected personnel to cover epic/sprint activities. This schedule shall be reported in the form of an Agile Epic/Sprint Development Plan and will be updated as appropriate. Alternatively, the Offeror may provide VDOT visibility into the sprint management dashboard.

The Offeror is responsible for demonstrating to VDOT that development is progressing according to the schedule. VDOT and/or designated representatives from the oversight committee expect to take part in epic/sprint reviews regularly.

The Offeror should propose an epic schedule at the outset of development. VDOT's notional schedule for this task includes:

- Epic 1: Administrative UI and API for loyalty program
- Epic 2: Administrative UI and API for challenges

If the requirements are modified as a result of the agile process, then that information must be documented either by revising the requirements document or another process agreed to by VDOT and the Offeror.

Deployment and Acceptance

The Offeror will provide at least two system environments (production and pre-production). The pre-production environment will be identical to the production environment and will be used for testing and training.

The Offeror will deploy the working solution to the pre-production environment and complete testing and acceptance there. Once this is complete and the system is accepted, the Offeror will migrate the solution to the production environment and verify it there.

The release management process will define a consistent and repeatable process for deploying new functionality. When new functionality is deployed to the pre-production environment, the Offeror will prepare an Acceptance Test Plan for approval by VDOT. The acceptance testing will cover:

- Functional conformance with all requirements
- User experience
- Stress testing

The test plan will describe the schedule, environment, staff, and dependencies for the testing effort. Stress testing can make use of automated test systems.

The Offeror will prepare Acceptance Test Scripts. The scripts will have detailed instructions for running all tests. The Offeror will prepare a Requirements Traceability Matrix, associating requirements (using revised requirements from Task 3) with test scripts.

VDOT and the Offeror will conduct the tests together in the pre-production environment. Any failures or issues identified during testing will be logged and corrected by the Offeror. VDOT will work with the Offeror to verify corrections for issues identified during testing.

The Offeror will work with VDOT to determine the most thorough and efficient way to verify that the release does not introduce any regressions.

The solution will be used by the general public, so it is critical that the solution is available and functioning correctly. Once the solution is launched, the Offeror is responsible for ensuring that the solution is functionally operational 99.9% of the time. Planned outages will count towards total downtime.

VDOT expects that working software will be deployed to the production environment at the conclusion of each epic per release management processes.

All production deployments will be scheduled at a time that is acceptable to VDOT, and deployments will never be scheduled on weekdays between 6AM and 7PM.

Task Closeout

The Offeror will provide documentation and training for both system administrators and system operators. System administrator documentation and on-demand training will cover:

- Installation instructions.
- Instructions for stopping and starting the system as a whole and individual components.
- Troubleshooting guidelines.
- Guidance for locating and interpreting system logs.

System operator documentation and on-demand training will cover:

- Definition of loyalty and challenge programs.
- Generation of system reports.

- How-To guides and/or cheat sheets.

Training for operators and administrators will be provided in the form of videos, presentations and documents which VDOT personnel can use as needed.

Task 4 Deliverables

1. Solution Elaboration
 - a. User interface wireframes or graphics
 - b. Workflows and user stories
 - c. Updates to SDD and user experience checkpoint
 - d. Updated ICD
2. Agile Development
 - a. Agile Epic/Sprint Development Plan
 - b. Documentation of Requirements Modifications
 - c. Epic/Sprint Review and Planning Meetings
 - d. Weekly Epic/Sprint activity meetings if requested
 - e. Back-Office Software
3. Acceptance
 - a. Working solution for pre-production environment
 - b. Verified solution in production environment
 - c. Acceptance Test Plan
 - d. Acceptance Test Scripts
 - e. Requirements Traceability Matrix
 - f. Acceptance Testing
 - i. User Experience Testing
 - ii. Stress Testing
 - iii. Requirements Conformance
4. Task Closeout
 - a. Training Materials

Task 5: Implement Primary Mobile App Loyalty and Challenge Program

This task covers the delivery of the public-facing mobile application to support the loyalty and challenge programs. The mobile app will deliver all public-facing functionality for the solution, including everything the traveler need to register for and use the system.

VDOT expects that the primary mobile app will be delivered as Software-as-a-Service (SaaS).

Solution Elaboration

VDOT requires a clear picture of the user experience for the traveler early in the process. The Offeror will update the SDD to include the following:

- Story boards for primary traveler tasks
- All branding in the public interface
- Descriptions or examples of app usage reports (downloads, number of accounts, number of active users, usage patterns, etc.)

VDOT and the Offeror will review the SDD updates together and confirm that the traveler experience is on the right track. It is understood that there may be modifications to the design throughout the agile development process. This review serves as a checkpoint about the traveler experience.

Agile Development

The Offeror will provide VDOT with a development schedule and include VDOT in all sprint demos.

If the requirements are modified as a result of the agile process, then that information must be documented either by revising the requirements document or another process agreed to by VDOT and the Offeror.

Rollout

The Offeror will prepare a rollout plan for VDOT's approval. VDOT will act as a resource for the rollout process, but the Offeror is responsible for its implementation. The rollout plan will address:

- Schedule for soft and production rollout.
- Coordination with program management (Task 2) for marketing.
- Coordination with VDOT and other partner agencies for public announcements, press releases, and social media campaigns.
- Identification and recruitment for soft-launch participants.
- Process for gathering feedback during soft-launch.
- Process for refining solution based on soft-launch feedback.
- Process for making app available in Google Play Store and Apple App Store.
- Production launch.
- System monitoring after production launch.

The Offeror will implement the soft rollout. During the soft rollout the app will only be available to approved participants. The Offeror will collect feedback for at least one month. VDOT will work with the Offeror to interpret the feedback and make necessary corrections and adjustments. Once VDOT has approved the changes, the Offeror will update the solution and proceed to the production rollout. The Offeror is responsible for making the app available in the Google Play Store and Apple App Store.

The solution will be used by the general public, so it is critical that the solution is available and functioning correctly. Once the solution is launched, the Offeror is responsible for ensuring that the solution is functionally operational 99.9% of the time. Planned outages will count towards total downtime.

Deployment and Acceptance

The Offeror will prepare an Acceptance Test Plan for approval by VDOT. The acceptance testing will cover:

- Functional conformance with all requirements
- User experience
- Stress testing

The test plan will describe the schedule, environment, staff, and dependencies for the testing effort. Stress testing can make use of automated test systems.

The Offeror will prepare Acceptance Test Scripts. The scripts will have detailed instructions for running all tests. The Offeror will prepare a Requirements Traceability Matrix associating requirements with test scripts.

VDOT and the Offeror will conduct the tests prior to the production rollout. Any failures or issues identified during testing will be logged and corrected by the Offeror. VDOT will work with the Offeror to verify corrections for issues identified during testing.

All production deployments will be scheduled at a time that is acceptable to VDOT, and deployments will never be scheduled on weekdays between 6AM and 7PM.

Task 5 Deliverables

1. Solution Elaboration
 - a. Updates to SDD and User Experience Checkpoint
 - b. Updated ICD
2. Agile Development
 - a. Development Schedule
 - b. Sprint demonstrations
 - c. Documentation of Requirements Modifications
 - d. Primary mobile app
3. App Rollout
 - a. Rollout Plan
 - b. Marketing plan update, announcements, press release, social media campaigns
 - c. Soft Rollout
 - d. Production Rollout
4. Acceptance
 - a. Acceptance Test Plan
 - b. Acceptance Test Scripts
 - c. Requirements Traceability Matrix

- d. Acceptance Testing
 - i. User Experience Testing
 - ii. Stress Testing
 - iii. Requirements Conformance

Task 6: Implement Shared Services Dynamic Program

This task is to add features supporting dynamic incentives to the back-end shared services. The rules driving the dynamic incentive processes will be determined by the program management team (Task 2).

At this point the solution will already be live for the loyalty and challenge programs, and these programs must not be interrupted by the deployment of dynamic incentives.

The structure of this task is very similar to that of Task 4 and, in many cases, the deliverables for Task 6 will be updates and extensions of the deliverables for Task 4.

Dynamic incentives may require interactions with other systems (DSS and DEP), and the Offeror will be required to work with vendors and teams associated with those systems. VDOT will assist in the coordination. The triggers must be thoroughly validated during testing.

The Offeror has the option of integrating with the DSS for dynamic incentive triggers as part of event response or internally generating incentive triggers within the DI solution. If the Offeror elects to use internal triggers, then the Offeror is required to demonstrate to VDOT's satisfaction that the triggers are appropriately sensitive to real-time traffic conditions and aligned with all VDOT goals including:

- Achieves traffic management goals
- Cost efficient use of incentives
- Minimizes deployment and operations risks

Offeror's proposal must clearly state which approach they are using for dynamic incentive triggers.

This choice will impact other elements of the program and VDOT will need to inform all stakeholder early in the process.

Data on traveler response to dynamic incentives will be critical to incident response planning and will be needed by other parts of the RM3P program. Data on diversions and response rates for incentive offers will be stored in the DEP so that it is available for operational systems.

Solution Elaboration

The Offeror will update the SDD to cover any changes necessary for dynamic incentives.

The API for the mobile app infrastructure will have to be extended to include dynamic incentives. The Offeror will update the ICD to include dynamic incentives.

VDOT and the Offeror will review the SDD updates together and confirm that the user experience is on the right track. It is understood that there may be modifications to the design throughout the agile development process. This review serves as a checkpoint about the user experience.

Agile Development

The development process and deliverables will be the same as in Task 4.

The Offeror should propose an epic schedule at the outset of development. VDOT's notional schedule for this task includes:

- Epic 1: Integration with DSS or development of internal triggers
- Epic 2: User targeting for dynamic incentives
- Epic 3: Administrative UI and API for dynamic incentives
- Epic 4: Verification and rewards for dynamic incentives

Deployment and Acceptance

The deployment must not disrupt ongoing operation of the loyalty and challenge programs. The deployment process will be the same as in Task 4 with validation happening in the pre-production environment.

The 99.9% uptime rule will remain in effect, but downtime directly related to the initial deployment of dynamic incentives will not count towards that limit.

VDOT expects that working software will be deployed to the production environment at the conclusion of each epic.

The validation and verification process will be the same as in Task 4. The test plan and scripts will be entirely new, but need only cover dynamic incentives and system elements which may be impacted by the update.

All production deployments will be scheduled at a time that is acceptable to VDOT, and deployments will never be scheduled on weekdays between 6AM and 7PM.

Task Closeout

The Offeror will extend the Training Documentation to cover features associated with dynamic incentives.

Task 6 Deliverables

1. Solution Elaboration
 - a. User interface wireframes or graphics
 - b. Workflows and user stories
 - c. Updates to SDD and User Experience Checkpoint
 - d. Updated ICD
2. Agile Development
 - a. Agile Sprint Development Plan
 - e. Epic/Sprint Reviews and Planning
 - f. Documentation of Requirements Modifications
 - b. Weekly Epic/Sprint activity meetings if requested
 - c. Updated Back Office Software with Dynamic Incentive Functionality
3. Acceptance
 - a. Working Solution for Pre-Production Environment
 - b. Verified Solution in Production Environment
 - c. Acceptance Test Plan
 - d. Acceptance Test Scripts
 - e. Requirements Traceability Matrix
 - f. Acceptance Testing
 - i. User Experience Testing
 - ii. Stress Testing
 - iii. Requirements Conformance
4. Task Closeout
 - a. Updated Training Materials

Task 7: Implement Primary Mobile App Dynamic Program

This task covers adding dynamic incentive features to the public-facing mobile app. The structure of this task is very similar to that of Task 5; in many cases the deliverables for Task 7 will be updates and extensions of the deliverables for Task 5.

Solution Elaboration

The Offeror will update the SDD to cover any changes necessary for dynamic incentives.

VDOT and the Offeror will review the SDD updates together and confirm that the traveler experience is on the right track. It is understood that there may be modifications to the design throughout the agile development process. This review serves as a checkpoint about the traveler experience.

Agile Development

The Offeror will provide VDOT a development schedule and demonstrate progress by periodic demonstrations.

Rollout

This task will include a soft rollout followed by a production rollout. To the greatest extent possible, these activities must not disrupt operations and use of the loyalty and challenge programs. The soft rollout of dynamic incentives must be limited to a controlled and carefully planned subset of users (but may include selected new users also); it should not just be rolled out to all existing users.

The Offeror will prepare a rollout plan for VDOT's approval. This rollout plan will be entirely new, but will have the same structure, coverage, and approach as the rollout plan for Task 5.

The Offeror will implement the soft rollout and collect feedback for at least one month. VDOT will work with the Offeror to interpret the feedback and make necessary corrections of adjustments. Once VDOT has approved the changes, the Offeror will update the solution and proceed to the production rollout.

The 99.9% uptime rule will remain in effect, but downtime directly related to the initial deployment of dynamic incentives will not count towards that limit.

All production deployments will be scheduled at a time that is acceptable to VDOT, and deployments will never be scheduled on weekdays between 6AM and 7PM.

Acceptance

The validation and verification process will be the same as in Task 5. The test plan and scripts will be entirely new, but need only cover dynamic incentives and system elements which may be impacted by the update.

Task 7 Deliverables

1. Solution Elaboration
 - a. Updates to SDD and Traveler Experience Checkpoint
 - b. Updated ICD
2. Agile Development
 - a. Development Schedule
 - b. Sprint Demonstrations
 - c. Documentation of Requirements Modifications
 - d. Updated primary app
3. App Rollout
 - a. Rollout Plan
 - b. Marketing plan update, announcements, press release, social media campaigns
 - c. Soft Rollout
 - d. Production Rollout
4. Acceptance
 - a. Acceptance Test Plan
 - b. Acceptance Test Scripts
 - c. Requirements Traceability Matrix
 - d. Acceptance Testing
 - i. User Experience Testing
 - ii. Stress Testing
 - iii. Requirements Conformance

Task 8 Integrate with Additional Mobile App(s)

This task covers integration of the back-end shared services with a third-party mobile app infrastructure, approved by VDOT, not provided by the Offeror. The Offeror is not responsible for changes necessary to the third-party app but will have to coordinate with the third-party vendor and may need to make minor changes to the shared services API. The Offeror is primarily in an enablement and support role for this task, but the Offeror will need to fix bugs in the API or its implementation which are encountered in the integration process.

The ICD developed in previous tasks will be a key resource for third-party app developers. The Offeror will ensure that the ICD includes full technical specifications for all calls and responses (including those initiated by the shared services and those initiated by the app infrastructure). The ICD should include usage guidance so that an external developer can effectively make use of the API. The expectation is that the ICD

will be correct and complete prior to any integration activities, and the Offeror will make necessary corrections or additions if issues are encountered during integration.

The Offeror pricing information should include support for a single 3rd party integration, and provide optional pricing for additional integrations. While bugs may be encountered during integration work, VDOT expects that bug fixes will be covered under general warranty and should not be reflected in integration costs.

The Offeror will provide assistance to the third-party app vendor during their development in the following ways:

- Clear and complete documentation for the shared services API.
- Occasional calls or meetings to help interpret API usage.
- Assistance with access to the production and pre-production environments.
- Assistance with access to logs or other forms of feedback about the status and responses of the shared services.
- Other assistance as needed.

If changes to the shared services API are necessary, the Offeror will make those changes.

Rollout

The Offeror is responsible for working with the third-party vendor to ensure that their rollout does not impact the shared services or any other mobile apps.

The Offeror program management resources (see Task 2) will coordinate with the third-party vendor for marketing and publicity for the rollout.

Validation and Verification

The Offeror is responsible for verifying that the shared services function correctly when connected to the third-party app, and that performance and functionality of the primary app is not impacted.

Task 8 Deliverables

- Updates to the ICD as Needed
- Fixes to API (and shared services implementation for issues encountered in integration)
- API usage guidance

Task 9: Solution Revision and Operation

The incentivization solution will need constant refinements and tuning to ensure that it is:

- Aligned with consumer demand: The structure of the programs must be appealing to the public.
- Successfully promoting program goals: It is not enough simply that people are using the app; it is important that the behavior changes it triggers are consistent with program goals such as reducing SOVs.
- Providing a reasonable return on investment: The cost of the solution must be commensurate with the benefits of the congestion relief it provides.
- Sustainable in the long-term: Additional providers must be engaged to support incentive costs.

