

# Multimodal and Accessible Travel (MAT) Standards PMP v1.01

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## DRAFT Project Management Plan (PMP) for Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project

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Revised Version December 2, 2022

**PMP in support of:** USDOT Contract # FHWA- 693JJ321D000005  
TOPR # 693JJ321F000420

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Multimodal and Accessible Travel Standards and Vulnerable Road User  
Cybersecurity Support

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**CHANGE HISTORY**

<b>Version</b>	<b>DATE</b>	<b>EDIT</b>	<b>NOTE</b>
Draft v0.01	10/21/21	Eisenhart	Initial Draft for this Project Management Plan (PMP) v01.00.
Draft v0.02	10/22/21	Chan	Initial Draft for this Project Management Plan (PMP) v01.00.
Draft v0.03	10/22/21	Narla	Initial Draft for this Project Management Plan (PMP) v01.00.
Draft v0.04	04/15/22	Mahesh	Final Draft for this Project Management Plan (PMP) v01.00
Draft v1.01	12/2/22	Okunieff	Update from Version 1.0 (with update for Tasks 4, 5 and 6)

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## 1 INTRODUCTION

### 1.1 Purpose of the Project Management Plan

This document defines a Project Management Plan (PMP) for the Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project under the United States Department of Transportation (USDOT) Contract Number FHWA#693JJ321D000005, Task Order # 693JJ321F000420. This PMP identifies the activities for the Multimodal and Accessible Travel (MAT) Project and establishes a common understanding for the management of the project for:

- a) The USDOT Intelligent Transportation Systems (ITS) Joint Program Office (JPO) who is sponsoring the work.
- b) The partner Standard Development Organizations (SDOs) who are representing stakeholders for this project.
- c) The sub-consultant team contracted to perform the work; and
- d) The mobility stakeholder community, which includes transport service providers (e.g., public transit, paratransit), mobility service providers (e.g., bikesharing, scooter-sharing, carsharing, and ridesourcing), and mobility service customers representative who may use the deliverables from this PMP.

This PMP is based on the Performance Work Statement (PWS) for the 693JJ321F000420 project provided by the USDOT. The PMP includes plans for scope management; communications; deliverables and milestones; quality management; human resource management; and a Systems Engineering Management Plan (SEMP). Portions of this PMP may be updated during the course of the project if the Project Management Team or the USDOT determines that modification would significantly facilitate the project management functions. The PMP is not intended to be a progress tracking tool or to be modified for minor changes in schedule once the project has started.

### 1.2 Background of Project

USDOT and ITE and their standards development partners have worked on ITS standards since the inception of the ITS Standards Program over 20 years ago. In recent years traditional ITS technologies have started to integrate with multimodal travel and support vulnerable road users (VRUs). Working with the multimodal community to survey existing standards and how they can support/augment ITS implementations is a necessary step. Additionally, ensuring that the security needs of VRUs are addressed in both standards and ITS deployments is critical to the safety and security of those VRUs. USDOT previously had a MAT Standards project that produced a MAT Standards Assessment and Roadmap that this project is expected to build on. This project is to define critical activities to better address the convergence of ITS technologies with multimodal and accessible travel and VRUs.

The objective of this project is to continue the work, started under the Multimodal and Accessible Travel Standards project, to address gaps in standards and deployment guidance for MAT and VRU technologies when integrating with ITS environments and technologies, including connected vehicle (CV) technologies. Identifying the unique security and privacy risks associated with VRUs participating in ITS environments is a key activity that will be used to inform future cybersecurity guidance and standards development efforts. Coordinating and managing MAT standards engagements and developing MAT use cases are key follow-on efforts to the original MAT work that was accomplished. Finally, developing a mobility-on-demand (MOD) operational readiness assessment framework will support the future deployments of MOD technologies and help state and local agencies prepare for their deployments.

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## 2 SCOPE MANAGEMENT PLAN

### 2.1 Purpose of the Scope Management Plan

This Scope Management Plan establishes the scope management approach and processes as they pertain to scope description, verification, and control measures. It establishes the processes which ensure that the Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project includes all of the tasks required to complete the work identified while excluding all work that is unnecessary. Each of the major project tasks are listed below with the objectives, approach and deliverables identified. Tasks specifically identified in the PWS are identified in brackets with the PWS task number (i.e., [PWS Task #]). Specific deliverables identified in the PWS are identified in brackets as “[PWS Deliverable]”

### 2.2 Scope Statement

#### 2.2.1 Project Scope Description

The subsections below describe the project activities listed in the Gantt Charts in Section 4.3 Project Schedule. The development of the deliverable documents is carried out using a cyclical draft-review-update process with a Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project Committee of qualified reviewers that is not a part of the sub-consultant team.

##### 2.2.1.1 Task 1 Project Management [PWS Task 1]

The purpose of this task is to establish the management processes for the Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support. The project management activities include the development of a PMP and SEMP. The following stipulations apply:

- The approved version of the PMP, SEMP and project schedule only with pre-approval from the Contracting Officer's Representative (COR) and any modified version will be delivered to the COR within 10 working days after receiving COR approval.
- Once the draft PMP, SEMP and project schedule are ready for review, a meeting with the USDOT and its representatives will be scheduled to review each document and ensure that all parties are in agreement on the overall approach to project execution.
- The revised version of each contract deliverable (including the detailed project schedule) will be under document configuration control with version numbers assigned to each document. All documents submitted to and approved by the USDOT will be assigned a unique version number.
- An ATP is pursuant to USDOT's approval of a revised PMP and schedule.

##### 2.2.1.1.1 Task 1.1 Kick-off Meeting [PWS Task 1.1]

###### *Objectives*

- Ensure all parties have a clear understanding of the requirements of this PWS and what the USDOT's expectations are.

###### *Approach*

- The kick-off meeting will take place within 30 working days of the Authorization to Proceed (ATP) unless otherwise agreed to by the Government.