This is the technical support task for operations and ongoing solution refinements. It will continue for the life of the contract and is closely aligned with the program management task (Task 2). In general, Task 2 covers VDOT and the Offeror working together to assess progress to date and revise the approach as needed. This task implements the changes determined by Task 2 processes. The Offeror is responsible for:

- Adjusting configuration and options for loyalty, challenge and dynamic programs to better meet program goals.
- Periodically creating new challenges consistent with program goals.
- Ensuring the solution is performant and running correctly and meeting the 99.9% uptime rule.
- Routine operational tasks to ensure solution reliability
- Making bug fixes and security updates as needed.

- Providing reports and raw data to evaluate program progress and effectiveness.
- Updating incentive offers to include new partners as they come on board.

The Offeror shall provide on-call support to VDOT for any system failures or issues. The Offeror shall provide a tollfree phone number and access to an issue ticketing system.

The Offeror shall provide technical support for the primary app to the end user. The app will provide some method (email, chat, chatbot, phone call, etc.) for the end user to request help or report a problem and missing incentive reward. The Offeror shall respond to all issues within one business day. All end user requests for information or help must be logged, and the full log (including timestamps) must be made available in a readable format to VDOT whenever requested.

Task 9 Deliverables

1. Solution Performance and Uptime Reports
2. System Security Updates and Bug Fixes
3. Mobile App Security Updates and Bug Fixes
4. Updates to Shared Services ICD as Needed
5. Additional Updates to System Documentation as Needed
6. Customer service statistics reports

APPENDICES

Appendix A – Service Level Agreements (SLAs) for Dynamic Incentivization

The SLA covers three metrics for system performance which can trigger either bonuses or reductions in the monthly operations payment:

- Issue Resolution Time – This is based on the time Offeror takes to resolve any issue or problem which is classified as a High-Priority issue.
- Total Uptime – This is the total time that the system is fully functional. Planned maintenance counts as downtime.
- App Store Rating – This is the "star" rating for the primary mobile app (provided by Offeror) in the Apple Store and Google Play Store.

A **High-Priority** issue is defined as any failure that results in any of the following:

- Loss of ability of travelers to use the primary mobile app.
- Loss of ability of travelers to accrue credit towards an incentive (dynamic, challenge, or loyalty).
- Loss of ability of travelers to view or redeem awards.
- Loss of ability of system administrators to create new incentives (dynamic, challenge, or loyalty).
- Loss of ability for approved 3rd-party apps to connect to the shared services.
- Loss of ability for approved 3rd-party apps to receive information on available incentives.
- Loss of ability for approved 3rd-party apps to report progress towards an incentive (dynamic, challenge, or loyalty).
- Loss of ability for approved 3rd-party apps to receive information on a user's current reward status, or to distribute an award.

The Offeror will earn Performance Points for each of the three metrics in a manner described below. The total Performance Points will be calculated monthly and used to determine any deductions or bonuses applied to the Offeror's monthly operations payments. Performance Points calculations do not apply to any milestone payments. Offeror's monthly payment shall be calculated as follows: $(\text{Performance Points}/100) * \text{Monthly Operations Payment} = \text{Offeror Eligible Payment}$. The total number of Performance Points for a month may be greater than 100, but it cannot be less than zero. If the number of Performance Points is less than 100, then the difference between the Monthly Operations Payment and the Offeror Eligible Payment shall be called the Performance Standard Disincentive, which shall be considered forfeited to VDOT. The VDOT Program Manager shall review and approve any Performance Standard Disincentive and the Contractor shall use the processes and procedures described herein to dispute any such Performance Standard Disincentive.

Issue Resolution Time

- Resolution time is calculated for each issue individually. It is calculated as the interval between the time Offeror is notified of the issue and the time at which the system is restored to normal functionality
- An issue may be resolved by repairing the system or rolling back to a previous version that is fully functional. VDOT approval is necessary **before** performing a rollback.
- System availability is most critical during commuting hours so the expectation for resolution time depends on the time of day as follows:
 - Issues reported between the hours of 4:00 AM and 7:00 PM must be resolved within **two hours of the initial report**.
 - Issues reported between the hours of 7:00 PM and 4:00 AM must be resolved within **four hours of the initial report**.

Total Up Time

- Actual Down Time is calculated (in minutes) as the total time within the month that the system is unavailable, or any of the functionality mentioned in the definition of High-Priority issues is unavailable.
- The system shall be available 99.9% of the time.

- For each month, an Allowable Down Time will be calculated (in minutes) as the number of days in the month times 1.44. (1.44 = 24 hours/day * 60 minutes/hour * 0.001). Performance points will be awarded based on how the Actual Down Time compares to the Allowable Down Time.
- System maintenance (routine, planned or unplanned) counts towards total Down Time.
- The RFP notes certain exceptions to the rule that maintenance counts toward Down Time (associated with deployment of major new functionality), and VDOT, at its sole discretion, may grant additional exceptions.
- Any Down Time which is caused by failure of a VDOT network, system, or platform shall not count towards the downtime calculation.
- Any Down Time caused by a failure of a service, subcontractor, or system used by Offeror will count towards the Down Time calculation.

App Store Rating

- The App Store Rating is the "star" rating for the primary mobile app provided by Offeror in response to this RFP.
- The App Store Rating will be calculated as the average of the individual ratings in the Apple Store and the Google Play Store.
- If the rating changes during the course of the month then the calculation is made using the highest score reported during the month.
- The expectation is that the app rating will be greater than or equal to 4.0.

The available Performance Points and processes for earning them are described in Table 1.

Table 1: Performance Points for SLA

Performance Standard	Methodology for Assigning Performance Points	Total Available Points
Issue Resolution Time	<ul style="list-style-type: none"> • All High-Priority issues resolved within the allowable time based on time of day of initial report = all Available Points. • For each issue not resolved within the allowable time, there will be a deduction of two and a half (2.5) points from the total Available Points. 	30
Total Uptime	<ul style="list-style-type: none"> • Actual Down Time is less than or equal to Allowable Down Time = all Available Points. • For each 15-minute period, or any part thereof, that Actual Down Time is above the Allowable Down Time, there will be a deduction of one (1) point from the total Available Points. 	50
App Store Rating	<ul style="list-style-type: none"> • For App store rating between (inclusive) 4.0 and 4.5 = all Available points. • If the App store rating is greater than 4.5, then for each tenth (0.1) of a point greater than 4.5, there will be a bonus of one (1) point in addition to the Available Points. • If the App store rating is less than 4.0, then for each tenth (0.1) of a point below 4.0 there will be a deduction of one (1) point from the total Available Points. 	20

The Offeror is responsible for self-reporting on all SLA metrics on a monthly basis. VDOT will, at its own discretion, verify the metrics with VDOT collected data.

Appendix B – System and User Requirements for Dynamic Incentivization

NOTE: *This section is provided for informational purposes only to assist Offerors in developing their EOI submissions. Therefore, no response is required for this section.*

Purpose

The DI will include a set of back-end services which offer incentives, verify compliance with incentivized behavior(s), and distribute rewards. Multiple apps will be able to access the services, and the public will potentially have the option to choose which app they want to use to access incentives. All incentives are created by the shared back-end services. The back-end services communicate incentive offers to the infrastructure of participating apps and the apps present incentive offers to the users. Some apps may not have the feature set necessary to deliver all DI functions, so at least one app will be customized to offer all features of the DI element.

The apps will report back to the DI shared back-end services to identify whether users have met the terms for an incentive. The information sent from the apps to the back-end services is for reward verification, auditing, and program evaluation purposes. Information sent from the apps to the back-end services is not used for real-time operations.

The DI will consist of two programs. It will offer dynamic incentives which are generated in real-time in response to incidents and extreme congestion. Those incentives will be structured to encourage travelers to change their trip in order to reduce the impact of the event on the transportation network. There will also be an ongoing loyalty program which rewards travelers for using shared or active (pedestrian, bicycle, etc.) modes.

There are two options for the DI system architecture. One option will involve DI interaction with the Decision Support System (DSS); the other will not:

- Triggered by DSS: The DI element will be integrated with the DSS, and the DSS will trigger new incentives in response to incidents and extreme congestion using pre-determined business rules.
- Triggered by the DI back-end services independently: The DI element will generate new incentives in response to traffic conditions and will not be directly integrated with the DSS.

Logical Architecture for Dynamic Incentivization

App-Agnostic Approach

The RM3P incentive system will use an open application programming interface (API) for communication between mobile app systems and shared back-end services so that multiple, established apps can access and offer RM3P incentives. The hope is that multiple apps with existing market shares will join the RM3P system, allowing travelers to use their favorite app to manage RM3P incentives.

Figure 1 shows a high-level architecture for the app-agnostic approach. Communications between the app systems and the shared back-end services fall into the following categories:

- Incentive Offer/Verification
The back-end system creates an incentive offer and publishes it to the infrastructure for each participating app. An example of an incentive offered by the back-end system is that a given group of users are eligible for an incentive if they delay their departure for their regular daily commute by a half hour. The app infrastructure will verify if a user offered the incentive does not make their daily commute at the regular time but does make the commute more than a half hour after the regular time. The app infrastructure will report that the incentive requirements have been met but will not report trip details to the back-end.

- **User Management**

The back-end system stores user profiles and determines which users are eligible for each dynamic incentive and thus must have information about the user. The apps are responsible for the user interface, authentication and incentive verification, and thus must have accounts for each user. The back-end user model and app user accounts are distinct but related entities. The back-end user model will store information on origin/destination and departure times for regular daily commutes (and possibly other regular trips) but will not store any information on specific trip instances. The app must provide a way to create a back-end user profile as part of app account creation. It must also provide a way to associate an app account with an existing back-end user model; this is for travelers using two different apps to access RM3P incentives.

There are two options for the trigger mechanism, and those options are described in the following section. RM3P will only use one source for dynamic incentive triggers. In the future, the system may be extended to allow triggers from more than one source.

Since app providers are responsible for verifying that users have met the conditions for rewards, RM3P program managers will need a way to confirm that app providers are accurately reporting this information. It is not explicitly noted in Figure 1, but app providers will be required to provide methods for conducting spot checks on verification processes which include detailed trip information.

While the mobile app system is responsible for determining when the conditions for a reward have been satisfied, the shared back-end services are responsible for reward distribution. This approach ensures that users are not able to “double-dip” and collect rewards for the same trip through multiple apps.

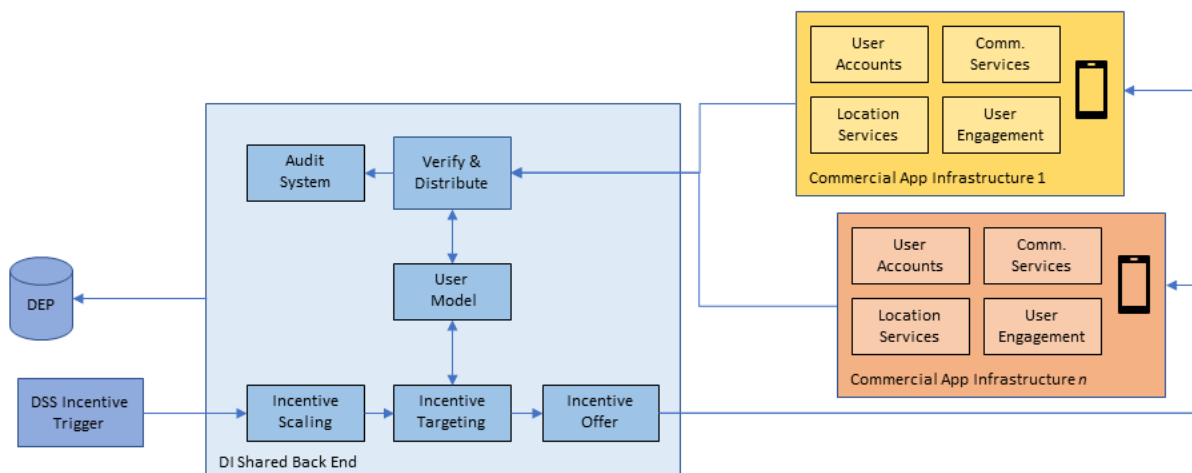


Figure 1: App Agnostic Architecture

While the architecture is open and will allow for multiple apps, the program needs also call for a customized app for the following reasons:

- To ensure that at least one app is available at the inception of the program.
- To ensure that at least one app supports all of the user-facing features of the system (including fully dynamic and targeted incentive offers).
- To ensure that at least one app presents a public-facing brand which represents the DI program to the public.

The shared back office system will push diversion rate data to the Data Exchange Platform. The purpose for this data is to support simulation model calibration. The simulation model will be used by the Decision Support System (DSS) to estimate the impact of response plans. Dynamic incentives will be one aspect of the response plans and the model will need data to estimate diversions due to dynamic incentives.

The remainder of this section refers to two types of apps:

- Branded/Co-Branded apps: This is an app(s) that has been customized during the DI procurement process to meet the needs described above.
- Third-Party apps: These are apps which have been approved to participate in the RM3P system but have little or no customization or specialized branding.

Back-End Services for Dynamic Incentive Generation

A proposed solution may offer one of two different options for dynamic incentive generation:

- Option 1: The DSS triggers the incentive generation process and the DI element defines the parameters of the incentive offer based on the event characteristics (most likely using business rules).
- Option 2: The DI element is wholly responsible for all aspects of incentive generation. In this case the DI solution must be directly integrated with real-time traffic data (which the Supplier is responsible for providing) and analyze that data using a simulation model or other advanced analytical tools.

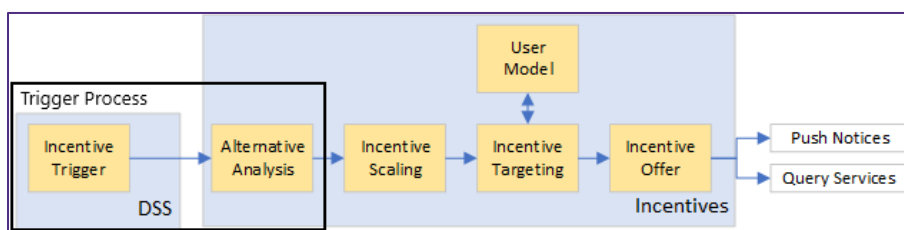


Figure 2: Back-End Services for Dynamic Incentive Generation (Option 1)

Incentive Trigger (Option 1)

This component is part of the AI-Based Decision Support System (DSS). Based on business rules built into the DSS, the system will initiate a dynamic incentive in response to congestion, incidents and planned events. The trigger component sends a notice to the alternative analysis component which includes information on the location, affected modes and anticipated duration and severity of the event. The DI system is required to send an acknowledgment back to the DSS to confirm receipt of the request.

Alternative Analysis (Option 1)

This component determines which alternative modes, routes and/or departure times will be offered for incentives. The determination will be based on either business rules or analytical tools or a combination thereof.

Incentive Scaling (Option 1)

The desired diversion rates will depend on the severity and anticipated duration of the event. This component determines the value of the incentive to be offered to achieve a diversion rate appropriate for the specific event. For example, this may be the number of points that are offered to travelers who accept the alternative trip. The system may offer more points for diversions related to major events than for minor events. The determination will be based on either business rules or analytical tools or a combination thereof.

Real-Time Network Status (Option 2)

In this case the solution provider must furnish data access and integrations necessary for real-time traffic monitoring. This includes incidents as well as traffic speeds and flows.

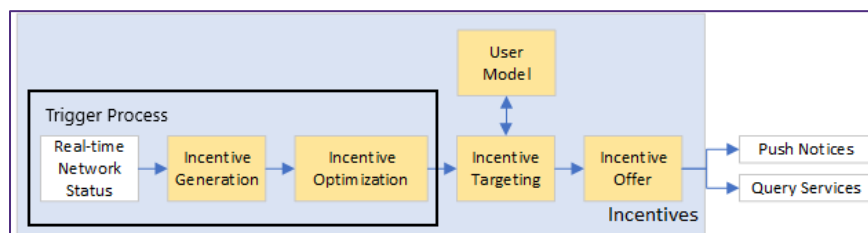


Figure 3: Back-End Services for Dynamic Incentive Generation (Option 2)

Incentive Generation (Option 2)

This component uses advanced analytical tools such as an online simulation model to determine when and where a dynamic incentive will be offered. The guideline for incentive criteria will be determined by RM3P stakeholders and implemented by the solution.

Incentive Optimization (Option 2)

This component will tune the incentive value to maximize the return on investment for each incentive offer. It will maximize the ratio of traffic impact value to incentive cost.

Incentive Targeting (Both Options)

It is important that incentives are offered to users in cases where it is reasonable to assume that the user would be traveling in the impacted area if we had not intervened. We also need to ensure that the system does not bombard users with incentive offers that are not relevant to them. This component will potentially calculate the following filters for incentive offers:

- Geofenced area for the incentive.
- Limit users to those with a regular commute in the affected area.
- Limit users to those with a profile indicating they may be receptive to this incentive.

Interaction with Apps

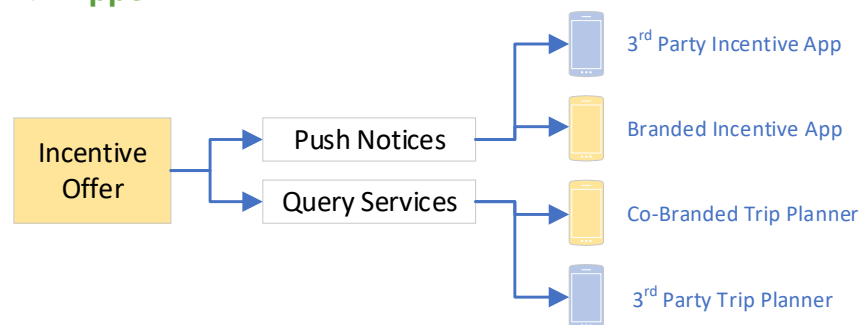


Figure 4: Interaction with Apps

The Incentive Offer component makes the incentive available to partner systems via application programming interfaces (API). The API must be made available so that any approved partner can access the incentive system. There are two mechanisms for distribution of information about incentives:

- Push Notifications – These are pushed to partner systems using a publish/subscribe interface or some similar methodology. The primary consumer of this service will be incentive apps. Those apps will in turn notify their users of the available incentive.
- Query Services – These are request/response services which provide information on all currently available incentives. The primary consumer of these services are trip-planning and mobility provider apps. Those apps can fetch a list of currently available incentives and display that to the user during trip selection.

This component should also offer a simple user interface for manually creating an incentive. This will not be part of a routine workflow, but will be necessary for testing and as a contingency.

Back-End Services for Incentive Verification and Distribution

User Model

This component stores the user's profile including information such as:

- Regular commuting pattern (both origin/destination and preferred modes).
- History of incentive offers and responses.

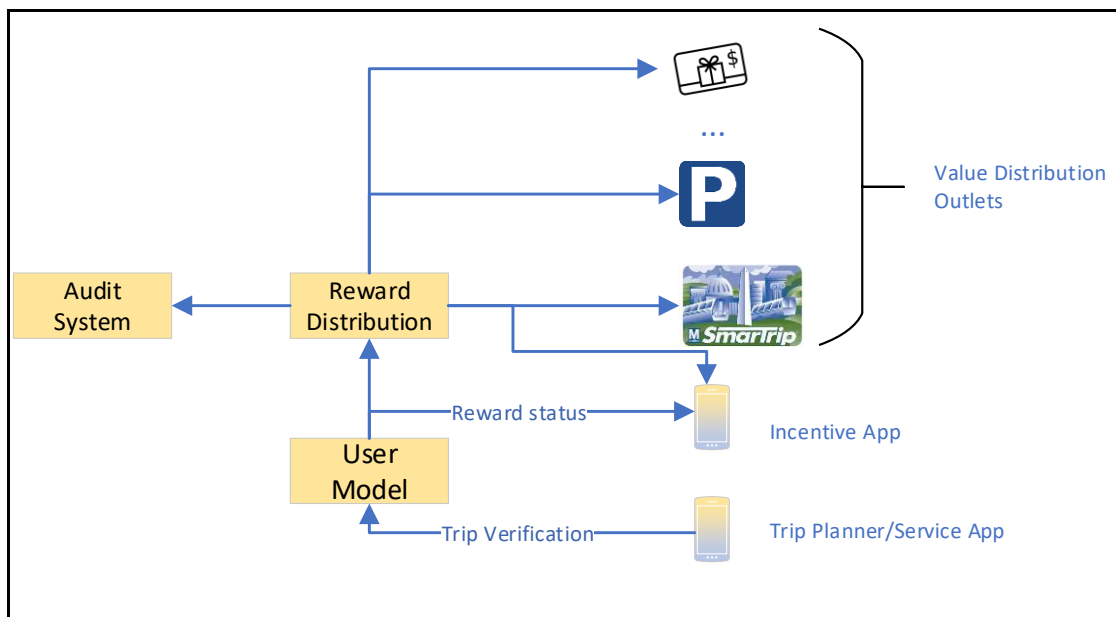


Figure 5: Back-End Services for Incentive Verification and Distribution

To address privacy concerns this component must include the following features:

- Allow end users to create anonymous accounts.
- Allow end users to purge data about them at their request
- Allow end users to link their RM3P account with accounts from mobility providers (for purpose of trip verification).

All data stored in the user model must be secure at rest as well as in motion. Industry standards for best practices for data security should be adhered to and verified by an independent security evaluation.

Trip Verification

The app must report information back to the RM3P system so that the conditions for rewards can be verified. This applies to both routine trips relevant to the loyalty program and special trips taken in response to dynamic incentives. The system should offer varying levels of rigor in the verification process. Verification process with an extremely high degree of certainty may require additional cost and effort on the part of the program sponsors (manual verification, additional automated auditing processes, etc.) Depending on the value of the reward it may not be worthwhile to use the most rigorous processes.

Reward Distribution

In some cases, value distribution will be in the form of services associated with other digital accounts (for example, transportation providers with their own apps). The system will provide users a method for linking external accounts so that the system can push value to the external account.

The reward distribution component should have a variety of capabilities including the ability to send coupons which can be scanned from the mobile phone and gift cards. It will support pushing value into transportation-related accounts such as transit payment systems and EZ-Pass. At a minimum, the system will provide integrations which allow it to automatically push value to the following systems:

- Automatically push value to a registered and linked SmartTrip card.
- Send value to parking systems established in the parking program element.

Audit System

The system must store a detailed record of all reward distributions, as well as supporting evidence verifying the reward validity. This is necessary to support fraud investigations and to document financial transactions.

The goal of the audit system is to provide fraud detection and financial accountability while also minimizing use and persistence of personally identifiable information (PII). Persistence of PII within the shared services back office, in particular, should be strictly limited to what is necessary to support back office functions. To meet all the goals the system must do the following:

- Individual trip data will be persisted within the mobile app infrastructure and archived for a period of one year. Individual trip reports will be available to auditors and administrators as needed for auditing purposes.
- Individual trip data necessary to credit users for progress or completion of dynamic incentives, challenges and loyalty programs will be reported from the mobile app infrastructure to the shared services back office within one hour of the completion of the trip. These trip reports will contain enough information so that the shared services back office can detect if the same trip is reported by two different apps but will otherwise limit PII in this report as much as possible.
- The shared services back office will credit users with progress and rewards based on trip reports. It will compare trip reports from different apps and ignore any duplicate reports for the same trip. All individual trip reports will be purged from the shared services data store one hour (the time period during which they may be used to detect duplicate reports) after they are received.
- The shared services back office will produce monthly reports for each user (based on cell phone number) which show dynamic incentives received, challenges completed, and aggregated information on loyalty program progress and status. These reports will be provided to the traveler and also made available (along with data) to evaluators as needed who will use the reports to determine if users are simultaneously taking advantage of multiple travel demand management programs.

Requirements

There are three types of incentive structures that the system must offer to the user:

- **Dynamic Incentives:** These are offers created dynamically in response to incidents and events. For example: if there is a crash on I-95, the system might offer a \$2 Starbucks gift card to commuters who regularly travel on I-95 if they delay their departure by at least an hour.
- **Loyalty Programs:** This program allows the user to earn rewards based on long-term use of shared and active modes. For example: if a user takes 20 or more Metro trips a month that might qualify the user for Gold Status which gives them access to preferred parking at Metro park-and-rides.
- **Challenges:** These are short-term programs which promote a specific mode, provider or demand management strategy. For example: If a user takes five or more express bus trips within the next two weeks, they will get a \$5 iTunes gift card.

Both dynamic incentives and challenges may be targeted to users based on their personal commuting patterns.

The system must allow for any RM3P incentive to be offered across multiple mobile apps. The vendor will be required to provide a shared back-end system capable of communicating with multiple apps. It is assumed that the shared back-end will communicate with infrastructure which supports the mobile apps rather than communicating directly with mobile devices. The vendor will be required to provide at least one mobile app that uses the back-end services and provides traveler facing functionality.

Use Cases

Figure 6 shows the most common user-facing use cases:

- **Create Account:** The user creates a new account in the mobile app including authentication credentials and required profile information. The mobile app will associate the account with an existing user profile (based on cell phone number) residing in the shared services or create a new profile in the shared services if the user does not already have one.
- **Make Trip:** In most cases the mobile app will automatically detect a trip without the user taking any action. The app should be able to detect complete trips even if the traveler makes intermediate stops between the origin and destination. The mobile app will determine if the trip satisfies the

conditions for a dynamic incentive or contributes progress toward loyalty program or challenge goals and reports this information to the shared services.

- Manually Enter Trip: In some cases, the mobile app may not detect (or incorrectly classify) a trip that the user makes. In these cases, the mobile app will allow users to manually enter or update trip details for some period of time after a trip has occurred. The mobile app will determine if the trip satisfies the conditions for a dynamic incentive or contributes progress toward loyalty program or challenge goals and reports this information to the shared services.
- Check Reward Status: The user can check to see if they have any rewards available and view their current status with respect to challenges and loyalty program goals.
- Purge User Profile: The user can delete their profile and purge all data associated with their user profile.
- Update User Profile: The user can modify or delete individual elements of their user profile including:
 - Common trip origin/destinations and departure times
 - User preferences/characteristics including: disability status, SmartTrip card information, mode preferences, etc.

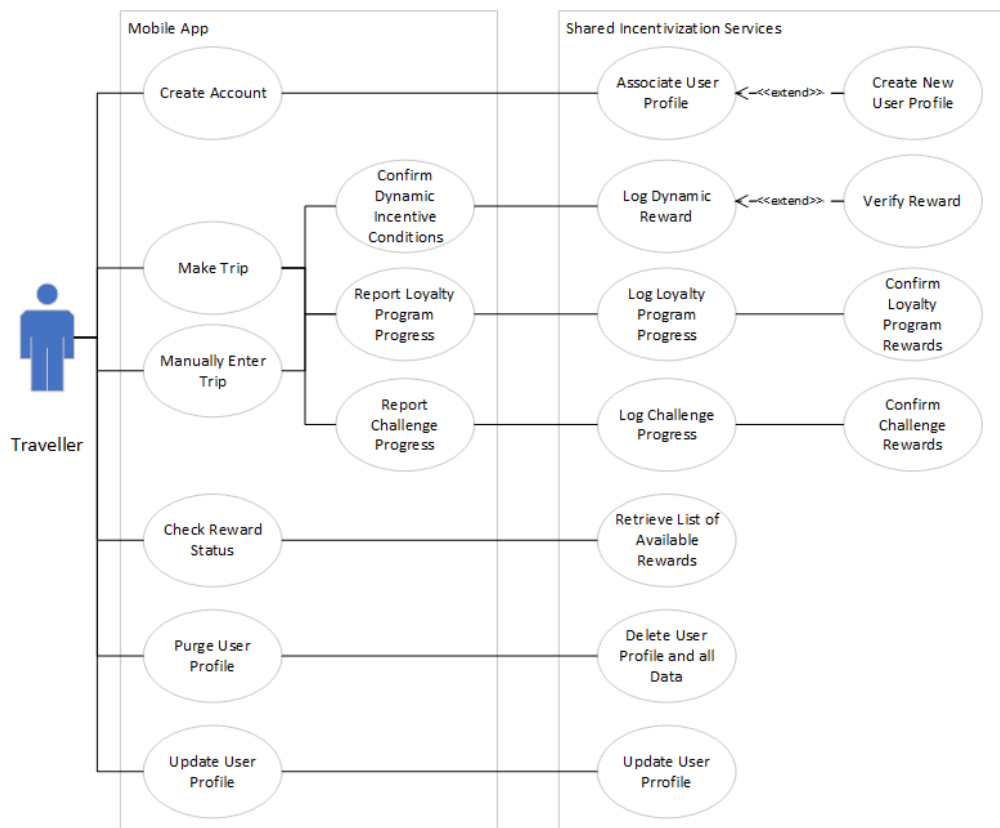


Figure 6: Common User-Facing Use Cases

Figure 7 shows use cases associated with dynamic incentives:

- Create Dynamic Incentive: The triggering mechanism (which may be an integration with the DSS or internal to the incentivization system) will create a new incentive. The triggering mechanism will provide the location, anticipated duration and severity of the triggering incident.
- Manually Create Dynamic Incentive: System administrators will have a GUI which enables them to create an incentive with a given location, duration and severity.
- Notify User of Incentive: The mobile app providers will notify users in real-time when a new dynamic incentive is available. The notification process must not compromise safety by distracting drivers.

- User Accepts or Rejects Offer: The traveler registers their intent to comply with the terms of the incentive. The system will need to confirm compliance before granting the reward.

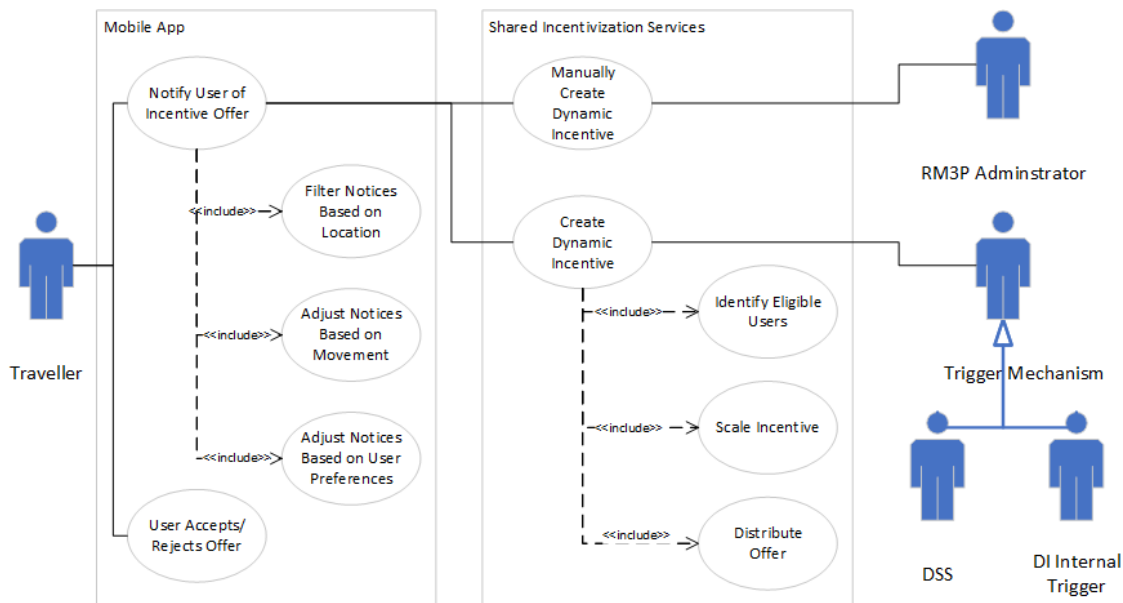


Figure 7: Use Cases for New Dynamic Incentives

Figure 8 shows a state diagram for the relationship between an individual user and an individual dynamic incentive. The purpose of Figure 8 is to illustrate the vision for dynamic incentives and the traveler experience. The Supplier is free to propose a different workflow as long as it safely achieves the DI goals.

- Eligibility Undetermined: The dynamic incentive has just been created and has not been targeted to the user.
- Eligible: The shared services targeting process has determined that this user is eligible for this incentive.
- Ineligible: The shared services targeting process has determined that this user is not eligible for this incentive. This is a terminal state.
- Delivered: The mobile application provider has delivered the incentive offer to the user.
- Undelivered: The user is eligible for the incentive, but the mobile application has not been able to deliver the incentive offer to the user. The mobile application provider should continue attempting to deliver the offer.
- Rejected: The incentive has been offered to the user, but the user has explicitly expressed that they will not pursue the incentive.
- Accepted: The incentive has been offered to the user, and the user has expressed that they will pursue the incentive.
- Confirmed: The mobile application provider has detected (or the user has manually entered) a trip that satisfies the conditions for the incentive. It is not pictured in the diagram but depending on implementation details it may be possible to transition to this state from the Delivered state.
- Expired: The user did not satisfy the terms of the incentive before the incentive expired. The user will remain in this state for a configurable amount of time during which the user may revise or create a trip record. After the configurable amount of time this becomes a terminal state.
- Pending Verification: Some incentives may require additional verification processes (which may include manual inspection). Those processes are not yet complete.
- Denied: Verification processes determined that the user did not meet the terms of the incentive.
- Awarded: The user has met the terms of the incentive and has earned the reward.