###### *Deliverables*

- Draft PMP and a detailed project schedule, in Microsoft Project format, that lists all milestones [PWS Deliverable]

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### 2.2.1.1.2 Task 1.2 Project Management Plan (PMP) [PWS Task 1.2]

#### *Objectives*

- Develop a PMP that describes the overall approach to managing the Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project and coordinating the work performed by all subcontractors.

#### *Approach*

- The PMP contains a Communications Plan that describes how ITE will coordinate their efforts with the USDOT, particularly the Contracting Officer's Representative (COR) and the Contracting Officer (CO).
- The PMP includes a Human Resources Management Plan that describes the overall structure of the Project Development Team including how to leverage key experience and capabilities, explain the roles and responsibilities of all key individuals, and describe the reporting relationships among the team. The Human Resources Management Plan will contain team resumes, representing domain experts and a qualified technical editor. The Human Resources Management Plan, including team members, is subject to USDOT approval as part of the overall approval of the PMP.
- The PMP includes a Quality Management Plan to ensure that the documents submitted as deliverables will:
  - contain suitable material for the target audience.
  - be organized in presentation.
  - contain proper word use and English diction.
  - contain detailed illustrations.
  - be comprehensive, complete, and correct; and
  - be edited for grammatical and editorial errors.The Quality Management section is subject to USDOT approval as part of the overall approval of the PMP.
- The PMP includes the Risk Management Plan that identifies risks that might affect the project and the characteristics of the risk. Types of risks considered include risks potentially impacting: technical, project schedule, scope, and costs. A Risk Management Log will be maintained on an on-going basis during the entire period of performance to track risks, mitigation plans and status. Each risk will have a unique number, probability of occurrence and impact of occurrence rating.
- The PMP includes a detailed project schedule in Microsoft Project 2010 format that contains all of the planned tasks and milestones for the project. The project schedule will address all project management activities. The project schedule will reflect a work breakdown structure (WBS) comprised of at least three levels. An updated project schedule reflecting actual work performed for the previous month will be included with every monthly report (see Section 2.2.1.1.1). The monthly updated project schedule will reflect both the baselined task start and end dates and the actual start and end dates for each task. The project schedule will be provided as both a Microsoft Project Document (MPP) and a Portable Document Format (PDF).
- The draft PMP will be delivered at the kick-off meeting.
- The approved version of the PMP and project schedule will only be revised with pre-approval from the COR. Any modified version of the project schedule will be delivered to the within 10 working days after receiving COR approval.
- Once the draft PMP and project schedule are ready for review, ITE will schedule a meeting with USDOT and its representatives, AASHTO, NEMA and subcontracted SMEs to review each document and ensure that all parties are in agreement on the overall approach to project execution.
- ITE will put the revised version of each contract deliverable (including the project schedule) under document configuration control, with version numbers assigned to each document. All documents submitted to, and approved by, USDOT will be assigned a unique version number.

*Deliverables*

- Final PMP [PWS Deliverable]
- Monthly Progress Reports [PWS Deliverable]

**2.2.1.2 Task 2 Cybersecurity and Privacy Analysis for Vulnerable Road Users [PWS Task 2]**

The purpose of this task is to research and document critical risks for privacy and security of individual transportation system users, particularly VRUs (e.g., pedestrians, cyclists, people with disabilities) in connected/automated vehicle environments and integrated mobility systems.

*Objectives*

- Review Relevant Prior and Ongoing Research related to projects associated with the standard under development/update and gain a clear understanding of the prior work.

*Approach*

- **Task 2.1: Review Ongoing Standards, Guidance, or Best Practices to gain clear understanding of prior work to determine any gap exists.** ITE will then propose recommendations for addressing that gap, including updating any existing standard/guidance/best practice documents or developing a new standard/guidance/best practice document.
- **Task 2.2: Develop a white paper providing the results of the analysis of VRU Cybersecurity and Privacy Risks.** A draft white paper will be provided to the DOT for review and comment. ITE will update the white paper based on the comments received to create the final version of the white paper.

Note: This task will incorporate the results of the Task 3.1 report into the Task 2.2 white paper.

*Deliverables*

- Draft Vulnerable Road User Cybersecurity and Privacy Risks Whitepaper [PWS Deliverable]
- Final Vulnerable Road User Cybersecurity and Privacy Risks Whitepaper [PWS Deliverable]

**2.2.1.3 Task 3 Develop Multimodal and Accessible Travel (MAT) Use Cases [PWS Task 3]***Objectives*

- The objective of this task is to develop use cases that cover different aspects of 8 multimodal and accessible travel (MAT).

*Approach*

## Task 3.1: Multimodal and Accessible Travel Use Case Review

- ITE will begin this task by reviewing those MAT use cases that were identified during the Multimodal and Accessible Travel Standards Assessment (MATSA) project as well as those that have already been identified in the Accessible Transportation Technology Research Initiative (ATTRI) and The Complete Trip - ITS4US Deployment Program (among other USDOT programs/areas such as Mobility Services for All Americans, and Vehicle-to-Infrastructure (V2I) and Connected Vehicle resources).
- In the MATSA project, numerous use cases and gaps in use cases were identified in various aspects of MAT. For example, in the Public Right of Way (PROW) and Indoor Navigation areas.
- The results of this research into use cases and gaps in use cases will be documented in the Draft Multimodal and Accessible Travel Use Case Review for review and comment by USDOT. Once comments are received from USDOT, they will be incorporated into the Final Multimodal and Accessible Travel Use Case Review.

*Deliverables*

- Draft Multimodal and Accessible Travel Use Case Review
- Final Multimodal and Accessible Travel Use Case Review

Task 3.2: Develop MAT Use Cases. Based on the results of Task 3.1, ITE will develop, and document use cases using the use case template provided in the PWS.

- As identified in the Final MATSA Outreach Plan and MATSA Roadmap, take into account all use cases identified in existing and current standards and relevant activities and attempt to harmonize like use cases where possible. As part of this development, ITE will develop the use cases according to the nine dimensions when considered together provide a framework of MAT standards
- The use cases will be documented in a Draft MAT Use Cases deliverable and provided to the USDOT for review and comment.
- Once comments are received from USDOT, they will be incorporated into the Final MAT Use Cases document. In addition a Section 508 Compliant version of the document will be created and delivered.