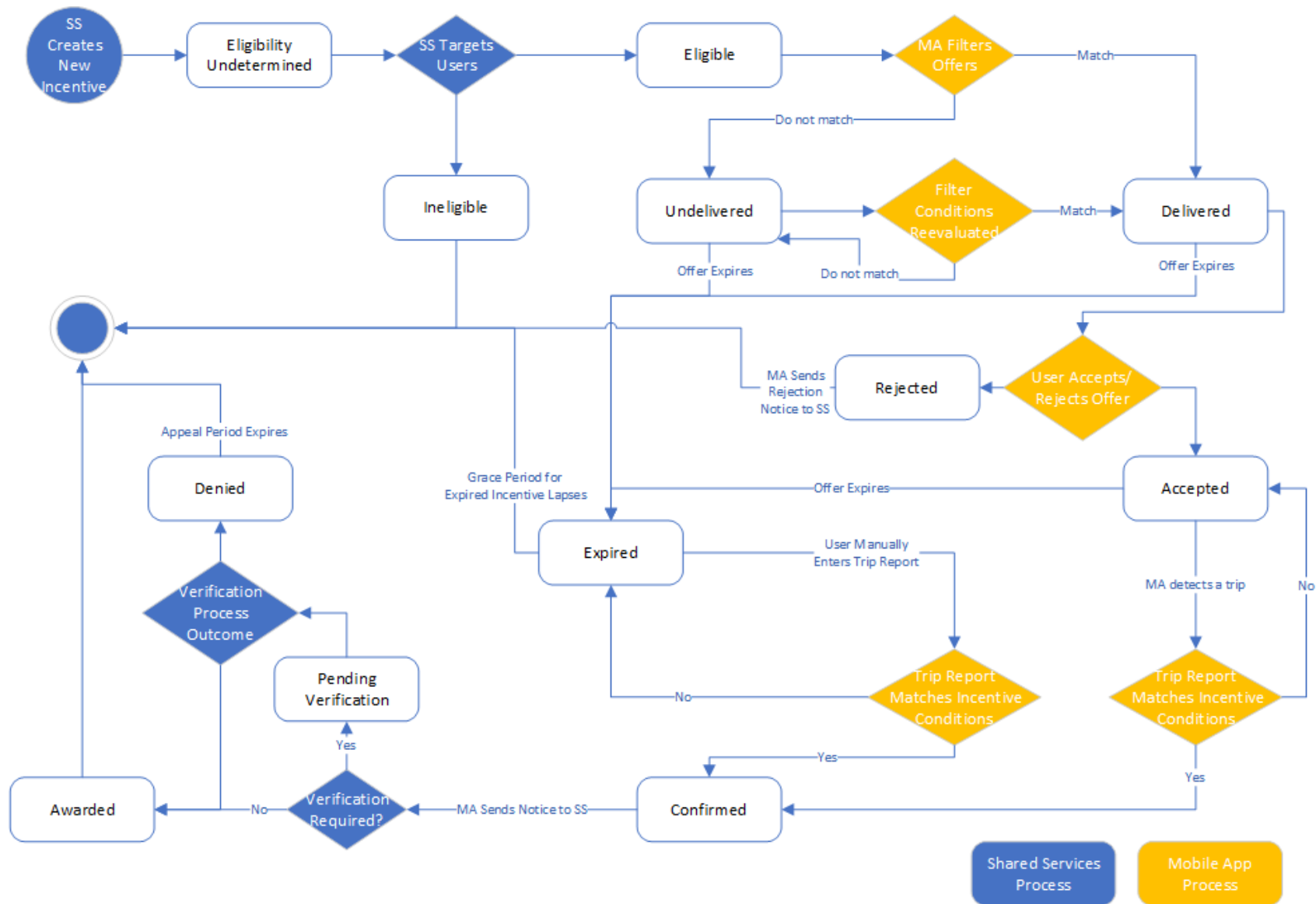


Figure 8: State Diagram for a User Status for a Dynamic Incentive

Figure 9 shows use cases associated with challenges:

- Create Challenge: RM3P administrators use a GUI to create a new challenge.
- Notify User of Challenge Offer: The mobile app provider notifies user about a new challenge. These notifications are not as urgent as notices for dynamic incentives.

Figure 10 shows use cases associate with reward redemption and distribution:

- Redeem Reward: The user requests a redemption through the mobile app. The shared services may need to interact with a third party to distribute the reward.

Figure 11 shows use cases for trip planning. These are optional use cases.

- Plan Trip: The user has selected a trip origin/destination and the mobile application provider has calculated one or more trip itineraries for the origin/destination. The shared services have calculated rewards and program progress for each itinerary, and the mobile app has shown the user potential value for each itinerary.

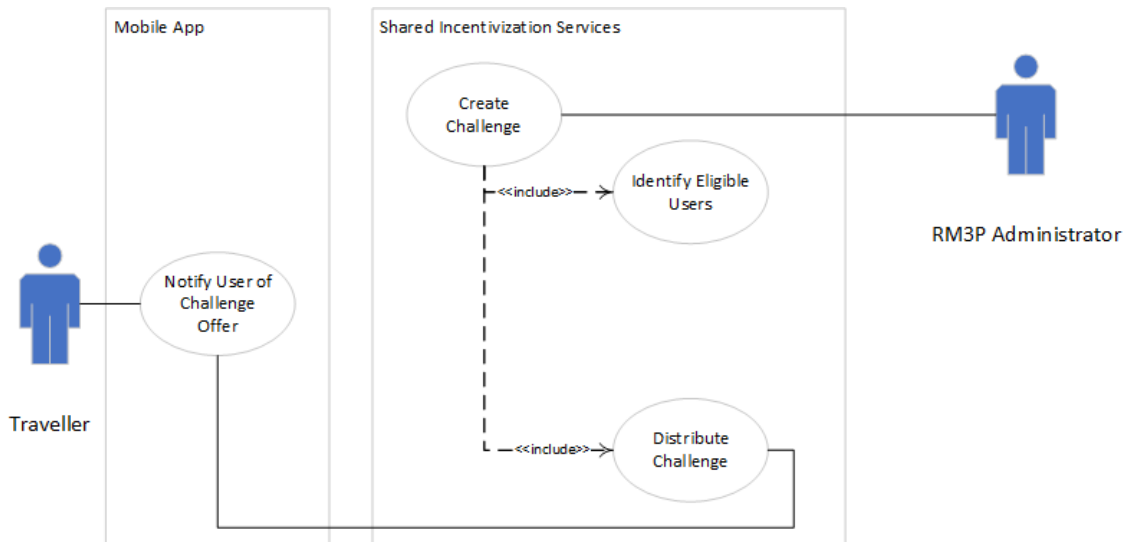


Figure 9: Use Cases for New Challenges

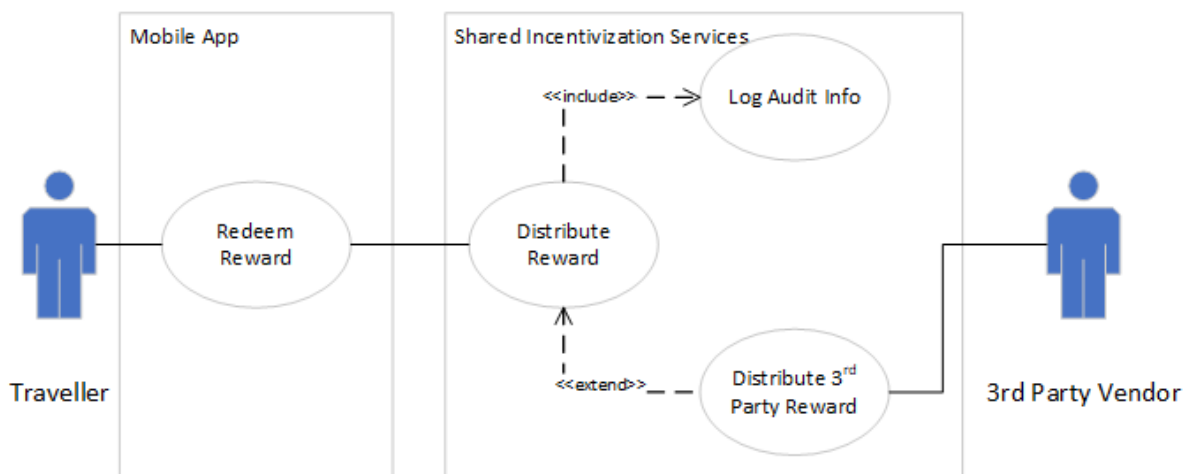


Figure 10: Use Case for Reward Redemption

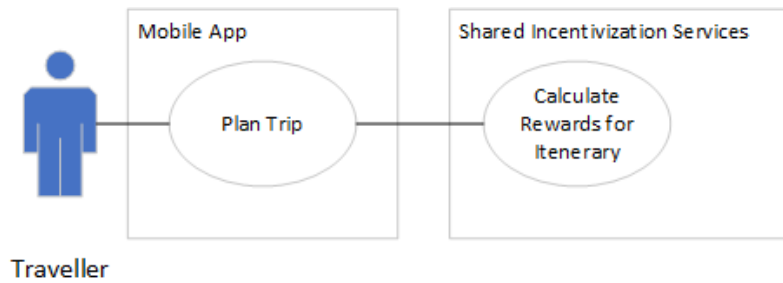


Figure 11: Trip Planning Use Case

Table 1 summarizes the communication between the back-end shared services and the mobile app infrastructure. In all cases the communication is assumed to be between the shared services and infrastructure which supports the mobile app. There is no expectation that the back-end shared services will communicate directly with any mobile device.

Table 1: Summary of Communication Between Shared Services (SS) and Mobile App (MA) Systems

Interface	Description	Initiated By:
Find User Profile	Given a natural identifier for a user (email, phone number), return an identifier for the associated SS user profile if one exists, or optionally create one if it does not exist.	MA
Update User Profile Detail	For a given profile identifier, add or update detail on common trip origin/destination and departure times, user preferences, and characteristics.	MA
Dynamic Incentive Confirmation	For a given profile identifier and dynamic incentive identifier, confirm that the user has satisfied the conditions for the dynamic incentive. This call should not transmit any PII.	MA
Challenge Progress Notice	For a given profile identifier, report progress on a challenge (trip count, mode, distance, etc.). This call should not transmit any PII.	MA
Loyalty Program Progress Notice	For a given profile identifier, report progress for the loyalty program (trip count, mode, distance, etc.). This call should not transmit any PII.	MA
Check Reward Status	For a given profile identifier, return a list of all rewards currently available.	MA
Purge Profile Information	For a given profile identifier, purge all user data associated with the profile.	MA
Broadcast Dynamic Incentive	For a given profile identifier (or list of identifiers), notify the mobile app that the users are eligible for a given dynamic incentive.	SS
Acknowledge Accept/Reject of Dynamic Incentive	For a given profile identifier, notify the shared services that the user has accepted or rejected a given dynamic incentive.	MA
Broadcast New Challenge	Notify mobile app providers that a new challenge is available.	SS
Redeem Reward	For a given profile identifier and reward, distribute the reward to the user.	MA

Table 2 shows the system and user needs.

Table 2: Needs

Need ID	Need Statement	Priority	Description
DI-N01	Need to offer incentives to the public to change trips in response to incidents or extreme congestion	H	This is the fundamental goal of the dynamic incentivization program.
DI-N02	Need to offer dynamic incentives which include mode, departure, destination and route shifts	H	The goal is to take a holistic approach to the transportation system across all modes and demand management strategies. This need has been modified since the Needs & Features document to remove trip cancellation from dynamic incentives.
DI-N03	Need to offer dynamic incentives which encourage shifts toward trip choices which match available capacity in the transportation network	H	The goal is for incentives to improve the performance of the network. The program does not claim that incentivized trips will be faster or shorter for the individual traveler
DI-N04	Need to target dynamic incentives on users who would have been likely to take a trip encountering the incident or extreme congestion	H	The goal of dynamic incentives is to move trips away from problem spots. If a traveler was never going to be at the problem spot, then they should not be offered an incentive. In addition, if an incentive has no relevance for them, then any associated notification would be a nuisance.
DI-N05	Need to maintain a user behavioral model which predicts user travel patterns based on past behavior	H	Dynamic incentives should only incentivize behavior changes. For example, if a user takes the Metro every day then they should not be offered a dynamic incentive to take the Metro.
DI-N06	Need to target dynamic incentive offers so they maximize ratio of network impact value to incentive cost	M	This is an optional need. If a solution does not provide this need then it must provide DI-N07. In this case the DI system is responsible for determining when and where to offer dynamic incentives.
DI-N07	Need to integrate with the DSS to trigger dynamic incentives	M	This is an optional need. If a solution does not provide this need then it must provide DI-N06. In this case the DSS is responsible for determining when and where to offer dynamic incentives.
DI-N08	Need to notify users in real-time of new dynamic incentives or significant increases in value of incentives	H	Dynamic incentives offered in response to incidents may only have a short useful lifespan and the system needs to make sure users are aware of them when they are available.
DI-N09	Need to ensure that real-time notifications do not present any risks to traveler safety	H	Safety is part of the core mission of transportation providers.

Need ID	Need Statement	Priority	Description
DI-N10	Need to provide access to trip planner which shows incentive value for trip options	M	Providing the public tools to make informed personal choices is a program goal.
DI-N11	Need to offer loyalty program which encourages shared and active modes	H	Loyalty programs will engage users on a regular basis and will help to improve responsiveness to dynamic incentives.
DI-N12	Need to support multiple options for the structure of loyalty program incentives. Incentives may be based mode, route choice and departure time and include constraints like total number of trips, trip frequency, trip distances, etc.	H	The program will need flexibility as it is tuned to consumer demand and transportation provider goals.
DI-N13	Need to verify that travelers comply with the terms of incentives	H	This is necessary to ensure incentives are not abused or exploited by fraudulent users, including avoidance of 'double dipping' when someone attempts to collect rewards for the same trip through several apps (see Section 4.1).
DI-N14	Need to provide access to incentives functions through a mobile app	H	Dynamic incentives require real-time responsiveness and locational awareness, and mobile apps are the only realistic way to do this.
DI-N15	Need to provide a method for users to register for incentives through a mobile app	H	The program goals depend on having a user profile, so the system can offer, verify incentives and distribute rewards.
DI-N16	Need to ensure all data collected about a user conforms to a data management process agreed to by the user, and that the agreement is reasonable and meets common stakeholder standards	H	This is crucial to protecting the rights of the consumers and the perception of the program.
DI-N17	Need to support the following types of incentives: gift cards or coupons for private sector vendors; tickets, passes or other value on transit accounts; value or discounts on parking; value or discounts on micromobility; value on EZ-Pass accounts	H	The program will need flexibility since rewards and program structures are likely to change over time.
DI-N18	Need to provide a way for system administrators to configure new value sources (coupon or discount sources) and edit or delete existing sources.	H	The program will need flexibility since rewards and program structures are likely to change over time.
DI-N19	Need to provide a way to distribute incentives to users	H	This is a fundamental need.

Need ID	Need Statement	Priority	Description
DI-N20	Need to make incentive services available to multiple apps	H	The program goal is to make use of apps with existing market share and proven technology. This also has the benefit of providing consumer choice.
DI-N21	Need to provide performance metrics which assess impact and value of incentivization system	H	This is necessary to demonstrate the value of the program and to guide adjustments to the program over time.
DI-N22	Need to archive all data necessary to assess system and program performance, support fraud detection and to satisfy audit needs of financial systems	H	The program structure will need to be tuned and financial processes will be audited.
DI-N23	Need to protect user privacy in all aspects of the system	H	Public trust is crucial to stakeholder missions
DI-N24	Need to present a public facing brand which represents the RM3P program to the public	H	This program element is the public face of the RM3P program.
DI-N25	Need to provide equitable access to the system for disadvantaged and disabled users	H	The program is committed to providing services to all citizens.
DI-N26	Need to conduct focus groups and other outreach activities to develop and subsequently tune the program to consumer demand	H	Significant consumer adoption of the program is necessary for success.
DI-N27	Need to market the program to the public to raise awareness and adoption	H	Significant consumer adoption of the program is necessary for success.
DI-N28	Need to develop relationships with vendors to provide incentives in exchange for exposure or other benefits	H	This is necessary to move costs of incentives into sustainable channels.
DI-N29	Need to develop agreements with transportation providers to offer discounts, value, tickets or passes as incentives	M	This is necessary to move costs of incentives into sustainable channels.
DI-N30	Need to provide ongoing program management to continuously refine program and maintain and extend vendor and agency agreements and relationships	H	The consumer facing transportation environment is constantly changing and the program will have to adapt to remain relevant.
DI-N31	Need to capture observed incentive diversion rates to support simulation model calibration and to assess value of DI	M	Aggregated diversion data will be pushed to the Data Exchange Platform and used to calibrate the simulation model in the future

Need ID	Need Statement	Priority	Description
DI-N32	Need to be able to develop alternate sources of revenue for the system (such as advertisements)	M	This is a complex issue and will need to be considered thoroughly. This is a companion and extension to DI-N28.
DI-N33	The back-end needs to integrate with transportation demand management (TDM) programs	M	Users will be able to log trips for TDM programs and access rewards.

Requirements List

Table 3 lists the system requirements and uses the following abbreviations:

- Type
 - F = Functional
 - P = Performance
 - D = Data Related
 - C = Constraint
- Verify
 - D = Demonstrate
 - T = Test
 - I = Inspect
 - A = Analysis
- Mand/Desire
 - M = Mandatory
 - D = Desired

This document contains 2 options for the Incentive trigger generation where one option has to be selected. Each option has its own requirements. These are expressed by using conditional statements:

“DI-R2.2: O1” appears twice and the respondents have to state which one option they support. Below the corresponding requirements, there will be a “DI-R2.2.1: M” or “DI-R2.2.2: M” statement, which indicates that if the first option is selected (i.e., DI-R2.2.1) then the following requirements bearing the DI-R2.2.1: M statement must be supported.

- Priority
 - H = High
 - M = Medium
 - L = Low

Table 3: Requirements Definitions

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R1	The system shall provide shared services for managing incentives	F	DI-N01	D	M	H	
DI-R1.1	The shared services shall provide APIs for managing incentives	F	DI-N01	T	M	H	See Error! Reference source not found. complete list.
DI-R1.1.1	The shared services API shall provide calls to manage user profiles	F	DI-N04	T	M	H	
DI-R1.1.1.1	The shared services API shall provide a call to find a user profile given a user's natural identifier (email or phone) optionally creating a new profile if one does not exist	F	DI-N04	T	M	H	
DI-R1.1.1.2	The shared services API shall provide a call to add or update user profile data including common trip origin/destinations and departure times	F	DI-N04	T	M	H	
DI-R1.1.1.3	The shared services API shall provide a call to purge all user data from a user profile	F	DI-N04	T	M	H	
DI-R1.1.2	The shared services API shall provide calls to manage dynamically generated incentives	F	DI-N01	T	M	H	Data elements for a dynamic incentive to be determined. Likely to include route, mode and departure time.
DI-R1.1.2.1	The shared services API shall provide calls to notify mobile app providers that a given list of users are eligible for a given dynamic incentive	F	DI-N08	T	M	H	
DI-R1.1.2.2	The shared services API shall provide a call which mobile app providers can use to indicate if a user has accepted or rejected a dynamic incentive offer	F	DI-N08	T	M	H	
DI-R1.1.3	The shared services API shall provide calls to manage information about user trips	F	DI-N13	T	M	H	
DI-R1.1.3.1	The shared services API shall provide a call which mobile app providers can use to indicate that a given user has completed a trip that satisfies the conditions for a given dynamic incentive	F	DI-N23	T	M	H	This call should not transmit any detailed information about the trip.
DI-R1.1.3.2	The shared services API shall provide a call which mobile app providers can use to report progress toward completion of challenges	F	DI-N13	T	M	H	Data elements to be determined. Likely to include trip count, mode, distance.

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R1.1.3.3	The shared services API call for reporting challenge progress shall include enough trip detail so that if multiple apps report the same trip the shared services will count the trip only once	F	DI-N13	T	M	H	
DI-R1.1.3.4	The shared services API shall provide a call which mobile app providers can use to report progress for loyalty program	F	DI-N13	T	M	H	Data elements to be determined. Likely to include trip count, mode, distance.
DI-R1.1.3.5	The shared services API call for reporting loyalty program progress shall include enough trip detail so that if multiple apps report the same trip the shared services will count the trip only once	F	DI-N13	T	M	H	
DI-R1.1.4	The shared services API shall provide calls to manage information about user rewards	F	DI-N19	T	M	H	
DI-R1.1.4.1	The shared services API shall provide a call to return all rewards currently available to any given user	F	DI-N19	T	M	H	
DI-R1.1.4.2	The shared services API shall provide a call to redeem any available reward	F	DI-N19	T	M	H	
DI-R1.1.5	The shared services API shall provide calls to manage information about user trip planning	F	DI-N10	T	D	H	
DI-R1.1.5.1	The shared services API shall provide calls which return the potential rewards currently available for a given trip itinerary	F	DI-N10	T	D	H	
DI-R1.1.6	The shared services API shall provide a call to indicate the availability of a new challenge	F	DI-N11	T	M	H	Data elements to be determined. Likely to include trip count, mode, distance.
DI-R1.2	The shared services APIs shall be capable of being used by multiple mobile apps systems simultaneously	F	DI-N20	T	M	H	
DI-R1.3	The shared services shall be licensed and deployed such that VDOT/DRPT can continue to operate the shared services after the expiration of the contract	C	DI-N20	D	M	H	
DI-R1.3	The shared services back-office shall be operated as SaaS, but include protections so that the system can continue to operate if the Supplier fails or unexpectedly exits the market	C	DI-N01	I	M	H	
DI-R1.3.1	All data (historical and current) resident in the shared services back office (including, but not limited to, user	C	DI-N01	I	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
	account information, user profile information, user reward and status information, etc.) is entirely the property of VDOT and the vendor will make all data available to VDOT in a reusable electronic form at any time						
DI-R1.3.2	The shared services API shall be documented in sufficient technical detail such that 3rd-party programmers can code to it.	C	DI-N01	I	M	H	
DI-R1.3.3	VDOT shall have the right to use the shared services API in perpetuity.	C	DI-N01	I	M	H	
DI-R1.3.4	The shared services back-office software shall be open source, or Supplier must place their source code (along with build instructions and operational documentation) in escrow. VDOT will gain access to the escrowed materials in the event of vendor failure or market exit.	C	DI-N01	I	M	H	
DI-R1.4	The shared services shall store a user profile for each user	F	DI-N05	I	M	H	
DI-R1.4.1	The shared services user profile shall store information on routine trip origin/destinations and departure times for each user	F	DI-N05	T	M	H	
DI-R1.4.2	The shared services user profile shall not store information on individual trips	F	DI-N23	T	M	H	
DI-R2	The shared services shall provide services for creating and managing dynamic incentives	F	DI-N01	T	M	H	
DI-R2.1	The shared services shall provide a GUI which system administrators can use to manually create a dynamic incentive	F	DI-N01	T	M	H	
DI-R2.2	The shared services shall be integrated with at least one of the following trigger mechanisms which initiate creation of new dynamic incentives: <ul style="list-style-type: none"> Option 1 = DSS integration (DI-R2.2.1) Option 2 = Vendor model (DI-R2.2.2) 	F	DI-N01	I	M	H	Indicate with option is proposed to be supported: OPTION [____] (enter option #)
DI-R2.2.1	The shared services shall receive and acknowledge notices from the RM3P Decision Support System (DSS) and create new dynamic incentives based on the parameters provided by the DSS	F	DI-N07	T	DI-R2.2: O1	H	DSS Integration

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R2.2.1.1	The shared services shall create new dynamic incentives using the location, mode preference and duration specified by the DSS	F	DI-N02	T	DI-R2.2.1:M	H	DSS Integration
DI-R2.2.1.2	The system shall notify users (travelers) about the new dynamic incentive within one minute of being notified by the DSS	P	DI-N08	T	DI-R2.2.1:M	H	DSS Integration
DI-R2.2.1.3	The system shall send an acknowledgement to the DSS confirming receipt of the request to create a new dynamic incentive.	P	DI-N08	T	DI-R2.2.1:M	H	DSS Integration
DI-R2.2.2	The shared services shall create new dynamic incentives in response to real-time traffic conditions	F	DI-N01	T	DI-R2.2:O1	H	Vendor model
DI-R2.2.2.1	The shared services shall create new dynamic incentives when traffic speeds drop below a configurable threshold relative to historical norms for a given location	F	DI-N03	T	DI-R2.2.2:M	H	Vendor model
DI-R2.2.2.2	The shared services shall create new dynamic incentives for users to change mode, departure time and route	F	DI-N02	T	DI-R2.2.2:M	H	Vendor model
DI-R2.2.2.3	The shared services shall create new dynamic incentives which reduce traffic at locations which are currently over capacity	F	DI-N03	T	DI-R2.2.2:M	H	Vendor model
DI-R2.2.2.4	The configurable parameters used to trigger dynamic incentives (see DI-R2.2.2.1) shall be determined by RM3P sponsors and optimized for the RM3P program area	F	DI-N03	T	DI-R2.2.2:M	H	Vendor model
DI-R2.2.2.5	The vendor is responsible for all data acquisition and integration necessary to detect real-time traffic conditions	C	DI-N01	I	DI-R2.2.2:M	H	Vendor model
DI-R2.2.2.6	The system shall notify users (travelers) about the new dynamic incentive within one minute of detecting the triggering traffic condition	P	DI-N08	A	DI-R2.2.2:M	H	Vendor model
DI-R2.3	The shared services shall determine which users are eligible for each dynamic incentive	F	DI-N04	D	M	H	
DI-R2.3.1	The shared services shall offer dynamic incentives to users based on how likely the user is to take a trip involving the triggering event	F	DI-N04	D	M	H	
DI-R2.3.2	The shared services shall offer dynamic incentives to users based on user preferences and characteristics (stored in the user profile), including disability status, payment preferences, and openness to active modes	F	DI-N04	D	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R2.3.3	The shared services shall offer dynamic incentives to users based on how likely the user is to accept the incentive offer	F	DI-N05	D	M	H	
DI-R2.3.4	The shared services shall be capable of limiting award offers to individuals based on the total value of awards within the current year for that individual	F	DI-N04	T	M	H	
DI-R2.3.5	The shared services shall be capable of adjusting the dynamic incentive reward based on an individual user's likelihood of responding with a goal of maximizing diversions achieved within a given amount of total reward	F	DI-N06	D	D	H	
DI-R2.4	The shared services shall log an incentive as expired for all eligible users who have not confirmed compliance within a configurable grace period after the termination of the offer	F	DI-N01	T	M	H	
DI-R3	The shared services shall provide services for creating and managing traveler challenge programs	F	DI-N11	T	M	H	
DI-R3.1	The shared services shall provide a GUI that enables system administrators to create new challenges	F	DI-N11, DI-N12	T	M	H	Date elements to be determined. Likely to include mode, provider, trip count, total trip distance, duration.
DI-R3.2	The shared services shall provide a GUI that enables system administrators to edit or delete existing challenges	F	DI-N11, DI-N12	T	M	H	
DI-R3.3	The shared services shall credit progress towards challenge goals for a trip only once even if the trip is reported by multiple apps.	F	DI-N11	T	M	H	
DI-R3.3.1	The shared services shall receive and temporarily store individual trip reports.	F	DI-N11	T	M	H	
DI-R3.3.2	The shared services shall compare trip reports sent by different apps and ignore any duplicate trip reports.	F	DI-N11	T	M	H	
DI-R3.3.3	The shared services shall purge all trip reports older than one hour.	F	DI-N11	T	M	H	
DI-R3.4	The shared services shall support multiple challenges at the same time.	F	DI-N11	T	M	H	
DI-R3.4.1	The shared services shall allow users to participate in multiple challenges at the same time.	F	DI-N11	T	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R3.4.2	The shared services shall produce reports which show reward distributions broken down by all of the active challenges.	F	DI-N11	T	M	H	Need to be able to determine total periodic cost of each individual challenge
DI-R4	The shared services shall provide services for creating and managing traveler loyalty programs	F	DI-N11	D	M	H	
DI-R4.1	The shared services shall provide a GUI that enables system administrators to create new loyalty programs	F	DI-N12	T	M	H	Date elements to be determined. Likely to include mode, provider, trip count, total trip distance, duration.
DI-R4.2	The shared services shall provide a GUI that enables system administrators to edit or delete existing loyalty programs	F	DI-N12	T	M	H	
DI-R4.3	The shared services shall credit progress towards loyalty program goals for a trip only once even if the trip is reported by multiple apps.	F	DI-N11	D	M	H	
DI-R4.4	The shared services shall allow loyalty programs to contain multiple business rules for defining rewards.	F	DI-N11	D	M	H	For example, a program may have rewards for walking and transit. It may have one reward level for one locality and a different reward level for another locality
DI-R4.4.1	When a loyalty program contains more than one business rule the system shall record which rule triggered each reward that is earned.	F	DI-N11	D	M	H	
DI-R4.4.2	When a loyalty program contains more than one business rule the system shall report periodically on the total rewards triggered by each rule.	F	DI-N11	D	M	H	For example, if there is a rule for one locality and another rule for a different locality, the system needs to produce total reward costs for each locality.
DI-R5	The shared services shall provide services for redeeming rewards	F	DI-N19	D	M	H	
DI-R5.1	The shared services shall log all reward awards	F	DI-N19	T	M	H	
DI-R5.2	The shared services shall log all reward distributions	F	DI-N19	T	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R5.3	The shared services shall be capable of integrating with third-party systems to complete reward distributions	F	DI-N17	T	M	H	Specific integration targets to be determined after procurement.
DI-R5.3.1	The shared services shall be capable of transferring value into third-party accounts to complete a reward distribution	F	DI-N17	T	M	H	
DI-R5.3.2	The shared services shall be capable of generating an electronic gift card to complete a reward distribution	F	DI-N17	D	M	H	
DI-R5.3.3	The shared services shall be capable of distributing transit tickets and passes to complete a reward distribution	F	DI-N17	D	M	H	
DI-R5.4	The vendor shall complete a third-party cybersecurity audit on the shared services and provide documentation on the results of the audit	F	DI-N23	I	M	H	
DI-R5.5	The system shall provide a mechanism for generating revenue (such as advertising)	F	DI-N32	D	D	M	Subject to agency rules and restriction
DI-R5.6	The shared services shall integrate with external transportation demand management systems	F	DI-N33	D	D	M	Users should be able to log trips for TDM programs and access rewards from those programs
DI-R5.7	The shared services shall support audit processes.	F	DI-N22	T	M	H	
DI-R5.7.1	The shared services audit processes shall verify that rewards are not earned fraudulently.	F	DI-N22	T	M	H	
DI-R5.7.2	The shared services audit processes shall verify that all financial transactions are conformant with all relevant Virginia rules and laws.	F	DI-N22	T	M	H	
DI-R5.7.3	The mobile app infrastructure will support audit processes.	F	DI-N22	T	M	H	
DI-R5.7.3.1	The mobile app infrastructure will persist individual trip reports for at least one year.	F	DI-N22	T	M	H	
DI-R5.7.3.2	The mobile app infrastructure will provide a mechanism for auditor and administrators to retrieve individual trip reports as needed for audit purposes.	F	DI-N22	T	M	H	
DI-R5.7.3	The shared services audit processes shall persist all data necessary to verify reward validity for at least three years.	F	DI-N22	T	M	H	
DI-R5.7.4	The shared services audit processes shall provide data and report exports necessary to support validation processes.	F	DI-N22	T	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R6	The system shall provide at least one mobile app which presents all incentive functions defined above to the traveler	F	DI-N14	D	M	H	
DI-R6.1	The mobile app system shall provide functions for managing user accounts	F	DI-N15	T	M	H	
DI-R6.1.1	The mobile app system shall provide a way to create an account for the mobile ap	F	DI-N15	T	M	H	
DI-R6.1.2	The mobile app system shall require users to agree to all RM3P data use terms and conditions	F	DI-N16	D	M	H	
DI-R6.1.3	The mobile app system shall associate a user account with a shared services user profile	F	DI-N14	T	M	H	
DI-R6.1.4	The mobile app shall provide a way for the user to enter and update data associated with the back-end user profile	F	DI-N25	T	M	H	Data elements for back-end user profile to be determined. Focus is on common trip O/D and departure times, ability status, payment preferences, etc.
DI-R6.1.5	The mobile app shall provide a way for the user to purge all data associated with their back-end user profile	F	DI-N23	T	M	H	
DI-R6.2	The mobile app shall provide functions for managing user trips	F	DI-N13	D	M	H	
DI-R6.2.1	The mobile app shall detect user trips without the user having to take any action to initiate or terminate the trip	F	DI-N13	T	M	H	
DI-R6.2.1.1	The mobile app shall automatically detect the origin and destination of the trip	F	DI-N13	T	M	H	
DI-R6.2.1.2	The mobile app shall automatically detect the mode of the trip	F	DI-N13	T	M	H	
DI-R6.2.1.3	The mobile app shall create a trip record that resides within the mobile app system	F	DI-N13	D	M	H	
DI-R6.2.1.4	The trip detection performed by the mobile app shall be accurate in terms of origin, destination, mode, departure time, and arrival time for at least 95% of all trips	P	DI-N13	A	M	H	The vendor may propose a modification if it considers this requirement unachievable.