*Deliverables*

- Draft MAT Use Cases [PWS Deliverable]
- Final MAT Use Cases (Section 508 compliant) [PWS Deliverable]

**2.2.1.4 Task 4 Addressing Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Coordination [PWS Task 4]**

*Objectives*

- The objective of this task is to provide a plan for coordinating participation in MAT Standards activities that occur outside of the traditional ITS standards development organizations.

*Approach*

- **Task 4.1: Develop Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Coordination Plan and provide Report**
  - Identify the organizations developing standards that are involved with the standard domain (Reservation/Dispatch APIs, VRU in C2X environment and Cybersecurity, and Public Right of Way / Impedance Accessibility).
  - Plan will lay out an approach to coordinating with the various SDO and other stakeholder groups that should be included in coordination effort. The plan will include coordination goals and outcomes, list of stakeholders, their roles and responsibilities, gaps in standards, project schedule and work plan.
  - Provide the MATS Coordination Plan to the DOT and following approval of the Plan by the TOCOR.
- **Task 4.2: Initiate Coordination Working Groups**
  - Invite participants and facilitate Coordination Working Group kickoff meeting for each of three areas – (1) Reservation/Dispatch APIs, (2) VRU in C2X environment and Cybersecurity, and (3) Public Right of Way / Impedance Accessibility
  - Support development of coordination charter and Action Plan for coordinating standards development in the standard domain.

*Deliverables*

- Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Coordination Plan [PWS Deliverable]
- Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Report [PWS Deliverable]

**2.2.1.5 Task 5 Develop Mobility On-Demand (MOD) Operational Readiness Framework [PWS**



**Task 5]**

*Objectives*

- Develop a framework that state and local agencies can utilize to determine if they are ready to start deploying mobility on-demand (MOD) systems using standards.

*Approach*

- This approach utilizes inputs from Tasks 2 and 3 as well as the MAT Standards Assessment and Roadmap and any relevant MAT or MOD standards or guidance to develop a MOD Operational Readiness Framework.
  - The MOD Operational Readiness Framework will include, at a minimum, criteria in the following three areas, Technology readiness, Integration readiness and Security readiness.
  - ITE Team is aware of other readiness methods that will be applied to MOD operational readiness model. The model typically defines a checklist or series of questions to measure readiness. The MOD operational readiness framework will be modelled after these methods.
  - Deliver a draft MOD Operational Readiness Framework to the DOT for review and comments. Following receipt of comments ITE will revise the Framework and deliver it to the DOT, along with a 508 compliant version.

*Deliverables*

- Draft MOD Operational Readiness Framework [PWS Deliverable]
- Final MOD Operational Readiness Framework (Section 508 Compliant) [PWS Deliverable]

**2.2.1.6 Task 6 Develop MAT, MOD and VRU Whitepapers (with prior agreement with COR) [PWS Task 6]**

*Objectives*

- Respond to DOT needs for the development of white papers as needed on topics related to MAT, MOD, and VRU, in particular, the white papers will support Task 4 to drill into the gaps and stakeholders in four areas – VRU/Cybersecurity, Eligibility, PROW/Impedence Accessibility Measures and Reservations/Dispatch APIs.

*Approach*

- ITE will perform research or analysis as requested and develop white papers on specific MAT, MOD, or VRU topics. Per the PWS, potential topics include specific challenges with MAT or VRU encountered in the other tasks or specific cybersecurity related topics for MOD, MAT or VRUs.
- ITE has identified four potential white papers are described below.
- For each white paper, ITE will create and deliver a draft to the DOT. Following receipt of comments, revise the white paper and deliver a final version.

White Paper Topic	Description
VRU/Cybersecurity	Develop white paper that reviews existing research, standards, specifications and specific efforts that build on the research gathered for the MATSA project. Identify additional stakeholders including advocacy groups, USDOT programs, standards / specification efforts, commercial product developers, and other key stakeholders that are now working in the domain and would contribute to a working group on this topic.
Eligibility	Develop white paper that reviews existing research, standards, specifications and specific efforts that build on the research gathered for the MATSA project. Identify additional stakeholders including advocacy groups, USDOT programs, standards / specification efforts, commercial product developers, and other key stakeholders that are now working in the domain and would contribute to a working group on this topic. In particular, we will include developments from agencies, projects and systems that use automated

	eligibility processes such as California Integrated Travel Project (Cal-ITP), FTA Accelerating Innovative Mobility (AIM) and Integrated Mobility Innovation (IMI) projects, and efforts to automate ADA paratransit eligibility processes.
PROW/Impedence Accessibility Measures	Develop white paper that reviews existing research, standards, specifications and specific efforts that build on the research gathered for the MATSA project. Identify additional stakeholders including advocacy groups, USDOT programs, standards / specification efforts, commercial product developers, and other key stakeholders that are now working in the domain and would contribute to a working group on this topic. In particular, we will include developments from the ITS4US projects (University of Washington and GDOT), FHWA EAR Program (e.g., sidewalk mapping), and complete streets program efforts.
Reservations/Dispatch APIs	Develop white paper that reviews existing research, standards, specifications and specific efforts that build on the research gathered for the MATSA project. Identify additional stakeholders including advocacy groups, USDOT programs, standards / specification efforts, commercial product developers, and other key stakeholders that are now working in the domain and would contribute to a working group on this topic. MATSA covered Reservations APIs. This effort will extend the review to include reservation function connection to dispatch and scheduling standards.

*Deliverables*

- Four Whitepapers to support Coordination Planning.

**2.2.2 Project Acceptance Criteria**

Overall project acceptance is based on acceptance of the deliverables. Table 1 identifies the acceptance criteria and the accepting entity for each type of deliverable identified in the Section 2.2.1 Project Scope Description.