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R6.2.2	The mobile app shall provide an interface to create a new trip record or edit an existing trip record	F	DI-N13	T	M	H	
DI-R6.2.3	The mobile app system shall use the shared services API to automatically report rewards earned by a trip	F	DI-N13	I	M	H	
DI-R6.2.3.1	The mobile app system shall use the shared services API to report whether a trip satisfies the conditions for a dynamic incentive that the user is eligible for	F	DI-N13	T	M		The mobile app system is responsible for confirming when the conditions for a dynamic incentive have been met.
DI-R6.2.3.2	The mobile app system shall use the shared services API to report any progress a trip makes toward challenge goals	F	DI-N13	T	M	H	
DI-R6.2.3.3	The mobile app system shall use the shared services API to report any progress a trip makes toward loyalty program goals	F	DI-N13	T	M	H	
DI-R6.2.3.4	The mobile app system shall send a report to the shared services for each trip with enough detail that the shared services can detect if the same trip is reported by two different apps.	F	DI-N13	T	M	H	
DI-R6.2.3.5	The mobile app system shall send a report to the shared services for each trip within one hour of the trip completion.	F	DI-N13	T	M	H	
DI-R6.3	The mobile app system shall provide services for managing dynamic incentives	F	DI-N14	D	M	H	
DI-R6.3.1	The mobile app shall notify users when a new dynamic incentive is available	F	DI-N09	T	M	H	
DI-R6.3.2	The mobile app shall provide users a way to accept or reject an incentive offer when it is available to them	F	DI-N14	T	M	H	
DI-R6.4	The mobile app shall provide the user methods for managing challenges	F	DI-N14	D	M	H	
DI-R6.4.1	The mobile app shall provide users with a list of all challenges available to them	F	DI-N14	T	M	H	
DI-R6.4.2	The mobile app shall provide users with information about their current progress toward completion of any given challenge	F	DI-N14	T	M	H	
DI-R6.5	The mobile app shall provide users information on their current progress and status for the loyalty program	F	DI-N14	D	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R6.6	The mobile app shall provide users a method for redeeming an award	F	DI-N19	D	M	H	
DI-R6.6.1	The mobile app shall provide users a list of all awards currently available for redemption	F	DI-N14	T	M	H	
DI-R6.6.2	The mobile app shall provide users a way to select a particular reward for redemption	F	DI-N14	T	M	H	
DI-R6.6.3	The mobile app shall display instructions to the user about how to collect their reward	F	DI-N19	T	M	H	
DI-R6.6.3.1	The mobile app system shall be capable of displaying redemption instructions provided by the shared services	F	DI-N19	T	M	H	
DI-R6.6.3.2	The mobile app system shall be capable of displaying bar codes or QR codes generated by the shared services or third-party vendors	F	DI-N19	T	M	H	
DI-R6.7	The mobile app provider shall provide a method for VDOT administrators and evaluators to verify trip details for confirmed trip	F	DI-N13	T	M	H	This is intended for spot verifications during independent evaluation.
DI-R6.7.1	The mobile app providers shall provide a method for system administrators to request trip details for a given trip which was confirmed as compliant for a dynamic incentive	F	DI-N22	T	M	H	
DI-R6.7.2	The confirmation details shall include: <ul style="list-style-type: none"> • Trip origin • Trip destination • Arrival time • Departure time • Trajectory information 	F	DI-N13	T	M	H	Requirements will be refined to determine details on trajectory information.
DI-R6.8	The mobile app system shall use gamification principles to engage the end user	C	DI-N14	D	M	H	
DI-R6.9	The mobile app shall prominently display RM3P branding	C	DI-N24	D	M	H	
DI-R6.10	The vendor shall complete a third-party cybersecurity audit on the mobile application and provide documentation on the results of the audit	F	DI-N23	I	M	H	
DI-R6.11	The user-facing mobile app shall allow a user to select between English- and Spanish-language displays and data-entry capabilities	F	DI-N25	D	D	M	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R6.12	The mobile app shall be capable of supporting 50,000 simultaneous travelers	P	DI-N01	A	M	H	The system can be scaled up over time. The initial user base may be smaller, but the system should be architected for scalability.
DI-R6.13	The mobile app shall limit battery drain such that, in a day of operations, it accounts for no more than 2% of battery usage on modern devices	P	DI-N13	D	M	H	
DI-R6.14	The mobile app shall be available on both Android and IOS platforms.	F	DI-N01	D	M	H	
DI-R6.15	The mobile app's user interactions shall be consistent with all aspects of safety.	F	DI-N14	D	M	H	
DI-R6.15.1	The mobile app's user interface shall not distract drivers.	F	DI-N14	D	M	H	
DI-R6.15.2	The mobile app's user interface shall comply with all Virginia rules and laws pertaining to distracted driving.	F	DI-N14	D	M	H	
DI-R6.16	The mobile app provider shall provide technical support to end users (travelers)	F	DI-N14	D	M	H	
DI-R7	The system shall provide reporting functions	F	DI-N21	D	M	H	
DI-R7.1	The system shall provide the capability to generate reports on the impact of each dynamic incentive offer	F	DI-N21	T	M	H	
DI-R7.1.1	<p>The dynamic incentives impact report shall include at least the following minimum data elements for each dynamic incentive offer:</p> <ul style="list-style-type: none"> • Triggering event type • Triggering event location • Triggering event severity • Triggering event expected duration • Types of incentives offered • Number of incentive offers made • Number of incentive offers accepted • Number of incentive offers rejected • Number of incentive offers confirmed • Number of incentive offers verified • Distribution of type of trip change (if more than one type of trip change was eligible) 	F	DI-N21	T	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R7.1.2	The system shall be capable of exporting dynamic incentives impact report data to CSV files	F	DI-N21	T	M	H	
DI-R7.2	The system shall generate reports on the impact of each challenge	F	DI-N21	T	M	H	
DI-R7.2.1	The challenge impact report shall include at least the following data elements for each dynamic incentive offer: <ul style="list-style-type: none"> • Summary of challenge conditions • Number of users who completed the challenge • Geographic distribution of users who completed the challenge 	F	DI-N21	T	M	H	
DI-R7.2.2	The system shall be capable of exporting challenge impact report data to CSV files	F	DI-N21	T	M	H	
DI-R7.3	The system shall generate reports on the impact of the loyalty program	F	DI-N21	T	M	H	Details will depend on loyalty program structure.
DI-R7.3.1	The loyalty program impact report shall include at least the following data elements: <ul style="list-style-type: none"> • Count of total participants broken down by status level • Count of total qualifying trips broken down by mode • Distance of total qualifying trips broken down by mode 	F	DI-N21	T	M	H	
DI-R7.3.2	The system shall be capable of exporting loyalty program impact report data to CSV files	F	DI-N21	T	M	H	
DI-R7.4	The system shall generate usage reports for each mobility app	F	DI-N21	T	M	H	
DI-R7.4.1	The mobility app usage report shall include at least the following data elements for each mobility app: <ul style="list-style-type: none"> • New downloads within a given period • Average usage rate for users who downloaded within a given period • Average usage rate for all users within a given period • Total trips logged within a given period • Mode split for all trips logged within a given period 	F	DI-N21	T	M	H	
DI-R7.4.2	The system shall be capable of exporting mobility app usage report data to CSV files	F	DI-N21	T	M	H	
DI-R7.5	The system shall automatically export diversion rate data to the Data-Exchange Platform	F	DI-N31	T	M	H	This is aggregated data with absolutely no PII. The data

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
							elements are to be determined but will likely include the location of the triggering event, the value of the incentive offered, and the diversion rates by mode.
DI-R7.6	The system shall be capable of reporting activity associated with integrated TDM programs	F	DI-N33	T	D	M	
DI-R7.7	The system shall be capable of producing monthly loyalty program progress reports for individual end users.	F	DI-N22	D	M	H	
DI-R7.7.1	Monthly individual user loyalty program progress reports will include user id and cell number for the user.	F	DI-N22	D	M	H	
DI-R7.7.2	Monthly individual user loyalty program progress reports will include aggregated metrics for loyalty program progress such as: <ul style="list-style-type: none"> • Total metro rides • Total bus rides • Total miles walked • Total miles biked 	F	DI-N22	D	M	H	
DI-R7.7.3	The vendor will provide VDOT with monthly loyalty program progress reports and associated data for any user and time period on demand.	F	DI-N22	D	M	H	The VDOT evaluation team will use loyalty program progress reports to determine if user overlap with other TDM programs is a significant issue.
DI-R7.8	The vendor will provide VDOT with monthly reports on system compliance with all service level agreements.	D		I	M	H	
DI-R8	The vendor shall provide program management services for the incentive program	F	DI-N30	D	M	H	This includes dynamic incentives as well as loyalty program and challenges.
DI-R8.1	The vendor shall provide marketing services for the incentive program	F	DI-N27	D	M	H	
DI-R8.1.1	The vendor shall develop a marketing plan for the program	F	DI-N27	D	M	H	Deliverable.
DI-R8.1.1.1	The marketing plan shall identify goals for app downloads	F	DI-N27	D	M	H	
DI-R8.1.1.2	The marketing plan shall identify goals for average app usage frequency	F	DI-N27	D	M	H	

Req. ID	Requirement Statement	Type	Need	Verify	Mand/Desire	Priority	Notes
DI-R8.1.1.3	The marketing plan shall use existing RM3P branding materials	F	DI-N27	D	M	H	
DI-R8.1.1.4	The marketing plan shall be updated at least once a year	F	DI-N30	D	M	H	
DI-R8.1.2	The vendor shall implement the marketing plan	F	DI-N30	D	M	H	
DI-R8.2	The vendor shall provide services to define and refine the program structure	F	DI-N30	D	M	H	
DI-R8.2.1	The vendor shall conduct public focus groups to identify incentives and program structures which motivate the public	F	DI-N26	D	M	H	
DI-R8.2.2	The vendor shall perform analyses of program activity to gauge public response	F	DI-N30	D	M	H	
DI-R8.3	The vendor shall develop a plan for achieving financial sustainability for the program	F	DI-N30	D	M	H	
DI-R8.3.1	The vendor shall recruit third-party vendors to supply incentives in exchange for exposure	F	DI-N28	D	M	H	
DI-R8.3.2	The vendor shall develop partnerships with transit agencies to offer tickets and passes as incentives	F	DI-N18, DI-N29	D	M	H	
DI-R8.3.3	The vendor shall develop partnerships with micro-mobility providers to offer free or discounted rides as incentives	F	DI-N18	D	M	H	
DI-R8.4	The vendor shall develop a plan for combating user fraud within the program	F	DI-N30	D	M	H	
DI-R9.1	The proposed approach shall comply with the Commonwealth Enterprise Architecture (EA) policies (EA 200) and standards (EA 225) as published by VITA at https://www.vita.virginia.gov/policy--governance/itrm-policies-standards/	C		I	M	H	
DI-R9.2	The vendor shall review and comply with all relevant Commonwealth Adopted Data Standards. A complete list of all adopted data standards can be found at https://www.vita.virginia.gov/media/vitavirginiagov/it-governance/psgs/pdf/COV_Adopted_Standards.xlsx	C		I	M	H	

Appendix C – State Corporation Commission Form

NOTE: This form is to be completed and included in the EOI response to the RFQ.

Virginia State Corporation Commission (“SCC”) registration information. The Supplier:

is a corporation or other business entity with the following SCC identification number: _____ -
OR-

is not a corporation, limited liability company, limited partnership, registered limited liability partnership, or business trust **-OR-**

is an out-of-state business entity that does not regularly and continuously maintain as part of its ordinary and customary business any employees, agents, offices, facilities, or inventories in Virginia (not counting any employees or agents in Virginia who merely solicit orders that require acceptance outside Virginia before they become contracts, and not counting any incidental presence of the Supplier in Virginia that is needed in order to assemble, maintain, and repair goods in accordance with the contracts by which such goods were sold and shipped into Virginia from Supplier’s out-of-state location) **-OR-**

is an out-of-state business entity that is including with this proposal an opinion of legal counsel that accurately and completely discloses the undersigned Supplier’s current contacts with Virginia and describes why those contacts do not constitute the transaction of business in Virginia within the meaning of § 13.1-757 or other similar provisions in Titles 13.1 or 50 of the Code of Virginia.

****NOTE** >>** Check the following box if you have not completed any of the foregoing options but currently have pending before the SCC an application for authority to transact business in the Commonwealth of Virginia and wish to be considered for a waiver to allow you to submit the SCC identification number after the due date for proposals (the Commonwealth reserves the right to determine in its sole discretion whether to allow such waiver):

Appendix D – DBE/SWaM Business Subcontracting Plan

NOTE: *This appendix is provided for informational purposes only. A formal DBE/SWaM Subcontracting Plan does not have to be included in the EOI response to the RFQ. However, your RFQ response must detail out your plans for DBE and SWaM participation in the project. See RFQ Section 1.E and Section 3.D.2.*

All DBE and small/micro businesses must be certified by the Commonwealth of Virginia, Department of Small Business and Supplier Diversity (DSBSD) by the due date of the solicitation to participate in the DBE/SWaM program. Certification applications are available through DSBSD online at www.DSBSD.virginia.gov (Customer Service).

Definitions:

“Disadvantaged Business Enterprise (DBE)” means a for-profit small business concern that is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

“Small business” means a business, independently owned and controlled by one or more individuals who are U.S. citizens or legal resident aliens, and together with affiliates, has 250 or fewer employees, or average annual gross receipts of \$10 million or less averaged over the previous three years. One or more of the individual owners shall control both the management and daily business operations of the small business. (Code of Virginia, §2.2-4310)

“SWaM Business” is an entity certified as a Small, Woman-Owned, or Minority business by DSBSD.

“Micro Business” is a certified Small Business under the SWaM Program and has no more than twenty-five (25) employees AND no more than \$3 million in average annual revenue over the three-year period prior to their certification. (Code of Virginia, § 2.2-4310)

“Women-owned business” means a business that is at least 51% owned by one or more women who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest is owned by one or more women who are U.S. citizens or legal resident aliens, and both the management and daily business operations are controlled by one or more women.

“Minority-owned business” means a business that is at least 51% owned by one or more minority individuals who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more minority individuals who are U.S. citizens or legal resident aliens, and both the management and daily business operations are controlled by one or more minority individuals. (Code of Virginia, § 2.2-4310)

Proposer Name: _____

Preparer Name: _____ **Date:** _____

Instructions:

- A. **If you are certified by the Department of Small Business and Supplier Diversity (DSBSD) as a DBE/SWaM business, complete only Section A of this form.** This shall not exclude DSBSD-certified women-owned and minority-owned businesses when they have received DSBSD small business certification.
- B. **If you are not a DSBSD-certified DBE/SWaM business, complete Section B of this form.** For the offer to be considered and the offeror to be declared responsive, the offeror shall identify the portions of the contract that will be subcontracted to DBE/SWaM businesses.

Section A

If your firm is certified by the Department of Small Business and Supplier Diversity (DSBSD), are you certified as a (**check only one below**)

- Disadvantaged Business Enterprise/Women-owned
- Disadvantaged Business Enterprise/Minority-owned
- Micro Business
- Small and Women-owned Business
- Small and Minority-owned Business

Certification Number: _____
(Micro/SWaM only)

Expiration Date _____

Section B

DBE/SWaM Business Subcontracting Plan

All Disadvantaged Business Enterprises (DBE) and small businesses must be certified by the Commonwealth of Virginia, Department of Small Business and Supplier Diversity (DSBSD) by the due date of this solicitation to participate in the DBE/SWaM Business Program. Certification applications are available through DSBSD online at www.sbsd.virginia.gov.

It is the goal of the Commonwealth of Virginia that more than 42% of its purchases be made from small businesses. All offerors are required to submit a DBE/SWaM Business Subcontracting Plan for this solicitation with their bid/offer.