Table 1. Deliverable Acceptance Criteria and Accepting Entity

Deliverable Type	Acceptance Criteria	Acceptance By
Monthly Progress Reports	<ul style="list-style-type: none"> <li>• Adherence to Section 2.2.1.1.1.</li> <li>• Meets quality control criteria as described in Section 5.3.</li> </ul>	COR
Project Management Plan	<ul style="list-style-type: none"> <li>• Adherence to Section 2.2.1.1.2.</li> <li>• Meets quality control criteria as described in Section 5.3.</li> </ul>	USDOT
Comment Disposition Reports	<ul style="list-style-type: none"> <li>• Criteria to be established by the Project Manager.</li> <li>• Meets quality control criteria as described in Section 5.3.</li> </ul>	USDOT
All Deliverable Documents	<ul style="list-style-type: none"> <li>• Meets the objectives of the applicable project task (see Sections 2.2.1.2 to 2.2.1.6 and subtasks).</li> <li>• Meets quality control criteria as described in Section 5.3.</li> </ul>	USDOT

**2.2.3 Project Exclusions**

No exclusions have been identified.

**2.2.4 Project Constraints**

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The following constraints have been established for the MAT Standards and VRU Cybersecurity Support Project:

- a) The project schedule may not extend beyond August 22, 2023.
- b) No capital expenditures are available on the project.
- c) Project travel must be preapproved by ITE.

### **2.2.5 Project Assumptions**

The following assumptions are being made for the MAT Standards and VRU Cybersecurity Support Project:

- a) Additional web conferences will be used as needed to meet the project goals.
- b) Time has been built into many of the tasks due to DOT review.
- c) Throughout the project, there may be various versions of the project schedule produced to take advantage of economies discovered or to account for anomalies unforeseen. As long as there is no change in scope, this PMP does not need to be modified.

## **2.3 Scope Verification**

It is the responsibility of the Project Manager to verify interim project deliverables against the original scope as defined in the scope description (see Section 2.2.1). If there is a proposed change of scope (see Section 2.4), ITS JPO must formally accept the change prior to its incorporation into the project.

## **2.4 Scope Control**

The Project Manager and the Project Development Team will work together to control the scope of the project. The Project Development Team will leverage the project scope description (see Section 2.2.1) and the project schedule (see Section 4.3) as a statement of work for each task. The Project Development Team and subject matter experts will ensure that they perform only the work described in the project scope description and generate the deliverables identified. The Project Manager will oversee the Subcontracted Subject Matter Experts ("sub-consultant team") and the progression of the project to ensure that this scope control process is followed.

A change in scope is defined by a change in the overall budget, a change that extends the overall schedule, or a change in the work to be performed. Any member of the Project Management Team, the sub-consultant team, the Committee, or the ITS JPO may propose a change in scope. The proposed change is assessed by the Project Management Team and sub-consultant team. If the Project Management Team and sub-consultant team determine that a change in scope is warranted, formal approval from ITS JPO is required. This PMP is to be updated in the case of an approved change in scope.

## **3 COMMUNICATIONS PLAN**

### **3.1 Purpose of the Communications Plan**

This Communications Management Plan sets the communications framework for the administration of the Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project. It identifies the key stakeholders, their roles, and contact information.

### **3.2 Stakeholder Points of Contact**

ITS JPO Contracting Officer's Representative (COR)

Robert Sheehan

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### **3.3 Project Team and Committee Communications**

Communications within the sub-consultant team is on an ad hoc basis. Meetings of the Multimodal and Accessible Travel (MAT) Project Committee will typically use web conferencing. Throughout the project, the Committee will provide technical guidance and document reviews. The Project Manager will work to ensure that Committee meetings and web conferences are carried out according to the project needs.

### **3.4 Communications with ITS JPO**

Communications between the Project Development Team and ITS JPO will formally take place once monthly and as deliverables occur as described in Section 4. It is anticipated that ITS JPO will have one or more technical staff participating in the Committee meetings and web conferences where they will have extemporaneous and informal communication with the Project Development Team. Official communications between ITS JPO and the Project Development Team should be made through the Project Administrator/Coordinator and the COR (see Section 3.2).

## **4 DELIVERABLES AND MILESTONES**

### **4.1 Monthly Progress Reports**

ITE will provide monthly progress reports as follows:

- a) Monthly Status Reports – ITE will submit monthly progress reports no later than 30 days after the end of the month being reported on in the format specified by the COR. The progress report will describe work completed during the period, anticipated work, problems encountered and and/or anticipated as well as financial status including at least hours expended and other costs.

- b) Project Schedule – ITE will submit, to the Government, an initial project schedule in Microsoft Project Document (MPP) format within sixty (30) days after the effective date of the contract and updates showing the percent complete of major deliverables every thirty (30) days thereafter. The schedule will include at a minimum, the major deliverables and milestones and adhere to the Microsoft Project template structure provided by the COR. Any changes to due dates after the initial project schedule baseline must be approved by the Government. ITE will support the identification of schedule dependencies related to the project and in accordance with the Government defined process.
- c) Risk Register – ITE will document risks that might affect the project and the characteristics of the risk defined by the ITS JPO. The COR will provide a Microsoft Excel-based Risk Register template for ITE to populate and update as necessary. Each risk will have a unique number, probability of occurrence and impact of occurrence rating. The risk log will be updated monthly and submitted with monthly progress reports.

ITS JPO templates are available at [http://www.its.dot.gov/project\\_mang/index.htm](http://www.its.dot.gov/project_mang/index.htm)

The Project Manager will provide a monthly summary of the sub-consultant team progress reports to the Project Administrator/Coordinator and an updated project schedule per the requirements for the Project Administrator/Coordinator’s monthly reporting.

**4.2 Deliverable Summary**

Documents and software deliverables are to be sent electronically to the COR. Table 2 identifies the deliverables based on the project tasks identified on the Gantt Chart in Figure 1 and Figure 2. The delivery dates have not been established due to adjustments in the project schedules as stated in Section 4.3.

**Table 2. Deliverables by Project and Task**

Proj Task	Deliverable Item	Delivery Date
1.1	Monthly Progress Reporting	30 days after the end of the month
1.2	Project Management Plan	30 days after ATP
2.0	Cybersecurity and Privacy Analysis for Vulnerable Road Users	Per Schedule
2.1.1	Research and Develop a whitepaper on Cybersecurity and Privacy Analysis for Vulnerable Road Users	Per Schedule
2.1.3	Develop Multimodal and Accessible Travel (MAT) Use Cases	Per Schedule
2.1.4	Develop Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Coordination Plan and MAT Kickoff Standards Report	Per Schedule
2.1.5	Develop Mobility On-Demand (MOD) Operational Readiness Framework	Per Schedule
2.1.6	Develop MAT, MOD and VRU Whitepapers (with prior agreement with COR)	Per Schedule

**4.3 Project Schedule**

The Gantt Charts in in Figure 1 and Figure 2 provide the schedule for the Multimodal and Accessible Travel (MAT) Deliverables are identified by a diamond shape (◆). Web conferences are identified by a diamond shapewithin a circle (◈). Face-to-face meetings are identified by solid circle (●). It must be emphasized thatthese projects are not “leveled” based on personnel or priority as funding levels have not been solidified. This means that the dates of projects do not reflect the makeup of the sub-consultant team, their skills andtheir availability. Once funding levels and priorities are established the project schedules will be adjusted.

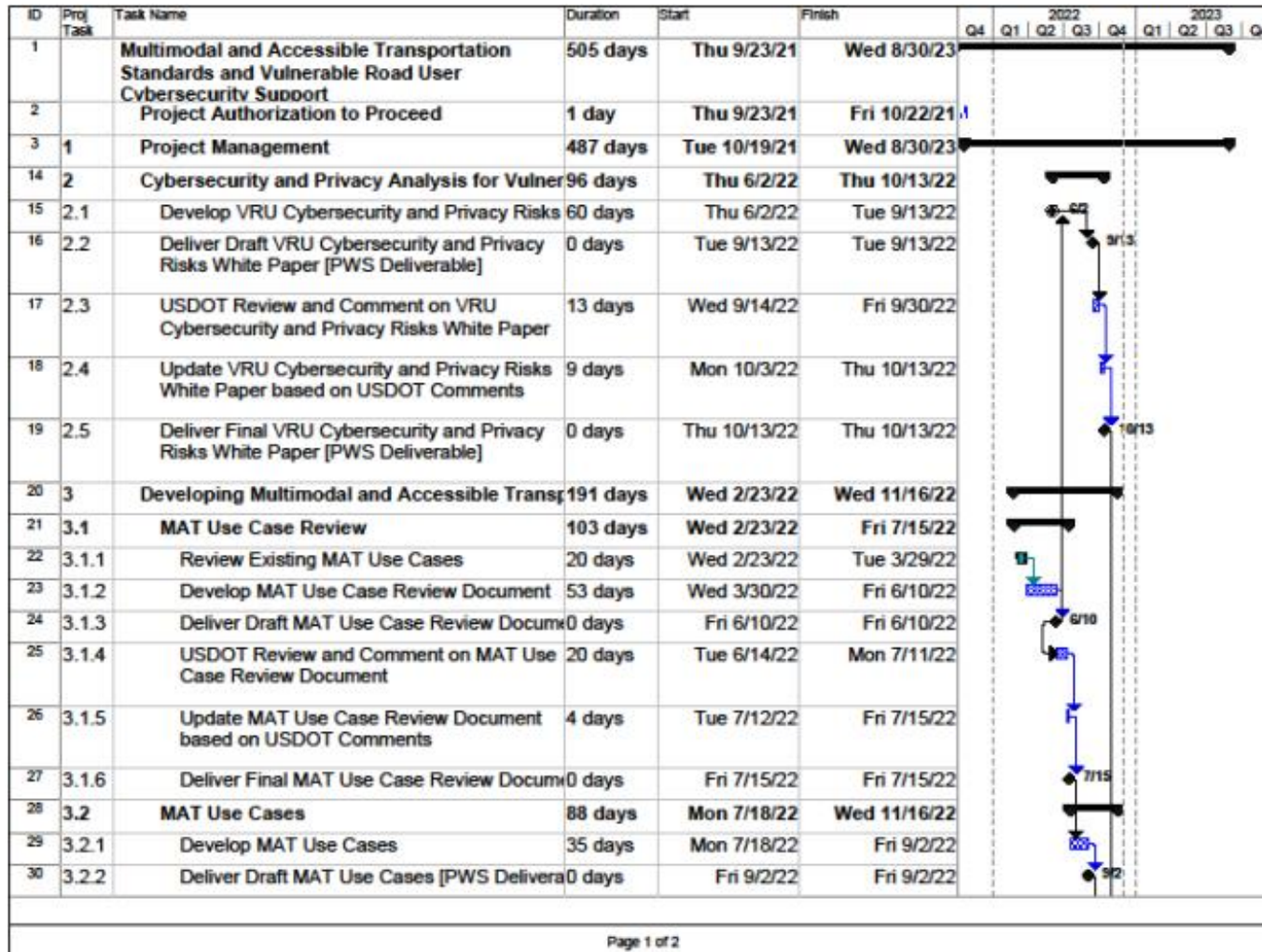


Figure 1. Project Schedule (Part 1 of 2)