If there is a DBE goal for this solicitation, offerors must meet the DBE goal with DBE certified firms or demonstrate good faith efforts. Many DBE firms are also SWaM certified firms; however, only certified DBE firms may be used to meet the DBE goal.

If the DBE goal is 0%, offerors which are small businesses themselves will receive the maximum available points for the small business participation plan evaluation criterion, and do not have any further subcontracting requirements.

Offerors which are not certified small businesses will be assigned points based on proposed expenditures with DSBSD certified small businesses for the contract period in relation to the offeror's total price for the contract period.

Points will be assigned based on each bidder's/offeror's proposed subcontracting expenditures with DSBSD certified small businesses for the initial contract period as indicated in Section B in relation to the offeror's total price.

The Contractor shall not receive credit both toward its DBE goal and toward its SWaM Business Subcontracting Plan for utilizing the same subcontractor(s) to perform or provide the same goods and/or services. The Contractor can use the same subcontractor to perform or provide different goods and/or services and receive credit both towards the Contractor's DBE goal and the SWaM Business Subcontracting Plan.

1. Disadvantaged Business Enterprise (DBE) Requirement

Populate Table 1 to show your firm’s plan for the utilization of DBE certified firms to be utilized on the contract. The offeror shall indicate the description of the category (S, M SP, H) and the type of work that each DBE firm will perform and the allowable credit per work item to be performed.

Note: The amount of allowable credit for a DBE supplier is 60% of the total cost of the materials or supplies obtained and 100% for a DBE Manufacturer of the materials and supplies obtained. An offeror may count 100% of the fees paid to a DBE hauler for the delivery of materials and supplies to the project site, but not for the cost of the materials and supplies themselves.

The DBE Goal is 15%.

Table 1: DBE Requirement

DBE Firm Name & Certification No.	Indicate if: Women-owned (W) or Minority-owned (M) and SWaM (S)	Contact Person, Telephone & Email	Indicate if: Subcontractor (S), Manufacturer (M); Supplier (SP), Hauler (H)	Type of Work, Goods, and/or services	Amount of allowable credit
	<input type="checkbox"/> W <input type="checkbox"/> M <input type="checkbox"/> S				
	<input type="checkbox"/> W <input type="checkbox"/> M <input type="checkbox"/> S				
	<input type="checkbox"/> W <input type="checkbox"/> M <input type="checkbox"/> S				
	<input type="checkbox"/> W <input type="checkbox"/> M <input type="checkbox"/> S				

Total \$ _____

Total Contract Value _____ x DBE Requirement _____ % = \$ _____

Percent Attained By Offeror _____ %

2. Micro/SWaM Subcontracting Plan

Populate Table 2 to show your firm’s plans for utilization of DSBSD certified small businesses in the performance of this contract for the initial contract period in relation to the offeror’s total price for the initial contract period. Certified small businesses include but are not limited to DSBSD certified women-owned and minority-owned businesses that have also received the SBSD small business certification. Include plans to utilize small businesses as part of joint ventures, partnerships, subcontractors, suppliers, etc. It is important to note that the proposed participation will be incorporated into the subsequent contract and will

be a requirement of the contract. Failure to obtain the proposed participation percentages may result in breach of contract.

Plans for Utilization of DSBSD-Certified Micro/SWaM Businesses for this Procurement

Table 2: Micro/SWaM Subcontracting Plan

Micro/SWaM & Address Certification No.	Indicate if: Women-owned (W) or Minority-owned (M)	Contact Person, Telephone & Email	Type of Goods and/or Services	Planned Involvement During Initial Period of Contract	Planned Contract Dollars During Initial Period of the Contract (\$ or %)
	<input type="checkbox"/> W <input type="checkbox"/> M				
	<input type="checkbox"/> W <input type="checkbox"/> M				
	<input type="checkbox"/> W <input type="checkbox"/> M				
	<input type="checkbox"/> W <input type="checkbox"/> M				
Total \$					

Appendix E – Enterprise Cloud Oversight Service (ECOS) and Assessment Questionnaire



NOTE: This appendix is provided for informational purposes only. The attached ECOS Assessment Form does not have to be completed and included in the EOI response to the RFQ. However, offerors down-selected under the RFQ process may be required to furnish this information as part of their proposals.

Enterprise Cloud Oversight Service (ECOS) provides oversight functions and management of cloud based services, specifically focused on software as a service (SaaS). The service assures compliance and improved security by providing transparency through VITA oversight.

The service assures consistent performance from suppliers through service level and performance monitoring. Agencies benefit from flexibility with growing business demands by ensuring adequate security controls are in place for the protection of data, proper utilization of resources and compliance with regulations, laws and timely resolution of audit recommendations.

ECOS minimizes the need for exceptions in obtaining external SaaS services. ECOS provides a flexible and custom option for obtaining SaaS services which meet the specific needs of the agency. The service offers guidance and oversight activities for agencies in the following areas:

- Meeting commonwealth requirements, such as SEC 501 and SEC 525
- Incorporating appropriate contract terms and conditions to mitigate risk
- Completing Annual SOC2 Type II assessment reviews
- Ensuring vulnerability scans and intrusion detection are conducted
- Patching compliance of suppliers environment
- Ensuring architectural standards are met
- Monitoring performance against Service Level Agreements (SLAs)

ECOS is a service specifically created for third party vendors offering **software as a service (SaaS) applications**.

SaaS is the capability to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The provider manages or controls the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user specific application configuration settings.

SaaS Characteristics include:

- Network-based access to, and management of, commercially available software
- Access to provider's services through an internet connection to a third party hosted facility
- A one-to-many model (single instance, multi-tenant architecture) for service delivery
- A common architecture for all tenants, usage based pricing, and scalable management
- Third party management of the service including functions such as patching, upgrades, platform management, etc.
- A multi-tenant architecture with a single, centrally maintained, common infrastructure and code base shared by all users and applications
- Subscriber/user managed access for the application
- Provider-based ***data custodianship and server administration*** for the service

INFORMATIONAL PURPOSES ONLY

Attachment A for Standard Form 1-003: ECOS Assessment

Work Request #	XXX	Date	
-----------------------	-----	-------------	--

Notes & Comments

Please ensure every section in this document is fully completed and you do not simply reply with Yes, No, or Not Applicable (NA) response. It is expected that there will be enough information provided to ensure that VITA is able to determine how the security objective is being met. This will help assist with streamlining the process.

Please complete the below fields for agency name, supplier name and requested Cloud service/product name.

Requesting Agency	Supplier Name	Supplier Product/Service Name	Approved PGR#


Note:

1. An answer of 'Yes' to all questions or answering 'No' to any of the questions in the assessment does not automatically constitute an approval, nor will the latter constitute automatic disqualification. Each response will be assessed and reviewed.
2. This assessment does not address all of the requirements outlined in the "Hosted Environment Information Security Standard", as the security standard contains both agency and supplier requirements. This assessment addresses supplier specific requirements that typically raise concerns from the Vendor and/or VITA.
3. As this is just an assessment, all Vendors still need to comply with all applicable Commonwealth Security Standards located at <http://www.vita.virginia.gov/library/default.aspx?id=537>
4. **Supplier:** When responding to questions contained within this questionnaire you **must** submit copies of the supporting policies or procedures or screen grabs of the applicable section of the supporting policies and procedures to support your responses where applicable.

Agency & Supplier: Please acknowledge by entering the authorized name(s) below and current date that you have read and understand the above 'Note' and all of the applicable security standards.

Agency Authorized Contact:		Date	
-----------------------------------	--	-------------	--

Supplier Authorized POC:		Date	
---------------------------------	--	-------------	--

 SEC 525 Mapping Document for SaaS Control Group	CGID	525 CID	525 Mapping	Control Specification	Assessment Question	WR Number		Assessment Response	
						Yes	No	N/A	Explanation of response
Cloud Classification & Configuration	CCC-1	CCC-1.0	EC - 1	Ensures appropriate information security guards are established.	Is the cloud solution you are proposing a Software as a Service, Platform as a Service, or Infrastructure as a Service Delivery Model				
Cloud Classification & Configuration	CCC-2	CCC-2	EC - 2	Establishing, monitoring, and operating IT systems in a manner consistent with COV Information Security policies and standards	Are you offering Public, Private or government cloud? Please describe the solution support model.				
Access Control: Policies & Procedures	ACP-1	ACP-1.1	AC-1	Develops, documents, and disseminates to all organization personnel, contractors, and service providers with a responsibility to implement access controls:	Does the provider have access control policies and procedures that are reviewed and/or updated at least annually or required due to environmental changes?				
Access Control - Account Management	ACP-2	ACP-2.1	AC-2	User access policies and procedures shall be established, and supporting business processes and technical measures implemented, for restricting user access as per defined segregation of duties to address business risks associated with a user-role conflict of interest.	Does the solution have the capability to identify and select the following types of accounts: Individual, group, System, Service, Application, Guest/anonymous and temporary?				
					Does the provider have the capability to segment and identify administrative accounts by tenant?				
					Are controls in place to prevent unauthorized access to your application, program or object source code, and assure it is restricted to authorized personnel only?				
					Does provider document how access to tenant data is granted and approved?				
					Is timely deprovisioning, revocation or modification of user access to the organizations systems, information assets and data implemented upon any change in status of employees, contractors, customers, business partners or involved third parties?				
					Do you provide tenants with documentation on how segregation of duties within proposed cloud service offering are maintained? Please provide copy of procedure(s)				
					Does the provider or solution automatically terminate temporary and emergency accounts after a predetermined period which is not to exceed 30-days in accordance with sensitivity and risk? Please provide copy of procedure(s)				
					Do you provide open encryption methodologies (3.4ES, AES, etc.) to tenants in order for them to protect their data if it is required to move through public networks (e.g., the Internet)?				

				Do you require at least annual certification of entitlements for all system users and administrators (exclusive of users maintained by your tenants)?				
				If users are found to have inappropriate entitlements, are all remediation and certification actions recorded/documented? If different actions are taken for Admin and User Accounts, please provide information on both.				
		ACP-2.8		Disable Inactive Accounts	Does the provider or solution automatically disable inactive accounts after 90 consecutive days of non-use?			
		ACP-2.9		Inactivity logout	Does the solution logout users automatically when the session inactivity time has exceeded 30 minutes?			
Access Control - Access Enforcement	ACP-3	ACP-3.1	AC-3	The information system enforces approved authorizations for logical access to information and system resources in accordance with applicable access control policies.	Are policies and procedures established for labeling, handling and the security of data and objects that contain data?			
Access Control - Separation of Duties	ACP-4	ACP-4.1	AC-5	User access policies and procedures shall be established, and supporting business processes and technical measures implemented, for restricting user access as per defined segregation of duties to address business risks associated with a user-role conflict of interest.	Are controls in place to prevent unauthorized access to your application, program or object source code, and assure it is restricted to authorized personnel only? Provide documentation on controls in place to prevent unauthorized access.			
					Are controls in place to prevent unauthorized access to tenant application, program or object source code, and assure it is restricted to authorized personnel only? Provide documentation on controls in place to prevent unauthorized access.			
Access Control - Least Privilege	ACP-5	ACP-5.1	AC-6	The organization employs the principle of least privilege, allowing only authorized accesses for users (or processes acting on behalf of users) which are necessary to accomplish assigned tasks in accordance with organizational missions and business functions.	Do you document how you grant and approve access to tenant data? Please procedure for doing this.			
		ACP-5.2			Do you have a method of aligning provider and tenant data classification methodologies for access control purposes?			
		ACP-5.3			Will you share user entitlement remediation and certification reports with your tenants, if inappropriate access may have been allowed to tenant data?			
Access Control - Unsuccessful Logon Attempts	ACP-6	ACP-6.1	AC-7	Enforces a limit of 3 consecutive invalid logon attempts by a user during a 15 minute period;	Do you allow tenants/customers to define password and account lockout policies for their accounts? Provide system password requirements and policies.			
		ACP-6.2		Automatically locks the account/node for a minimum of a 30 minute period when the maximum number of unsuccessful attempts is exceeded.	Do you support password (minimum length, age, history, complexity) and account lockout (lockout threshold, lockout duration) policy enforcement? Please provide policies for both standard and admin accounts.			
		ACP-6.3		Password Policy must meet or exceed current password policy defined in SEC 501.	Do you support tenant defined password complexity policies? Specify your password length and complexity requirements in the notes field			

Awareness and Training - Policy and Procedures	ATP-1	ATP-1.1	AT-1 AT-2 AT-2-COV AT-3 AT-4	Employment agreements shall incorporate provisions and/or terms for adherence to established information governance and security policies and must be signed by newly hired or on-boarded workforce personnel (e.g., full or part-time employee or contingent staff) prior to granting workforce personnel user access to corporate facilities, resources, and assets.	Do you specifically train your employees regarding their specific role and the information security controls they must fulfill?				
		ATP-1.2			Do you document employee acknowledgment of training they have completed?				
		ATP-1.3			Are all personnel required to sign NDA or Confidentiality Agreements as a condition of employment to protect customer/tenant information?				
		ATP-1.4			Is successful and timely completion of the training program considered a prerequisite for acquiring and maintaining access to sensitive systems?				
		ATP-1.5			Are personnel trained and provided with customer defined awareness programs at least once a year?				
Audit and Control -Audit and Accountability	AUC-1	AUC-1.1	AU-1	Audit plans shall be developed and maintained to address business process disruptions. Auditing plans shall focus on reviewing the effectiveness of the implementation of security operations. All audit activities must be agreed upon prior to executing any audits.	Do you produce audit assertions using a structured, industry accepted format (e.g., Cloud Audit/A6 URI Ontology, Cloud Trust, SCAP/CYBEX, GRC XML, ISACA's Cloud Computing Management Audit/Assurance Program, etc.)?				
		AUC-1.2			Are your audits performed at least annually? if no, please describe in the comments section.				
		AUC-1.3		Independent reviews and assessments shall be performed at least annually to ensure that the organization addresses nonconformities of established policies, standards, procedures, and compliance obligations.	Do you allow tenants to view your SOC2/ISO 27001 or similar third-party audit or certification reports?				
		AUC-1.4			Do you conduct network penetration tests of your cloud service infrastructure regularly as prescribed by industry best practices and guidance?				
		AUC-1.5			Do you conduct application penetration tests of your cloud infrastructure regularly as prescribed by industry best practices and guidance?				
		AUC-1.6			Are the results of the penetration tests available to tenants at their request?				
		AUC-1.7			Are the results of internal and external audits available to tenants at their request?				
Audit and Control: Audit Events	AUC-2	AUC-2.1	AU-2	An event is any observable occurrence in an organizational information system. Organizations identify audit events as those events which are significant and relevant to the security of information systems and the environments in which those systems operate in order to meet specific and ongoing audit needs.	Is the solution capable of auditing the following events? Successful and unsuccessful account logon events, account management events, object access, policy change, privilege functions, process tracking, and system events.				
		AUC-2.2		Audit events on Web Applications	Is the solution capable of auditing the following events, for Web applications? All administrator activity, authentication checks, authorization checks, data deletions, data access, data changes, and permission changes.				

Audit and Control: Audit Review, Analysis, and Reporting	AUC-3	AUC-3.1	AU-6	Audit Review, Analysis, and Reporting	Is the solution capable of automated mechanisms to centrally review, analyze and correlate audit and log records from multiple components of the solution to support organizational processes for investigation, alerting and response to suspicious activities? is the information available to your tenants?				
Audit and Control:	AUC-4	AUC-4.1	AU-11		Is the solution capable of maintaining all audit records in accordance with commonwealth record retention policies found at the following URL? http://www.lva.virginia.gov/agencies/records/				
Control Assessment and Authorization	CAA-1	CAA-1.1	CA-1 CA-3 CA-7	Risk assessments associated with data governance requirements shall be conducted at planned intervals and shall consider the following: <ul style="list-style-type: none"> Awareness of where sensitive data is stored and transmitted across applications, databases, servers, and network infrastructure Compliance with defined retention periods and end-of-life disposal requirements Data classification and protection from unauthorized use, access, loss, destruction, and falsification 	Do you provide security control health data in order to allow tenants to implement industry standard Continuous Monitoring (which allows continual tenant validation of your physical and logical control status)?				
		CAA-1.2			Do you conduct risk assessments associated with data governance requirements at least once a year?				
Configuration Management - Policy and Procedures	CMP-1	CMP-1.1	CM-1	Organization shall follow a defined quality change control and testing process (e.g., ITIL Service Management) with established baselines, testing, and release standards which focus on system availability, confidentiality, and integrity of systems and services	Do you provide your tenants with documentation that describes your quality assurance process?				
		CMP-1.2			Is documentation describing known issues with certain products/services available?				
		CMP-1.3			Are there policies and procedures in place to triage and remedy reported bugs and security vulnerabilities for product and service offerings? Are tenants provided with documentation on remedied issues?				
		CMP-1.4			Are mechanisms in place to ensure that all debugging and test code elements are removed from released software versions? Are there technical controls in place to prevent?				
	CMP-2	CMP-1.1	CM-2 CM-2-COV CM-3 CM-3-COV CM-7	The organization develops, documents, and maintains under configuration control, a current baseline configuration of the information system.	Do you have a capability to continuously monitor and report the compliance of your infrastructure against your information security baselines?				
		CMP-1.2			Do you have controls in place to restrict and monitor the installation of unauthorized software onto your systems?				
		CMP-1.3			Can you provide evidence that the proposed solution adheres to a security baseline, which is based on least functionality?				
		CMP-1.4			Are all changes to proposed solution authorized according to change management policies?				