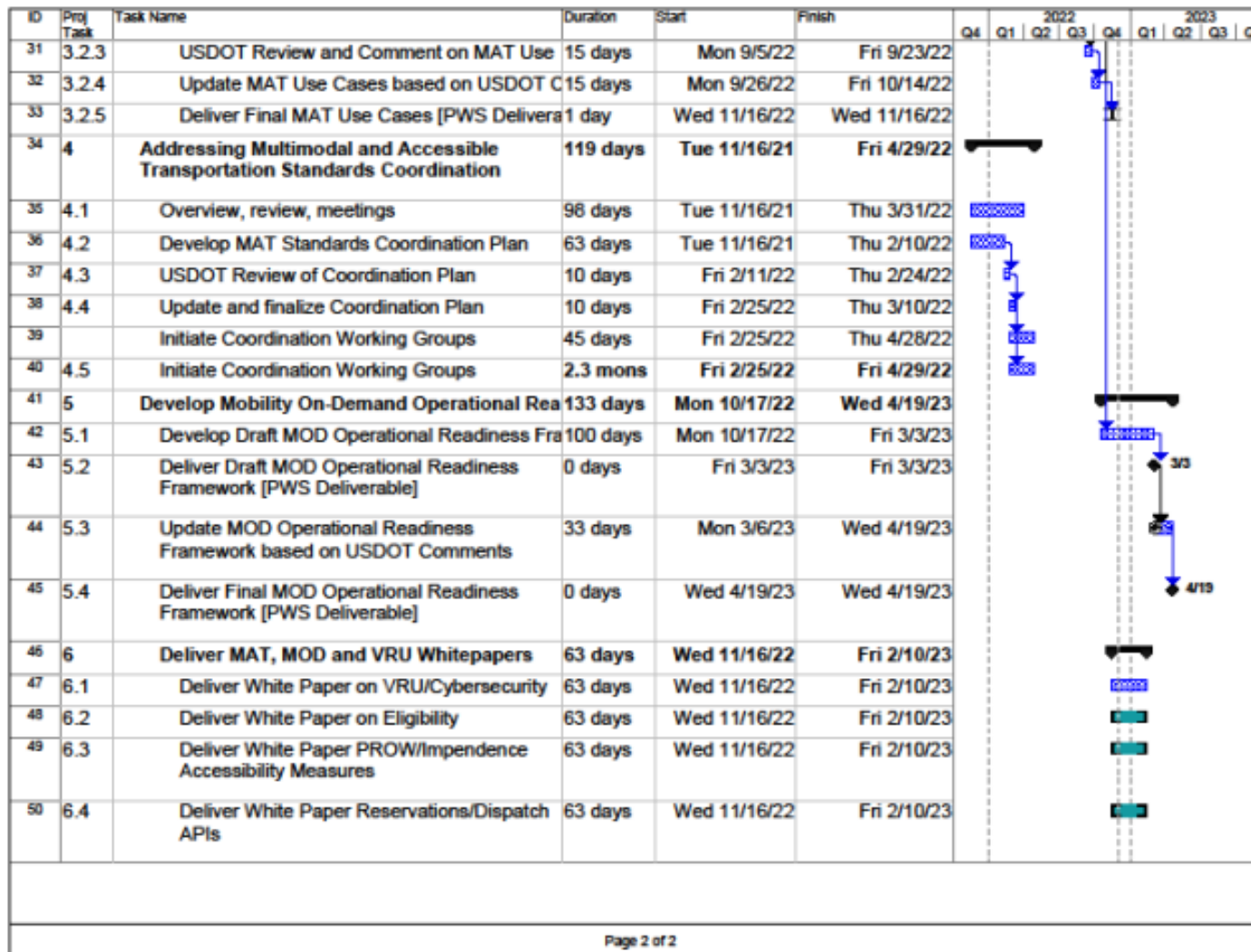


Figure 2. Project Schedule (Part 2 of 2)



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## **5 QUALITY MANAGEMENT PLAN**

### **5.1 Purpose of the Quality Management Plan**

This Quality Management Plan describes how quality will be managed throughout the life of the project. It includes processes and practices for ensuring quality planning, quality control and quality assurance.

### **5.2 Quality Planning**

In order to be successful, this PMP has integrated a quality system into the project tasks, project schedule, project deliverables and Project Development Team. The Project Manager and sub-consultant team have been selected for their experience with MAT.

There are two types of “quality” addressed by this plan: “product quality” and “process quality.” Product quality focuses on the project deliverables. Product quality will be insured by the Committee as described in the previous paragraph. Process quality focuses on how the project deliverables will be produced. The project scope description establishes multiple cycles of Committee review, comment and comment resolution periods all directed at the aspect of quality.

### **5.3 Quality Control**

This section describes the process for monitoring and recording the results of executing the quality activities. It applies to the project’s products as opposed to its processes.

The Committee review of all project deliverables will be performed according to the project schedule. Additional reviews may be required to meet project objectives. Reviewers will verify that deliverable documents:

- a) contain suitable material for the target audience;
- b) are organized in presentation;
- c) contain proper word use and English diction;
- d) contain detailed illustrations;
- e) are comprehensive, complete and technically correct; and
- f) are edited for grammatical and editorial errors.

Project deliverables will be judged on a “suitable for purpose” basis. The Project Development Team may identify more items or make suggestions for changes to a document than are needed to meet the project goals. In some cases, gaining consensus on technical matters within a committee can be time consuming. If any undertaking by a committee may jeopardize the project schedule, the Project Manager or Project Coordinator/Administrator may make decisions and recommendations to move the project forward.

### **5.4 Quality Assurance**

A Quality Checklist will be established and maintained by the Project Manager to assist in identifying specific items to be reviewed by the Committee. A Project Issue Log will be established and maintained by the Project Manager to capture any issue regarding the project that should be addressed by the Project Management Team including items that pertain to quality. Items for the Quality Checklist and Project Issue Log may be proposed by any member of the Project Development Team. It is up to the Project Management Team to determine if these items should be included on these lists and if any action should be taken. The Project Management Team will discuss any quality items on a bi-weekly basis.

## 6 HUMAN RESOURCES MANAGEMENT PLAN

### 6.1 Purpose of the Human Resources Management Plan

This Human Resources Management Plan is a tool which aides in the management of the human resources throughout the MAT Standards and VRU Cybersecurity Support project. It contains the roles, responsibilities and reporting on the project.

### 6.2 Roles, Responsibilities and Reporting

Table 3 identifies the members of the MAT Standards and VRU Cybersecurity Support Project Development Team, their roles within the project, their project responsibilities, and their reporting responsibilities.

**Table 3. Multimodal and Accessible Travel Project Development Team and Reporting**

Name	Project Role	Responsibility	Reporting
Narla, Siva ITE (202) 464-6219 <a href="mailto:snarla@ite.org">snarla@ite.org</a>	Project Administrator/ Coordinator	<ul style="list-style-type: none"> <li>Part of the Project Management Team.</li> <li>Official administration and coordination of the project from a contracts perspective</li> <li>Monitors project expenditures in labor, travel expenses and capital expenses.</li> <li>Official project communications channel to the COR.</li> <li>Coordinates and supports the Connected Intersections Committee.</li> </ul>	<ul style="list-style-type: none"> <li>Provides monthly progress reports to the COR per Section 4.1 including an updated Microsoft Project Schedule.</li> </ul>
Tavares, Nicola ITE (202) 464-6208 <a href="mailto:ntavares@ite.org">ntavares@ite.org</a>	Deputy Project Administrator/ Coordinator	<ul style="list-style-type: none"> <li>Part of the Project Management Team.</li> <li>Official administration and coordination of the project from a contracts perspective.</li> <li>Monitors project expenditures in labor, travel expenses and capital expenses.</li> <li>Official project communications channel to the COR.</li> <li>Supports the Project Committee.</li> </ul>	<ul style="list-style-type: none"> <li>Provides monthly progress reports to the COR per Section 4.1 including an updated Microsoft Project Schedule.</li> </ul>
Tatiana Richey ITE (202) 785-0060 <a href="mailto:ntavares@ite.org">ntavares@ite.org</a>	Contracts Manager	<ul style="list-style-type: none"> <li>Part of the Project Management Team.</li> <li>Official administration and coordination of the project from a contracts perspective.</li> <li>Prepares project policies and procedures to fulfill contract requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Provides monthly progress reports to the COR per Section 4.1 including an updated Microsoft Project Schedule.</li> </ul>
Patrick Chan, P.E. Consisted (917) 497-6718 <a href="mailto:Patrick.chan@cnstec.com">Patrick.chan@cnstec.com</a>	SME	<ul style="list-style-type: none"> <li>Part of the Sub-Consultant Team.</li> <li>Provide feedback on technical deliverables as appropriate. For example, use cases and reports.</li> </ul>	<ul style="list-style-type: none"> <li>Provides monthly progress reports to the Project Managers per Section 4.1 including an updated Microsoft Project Schedule.</li> </ul>
Paula (Polly) Okunieff, ICF	Technical Lead, SE, SME	<ul style="list-style-type: none"> <li>Part of the Project Management Team.</li> <li>Part of the Subconsultant Team.</li> <li>Assists ITE to maintain project reporting required by the USDOT.</li> <li>Quality management function on deliverables.</li> <li>Provides leadership for the rest of the consulting team.</li> <li>Coordinates with the Chairs of the ISC, Controller WG, API WG and Cabinet WG.</li> <li>Creation and maintenance of PMP and SEMP</li> </ul>	<ul style="list-style-type: none"> <li>Weekly progress reports with Project Team.</li> <li>Provides monthly project status reports to the PM per Section 4.1.</li> </ul>

Name	Project Role	Responsibility	Reporting
		<ul style="list-style-type: none"> <li>preparation.</li> <li>Provides expertise in CV technology, ATC equipment, NTCIP communications, and testing.</li> </ul>	
Carol Schweiger	SME	<ul style="list-style-type: none"> <li>Part of the Subconsultant Team.</li> <li>Provide feedback on technical deliverables as appropriate. For example, ConOps, SysReq and SDD documents.</li> <li>Participates in technical reviews (e.g., walkthroughs) of the technical deliverables</li> </ul>	<ul style="list-style-type: none"> <li>Weekly progress reports with Project Team.</li> </ul>
Tiffany Rad ELCnetworks (202) 507-9441 tiffany@anatr ope.com	SME	<ul style="list-style-type: none"> <li>Part of the Subconsultant Team.</li> <li>Provide feedback on technical deliverables as appropriate. For example, ConOps, SysReq and SDD documents.</li> <li>Participates in technical reviews (e.g., walkthroughs) of the technical deliverables.</li> </ul>	<ul style="list-style-type: none"> <li>Weekly progress reports with Project Team.</li> </ul>
Ajay Chandra Chintamaneni Gurus Infotech ajay@gurusin fotech.net	SE	<ul style="list-style-type: none"> <li>Part of the Subconsultant Team.</li> <li>Provide feedback on technical deliverables as appropriate. For example, ConOps, SRS, and SDD documents.</li> <li>Participates in technical reviews (e.g., walkthroughs) of the technical deliverables.</li> </ul>	<ul style="list-style-type: none"> <li>Weekly progress reports with Project Team.</li> </ul>
Uma Mahesh Madineni Gurus Infotech 703-870-0890 mahesh@gur usinfotech.net	SME/PM Support	<ul style="list-style-type: none"> <li>Part of the Subconsultant Team.</li> <li>Supports PGM, PM and Technical Lead.</li> <li>Meetings, records, collaboration tools</li> <li>Participates in technical reviews (e.g., walkthroughs) of the technical deliverables.</li> </ul>	<ul style="list-style-type: none"> <li>Weekly progress reports with Project Team.</li> </ul>
Purna Nimmagadda Gurus Infotech 703-868-3426 purna@gurusi nfotech.com	Requirements Analyst	<ul style="list-style-type: none"> <li>Part of the Subconsultant Team.</li> <li>Provide feedback on technical deliverables as appropriate. For example, ConOps, SysReq and SDD documents.</li> <li>Participates in technical reviews (e.g., walkthroughs) of the technical deliverables.</li> </ul>	<ul style="list-style-type: none"> <li>Weekly progress reports with Project Team</li> </ul>

### 7.3.1 Risk Management Plan

This section identifies potential problems in the project before they occur, plans for their occurrence, and monitors the system development so that early actions can be taken. A Risk Log has been established as shown in Table 6. Using this log risks can be identified, analyzed, prioritized, and mitigated. Note: The Risk Log will be initiated with risk items once funding levels and priorities are established for Multimodal and Accessible Travel (MAT) Project.