Contingency Planning - Information System backup	CP-1	CP-1.1	<p>A consistent unified framework for business continuity planning and plan development shall be established, documented, and adopted to ensure all business continuity plans are consistent in addressing priorities for testing, maintenance, and information security requirements. Requirements for business continuity plans include the following:</p> <ul style="list-style-type: none"> • Defined purpose and scope, aligned with relevant dependencies • Accessible to and understood by those who will use them • Owned by a named person(s) who is responsible for their review, update, and approval • Defined lines of communication, roles, and responsibilities • Detailed recovery procedures, manual work-around, and reference information • Method for plan invocation 	Do you provide tenants with geographically resilient hosting options?				
		CP-1.2		Do you provide tenants with infrastructure service failover capability to other providers?				
		CP-1.3		Are business continuity plans subject to test at planned intervals or upon significant organizational or environmental changes to ensure continuing effectiveness?				
		CP-1.4		Can the solution provide and maintain a backup of commonwealth data that can be recovered in an orderly and timely manner within a predefined frequency consistent with recovery time and recovery point objectives?				
		CP-1.5		Can the solution store a backup of commonwealth data, at least daily, in an off-site "hardened" facility, located within the continental United States, maintaining the security of commonwealth data?				
		CP-1.6		Can the solution partition, in aggregate for this proposal, all commonwealth data submitted into the solution by the data owner in such a manner that it will not be impacted or forfeited due to E-discovery, search and seizure or other actions by third parties obtaining or attempting to obtain records, information or commonwealth data for reasons or activities that are not directly related to the business of the data owner?				
Identification and Authentication; Organizational Users	IDA-1	IDA-1.1	<p>Vendor should have An identification and authentication policy that addresses purpose, scope, roles, responsibilities, management commitment, coordination among organizational entities, and compliance</p>	Does your management provision the authorization and restrictions for user access (e.g., employees, contractors, customers (tenants), business partners and/or suppliers) prior to their access to data and any owned or managed (physical and virtual) applications, infrastructure systems and network components?				
		IDA-1.2						
		IDA-1.3			Procedures to facilitate the implementation of the identification and authentication policy and associated identification and authentication controls	Do you require at least annual updates and reviews of your access policies for all system users and administrators (exclusive of users maintained by your tenants)?		
		IDA-1.1	<p>Internal agency or customer (tenant) user account credentials shall be restricted as per the following, ensuring appropriate identity, entitlement, and access management and in accordance with established policies and procedures:</p> <ul style="list-style-type: none"> • Identity trust verification and service-to- 	Do you support use of, or integration with, existing customer-based Single Sign On (SSO) solutions to your service?				
		IDA-1.2		Do you support identity federation standards (SAML, SPML, WS-Federation, etc.) as a means of authenticating/authorizing users?				

Identification and Authentication; Authenticator Management	IDA-2	IDA-1.3	IA-2 IA-2-COV IA-5	service application (API) and information processing interoperability (e.g., SSO and Federation) • Account credential lifecycle management from instantiation through revocation • Account credential and/or identity store minimization or re-use when feasible • Adherence to industry acceptable and/or regulatory compliant authentication, authorization, and accounting (AAA) rules (e.g., strong/multi-factor, expireable, non-shared authentication secrets)	Do you have an identity management system (enabling classification of data for a tenant) in place to enable both role-based and context-based entitlement to data?					
		IDA-1.4			Do you provide tenants with strong (multifactor) authentication options (digital certs, tokens, biometrics, etc.) for user access?					
		IDA-1.5			Do you allow tenants to use third-party identity assurance services?					
		IDA-1.6			Do you support password (minimum length, age, history, complexity) and account lockout (lockout threshold, lockout duration) policy enforcement?					
		IDA-1.7			Do you support the ability to force password changes upon first logon?					
		IDA-1.8			Do you have mechanisms in place for unlocking accounts that have been locked out (e.g., self-service via email, defined challenge questions, manual unlock)?					
Incident Response	IR-1	IR-1.1	IR-4 IR-5 IR-6	Identify immediate mitigation procedures, including specific instructions, based on information security incident categorization level, on whether or not to shut down or disconnect affected IT systems. Establish procedures for information security incident investigation, preservation of evidence, and forensic analysis.	Do you have a documented security incident response plan?					
		IR-1.2			Do you integrate customized tenant requirements into your security incident response plans?					
		IR-1.3			Do you publish a roles and responsibilities document specifying what you vs. your tenants are responsible for during security incidents?					
		IR-1.4			Have you tested your security incident response plans in the last year?					
		IR-1.5			The organization tracks and documents information system security incidents.	Do you monitor and quantify the types, volumes and impacts on all information security incidents?				
		IR-1.6			Will you share statistical information for security incident data with your tenants upon request?					
		IR-1.7			Requires personnel to report suspected security incidents to the organizational incident response capability within 24 hours from when the agency discovered or should have discovered their occurrence; and Reports security incident information to designated authorities.	Do you have a defined and documented incident notification process for reporting suspected security incidents within 24 hours?				
		IR-1.8			Does your security information and event management (SIEM) system merge data sources (app logs, firewall logs, IDS logs, physical access logs, etc.) for granular analysis and alerting?					
		IR-1.9			Do you maintain liaisons and points of contact with local authorities in accordance with contracts and appropriate regulations?					
		IR-1.10			Do you enforce and attest to tenant data separation when producing data in response to legal subpoenas?					
Media Protection Policy and Procedures	MPP-1	MPP1.1	MP-6	Policies and procedures shall be established with supporting business processes and technical measures implemented for the secure disposal and complete removal of data	Do you support secure deletion (e.g., degaussing/cryptographic wiping) of archived and backed-up data as determined by the tenant?					

Procedures: <i>Media Sanitization</i>	MPP-1	MPP1.2	MP-6-COV	from all storage media, ensuring data is not recoverable by any computer forensic means.	Does supplier meet all data disposal requirements as outlined in the current Removal of Commonwealth Data from Electronic Media Standard (SEC514-04)?				
Physical and Environmental Protection: Physical Access Authorizations	PEP-1	PEP-1.1	PE-2(1) PE-2(3)	The organization authorizes physical access to the facility where the information system resides based on position or role.	Can you provide a published procedure for exiting the service arrangement, including assurance to sanitize all computing resources of tenant data once a customer has exited your environment or has vacated a resource?				
Physical and Environmental Protection: <i>Physical Access Control</i>	PEP-2	PEP-2.1	PE-3	Ingress and egress points such as service areas and other points where unauthorized personnel may enter the premises shall be monitored, controlled and, if possible, isolated from data storage and processing facilities to prevent unauthorized data corruption, compromise, and loss.	Do you restrict physical access to information assets and functions by users and support personnel?				
		PEP-2.2			Are ingress and egress points, such as service areas and other points where unauthorized personnel may enter the premises, monitored, controlled and isolated from data storage and process?				
Physical and Environmental Protection: <i>Physical Location</i>	PEP-3	PEP-3.1	PE-18-COV SA-9-COV-1	All information system components and services remain within the continental United States. All physical components associated with an information system or service classified as sensitive with respect to confidentiality or integrity must be housed within the same storage location dedicated for the exclusive use of the organization and are clearly marked. Each hypervisor can only host one tier of the application architecture and no hypervisor may host the application interface and the data storage component for any information system, even if the components in question do not interact within the same information system.	Do you allow tenants to define acceptable geographical locations for data routing or resource instantiation?				
		PEP-3.2			Can you provide the physical geographical location of the storage in advance for a tenants data?				
		PEP-3.3			Can you provide the physical geographical location of a tenants data upon request?				
		PEP-3.4			Can you ensure that data does not migrate beyond a defined geographical residency?				
		PEP-3.5			Do you have the capability to restrict the storage of customer data to specific countries or geographic locations?				
		PEP-3.6			Does the solution have the capability to set affinity on tiered systems, no one hypervisor can host the application and the data storage?				
System and Information Integrity: <i>Vulnerability / Patch Management (Flaw Remediation)</i>	SII-1	SII-1.1	SI-2 RA-5 RA-5-COV	Policies and procedures shall be established, and supporting processes and technical measures implemented, for timely detection of vulnerabilities within organizationally-owned or managed applications, infrastructure network and system components (e.g., network vulnerability assessment, penetration testing) to ensure the efficiency of implemented security controls. A risk-based model for prioritizing remediation of identified vulnerabilities shall be used. Changes shall be managed through a change management process for all vendor-supplied patches, configuration changes, or changes to the organization's internally developed software. Upon request, the	Do you conduct network-layer vulnerability scans regularly as prescribed by industry best practices? Provide the frequency.				
		SII-1.2			Do you conduct application-layer vulnerability scans regularly as prescribed by industry best practices? Provide the frequency				
		SII-1.3			Do you conduct local operating system-layer vulnerability scans regularly as prescribed by industry best practices? Provide the frequency				
		SII-1.4			Will you make the results of vulnerability scans available to tenants at their request?				
		SII-1.5			Do you have a capability to rapidly patch vulnerabilities across all of your computing devices, applications and systems?				

		SII-1.6		provider informs customer (tenant) of policies and procedures and identified weaknesses especially if customer (tenant) data is used as	Will you provide your risk-based systems patching time frames to your tenants upon request?				
System and Information Integrity: <i>Malicious Code protection</i>	SII-2	SII-2.1	SI-3 SI-3-COV	Policies and procedures shall be established, and supporting business processes and technical measures implemented, to prevent the execution of malware on organizationally-owned or managed user end-point devices (i.e., issued workstations, laptops, and mobile devices) and IT infrastructure network and systems components.	Does the provider ensure that they will utilize industry standard malware protection, incorporating both signature and non-signature-based detection mechanisms, on all systems with access to commonwealth data?				
		SII-2.1			Does the provider ensure that malware protection will be centrally managed and receive regular automatic updates to malicious code protection mechanisms and data files from the software vendor?				
System and Communications Protection: <i>Boundary Protection</i>	SCP-1	SCP-01.1	SC-7	Policies and procedures shall be established, and supporting business processes and technical measures implemented, for the use of encryption protocols for protection of sensitive data in storage (e.g., databases) and data in transmission (e.g., system interfaces, over public networks, and electronic messaging) as per applicable legal, statutory, and regulatory compliance obligations.	Does the provider ensure that the solution will utilize industry standard firewalls regulating all data entering the internal data network from any external source which will enforce secure connections between internal and external systems and will permit only authorized data to pass through?				
		SCP-01.2			Does the offeror ensure that external connections incorporated into the solution have appropriate security controls including industry standard intrusion detection and countermeasures that will detect and terminate any unauthorized activity prior to entering the firewall maintained by offeror?				
System and Communications Protection; <i>Encryption</i>	SCP-2	SCP-02.1	SC-1 SC-8 SC-8-COV SC-23 SC-28	The organization establishes and manages cryptographic keys for required cryptography employed within the information system in accordance with the organization-defined requirements for key generation, distribution, storage, access, and destruction. Platform and data appropriate encryption (e.g., AES-	Do you encrypt tenant data at rest (on disk/storage) within your environment?				
		SCP-02.2			Do you use encryption for storing and transmitting email attachments?				
		SCP-02.3			Do you leverage encryption to protect data and virtual machine images during transport across and between networks and hypervisor instances?				
		SCP-02.4			Do you support tenant-generated encryption keys or permit tenants to encrypt data to an identity without access to a public key certificate (e.g., identity-based encryption)?				
		SCP-02.5			Do you have documentation establishing and defining your encryption management policies, procedures and guidelines?				
		SCP-3.1		The organization establishes and manages cryptographic keys for required cryptography employed within the information system in accordance with the organization-defined requirements for key generation, distribution, storage, access, and destruction. Platform and data appropriate encryption (e.g., AES-	Do you have platform and data appropriate encryption that uses open/validated formats and standard algorithms?				
		SCP-3.2			Do you support encryption keys being solely maintained by the cloud consumer or a trusted key management provider?				
		SCP-3.3			Do you store encryption keys in the cloud?				

Systems and Communication Protection; Cryptographic Key Establishment and Management	SCP-3	SCP-3.4	SC-12 SC-12-COV SC-13 SC-13-COV	256) in open/validated formats and standard algorithms shall be required. Keys shall not be stored in the cloud (i.e. at the cloud provider in question), but maintained by the cloud consumer or trusted key management provider. Key management and key usage shall be separated duties.	Do you have separate key management and key usage duties?				
Data Security & Information Lifecycle Management Nonproduction Data	DS-01	DS-01.1	SA-11	Production data shall not be replicated or used in non-production environments. Any use of customer data in non-production environments requires explicit, documented approval from all customers whose data is affected, and must comply with all legal and regulatory requirements for scrubbing of sensitive data elements.	Do you have procedures in place to ensure production data shall not be replicated or used in non-production environments?				
VITA Governance - Portability Requirements									
Interoperability & Portability APIs	IPY-01	IPY-01	ECOS -1	The provider shall use open and published APIs to ensure support for interoperability between components and to facilitate migrating applications.	Do you publish a list of all APIs available in the service and indicate which are standard and which are customized?				
Interoperability & Portability Data Request	IPY-02	IPY-02	ECOS -2	All structured and unstructured data shall be available to the customer and provided to them upon request in an industry-standard format (e.g., .doc, .xls, .pdf, logs, and flat files).	Is customer data (Structured & Unstructured) available on request in an industry-standard format (e.g., .doc, .xls, or .pdf)?				
Interoperability & Portability Policy & Legal	IPY-03	IPY-03.1	ECOS -3	Policies, procedures, and mutually-agreed upon provisions and/or terms shall be established to satisfy customer (tenant) requirements for service-to-service application (API) and information processing interoperability, and portability for application development and information exchange, usage, and integrity persistence.	Do you provide policies and procedures (i.e. service level agreements) governing the use of APIs for interoperability between your service and third-party applications?				
		IPY-03.2	ECOS -4		Do you provide policies and procedures (i.e. service level agreements) governing the migration of application data to and from your service?				
Interoperability & Portability Standardized Network Protocols	IPY-04	IPY-04.1	ECOS - 5	The provider shall use secure (e.g., non-clear text and authenticated) standardized network protocols for the import and export of data and to manage the service, and shall make available a document to consumers (tenants) detailing the relevant interoperability and portability standards that are involved.	Can data import, data export and service management be conducted over secure (e.g., non-clear text and authenticated), industry accepted standardized network protocols?				
		IPY-04.2	ECOS - 6		Do you provide consumers (tenants) with documentation detailing the relevant interoperability and portability network protocol standards that are involved?				
Interoperability & Portability Virtualization		IPY-05.1	ECOS - 7	The provider shall use an industry-recognized virtualization platform and standard virtualization formats (e.g., OVF) to help ensure interoperability, and shall have	Do you use an industry-recognized virtualization platform and standard virtualization formats (e.g., OVF) to help ensure interoperability?				

	IPY-05	IPY-05.2	ECOS - 8	documented custom changes made to any hypervisor in use, and all solution-specific virtualization hooks, available for customer review.	Do you have documented custom changes made to any hypervisor in use, and all solution-specific virtualization hooks available for customer review?				
Security Framework - Organizational Security Framework	SF -01	SF-01.1	ECOS - 9	Design, acquisition, implementation, configuration, modification, and management of infrastructure and software are consistent with defined processing integrity and related security policies.	What Security Framework do you follow (.i.e. NIST, , ISO/IEC 27001, etc...)?				

Appendix F – Proprietary/Confidential Information Summary Form

SECTION/TITLE	PAGE NUMBER(S)	REASON(S) FOR WITHHOLDING FROM DISCLOSURE

*Identify the reason for withholding from disclosure in accordance with the Code of Virginia § 2.2- 4342F.