Risk monitoring will be performed by the project manager on a bi-weekly basis. Each risk area addressed in this PMP will be reviewed along with any new risk area that is identified during the execution of the project. At any time during the project any member of the Committee or interested parties may alert the management team of the occurrence of a risk item or identify new risk areas. New risk areas identified will be added to a Risk Log Table maintained by the project manager.

**Table 6. Risk Log**

ID#	Project Work Stream	Status	Risk Category	Description	Impacts	Owner	Mitigation (update where applicable)	(P)	(I)	P*I	Priority
01		N	c	Scope of MAT considered for use cases			See below.	2	2	4	
02		N	a, c	Difficulty reaching agreement on use cases			See below.	2	2	4	
03		N	a, b, c				See below.	1	2	2	

**LEGEND:**

ID# – Unique identifier for each identified risk item.

**Project Work Stream** – Specific contract/task order activity and/or deliverable to which the risk item applies.

Status –

N: New

R: Retired

IDPMP: Identified in PMP or SEMP

**Risk Category** –

- a) Schedule – Risks that cause schedule slippage of the project;
- b) Cost – Risks that cause cost to exceed budget of the project; and

**Technical** – Risks affecting the completeness or correctness of the product. Description – Concise description of the risk item.

**Impacts** – Impacts on the task or program if the identified risk occurs. Owner – Individual or entity with authority to resolve risk.

**Risk Response Plan** – Description of the planned response should an identified risk occur. This column can be a reference to a specific plan document.

**Date Assessed** – Most recent date the risk and/or risk response plan was updated.

(P) – See Table 7 below.

(I) – See Table 7 below.

P\*I – Risk probability

(P) multiplied by impact of risk

(I). Priority - Identifies priority based on the P\*I.

Table 7. Values Assigned for Probability of Risk and Impact of Risk

Probability of Occurrence (P)	Impact of Risk (I)
<b>3 = High</b> Certain or very likely to occur	<b>3 = High</b> Major impact on cost, schedule, or scope
<b>2 = Medium</b> 50/50 chance of occurring	<b>2 = Medium</b> Significant impact on cost, schedule or scope
<b>1 = Low</b> Possible, but unlikely to occur	<b>1 = Low</b> Insignificant impact on cost, schedule, or scope

**Risk Item Details**

**01) Scope of MAT considered for use cases**

**02) Difficulty reaching agreement on use cases**

*Risk Area #1: Scope of MAT considered for use cases*

The risk is that the MAT area is quite broad and managing the range of areas to consider for development us use cases presents a risk. Some areas, such as payment integration, can encompass a wide range of scenarios and previous work in this area has created literally more than 100 use cases. Defining what aspects of MAT to consider, and in how much detail is a technical risk the project will need to manage.

**Mitigation:**

The primary mitigation to this risk area is:

- a) Early identification of MAT areas and the range of existing use case definition within the areas will be used to scope the task with the customer.

*Risk Area #2: Difficulty reaching agreement on use cases*

The risk is that the sub-consultant team develops a set of new or revised use cases for which they are unable to get general concurrence from the review team. This could relate to the formats of the use cases, or the range of scenarios addressed by the use cases.

**Mitigation:**

The primary mitigation to this risk area is:

- a) Get agreement with the reviewers on the range of use cases to be developed prior to beginning detailed development
- b) Get agreement with the reviewers on the format used for the new use cases, along with agreement on how to resolve differences between differing representations of use cases represented by the range of existing use cases.

Risk Rating	Risk Statement	Mitigation Strategy
Low	Scope Creep: MAT scope may be too large to translate into use cases that are needed by SDOs to develop standards.	Limit MAT scope to highest priority topics and refine topics to achievable, constrained areas can be addressed in the short run by SDOs.

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## APPENDIX A – REFERENCES

USDOT ITS Joint Program Office, Task Order No. HOIT210145PR for Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support

Contract Number FHWA#693JJ321D000005, Task Order # 693JJ321F000420

ITS JPO templates are available at [http://www.its.dot.gov/project\\_mang/index.htm](http://www.its.dot.gov/project_mang/index.htm)

**Projects Referenced** : Multimodal and Accessible Travel Standards Assessment (MATSA); Accessible Transportation Technology Research Initiative (ATTRI); ITS4US Deployment Program (among other USDOT programs/areas such as Mobility Services for All Americans, and Vehicle-to-Infrastructure (V2I) and Connected Vehicle resources); CALACT; ISO TC204 WG 8; The Integrated Mobility Innovation (IMI), Accelerating Innovative Mobility (AIM) and CTAA grants; ISO TC204 WG19; Work Zone Data Exchange (WZDx)

## APPENDIX B – GLOSSARY, ACRONYMS AND ABBREVIATIONS

Term	Definition
AASHTO	American Association of State Highway and Transportation Officials
AIM	Accelerating Innovative Mobility
ATP	Authorization to Proceed
ATTRI	Accessible Transportation Technology Research Initiative
CALACT	California Association for Coordinated Transportation
CO	Contracting Officer
ConOps	Concept of Operations
COR	Contract Officer's Representative
CTAA	Community Transportation Association of America
CV	Connected Vehicles
ITE	Institute of Transportation Engineers
DOT	Department of Transportation
IMI	Integrated Mobility Innovation
ITS	Intelligent Transportation Systems
JPO	Joint Program Office
MAT	Multimodal Accessible Travel
MOD	Mobility-On-Demand
MATSA	Multimodal and Accessible Travel Standards Assessment
N/A	Not Applicable
NEMA	National Electrical Manufacturers Association
PMP	Project Management Plan
PROW	Public Right of Way
PWS	Performance Work Statement
SDO	Standards Development Organization
SE	Systems Engineering
SEMP	Systems Engineering Management Plan
SEMS	Systems Engineering Master Schedule
SEP	Systems Engineering Process
SME	Subject Matter Expert
SRS	System Requirements Specification
TBD	To Be Determined
TOCOR	Task Order Contracting Officer's Representative
USDOT	United States Department of Transportation
V2I	Vehicle-to-Infrastructure
VRU	Vulnerable Road User
WBS	Work Breakdown Structure