FTA Guidance Document
0002

FTA RESEARCH
FEDERAL TRANSIT ADMINISTRATION

FTA Safety Research and Demonstration Program Guidance for Grantees: Statement of Work Sample Guidance

PREPARED BY
Center for Urban Transportation Research (CUTR)
University of South Florida

U.S. Department of Transportation
Federal Transit Administration

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U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

AVAILABLE ONLINE
https://www.transit.dot.gov/about/research-innovation

Metric Conversion Table

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
NOTE: volumes greater than 1000 L shall be shown in m^3				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
^oF	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	^oC

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14. ABSTRACT

All projects funded under FTA's Safety Research and Demonstration (SRD) Program must provide a Statement of Work (SOW) that contains specific required elements. This guidance document provides information to be included in the SOW and examples of wording and formatting for use in the SOW.

15. SUBJECT TERMS
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Section 1 Introduction

This Statement of Work (SOW) example is provided as guidance to assist in the development of an SOW for projects awarded through the Federal Transit Administration (FTA) Safety Research and Demonstration (SRD) Program. This document outlines the elements that should be included in a draft SRD project SOW and provides simple examples of language that each grantee should tailor to address individual project details and complexities. Grantees are empowered to expand upon each section or deviate as appropriate for the scope of the project.

This guidance was developed from the perspective of the transit agency as the lead grantee. Additionally, this SOW guidance is based on an SRD Program perspective; therefore, the information remains focused around safety and is not meant to be representative of all types of research.

Additional guidance on Data Management Plan (DMP) development for SRD Program projects is available at https://www.transit.dot.gov/sites/fta.dot.gov/files/2020-10/FTA-Guidance-Document-0001.pdf

Section 2 SOW Required Elements

Elements that should be included in a draft SRD project SOW are described in the following sections, including example language and formatting, as follows:

- Background
- Problem Statement
- Objectives
- Key Partners
- Project Description
- Project Management
- Project Management Guidelines
- Scheduling and Communication
- Risk Register
- Project Tasks
- Timeline and Key Milestones
- Project Evaluation/Performance Metrics
- Budget

Background

This section of the SOW should provide national and local statistics that identify the significance of the safety issue to be addressed by the demonstration. This should be followed by a brief description of the project approach to mitigate or prevent the safety issue, the technology that will be used (as applicable), and the evaluation method. This may include discussion of other solutions that have been tested or implemented, either within the grantee agency or at other public transportation agencies, that have not yet solved the safety issue.

Example

Throughout the U.S., according to the Fatality Analysis Reporting System (FARS), there were approximately 35 fatal pedestrian crashes and 96 serious crashes with transit buses each year from 2010 to 2014. Approximately 48% of pedestrian fatalities and 40% of serious pedestrian crashes occurred when the bus was going straight. Of the 7 annual bicyclist fatalities, 67% occurred when the bus was going straight. According to the National Transit Database (NTD), more than half of all bus-related injuries and fatalities between 2010 and 2019 occurred while the bus was going straight. The Project Partners believe that a number of these crashes could be prevented by making minor changes to the layout of the operator compartment. In particular, the placement and size of the operator mirrors could be configured to minimize A pillar obscuration and provide the driver with the optimal view to maximize pedestrian, bicyclist, and customer safety.

Problem Statement

The Problem Statement section should describe the current safety issue and propose how the safety research demonstration project will serve to reduce the safety issue or minimize the severity of the outcome. The Problem Statement should also display a clear understanding of current regulations that might impact the demonstration. If applicable, it should also identify related National Transportation Safety Board (NTSB) recommendations and identify how the project aligns with the associated recommendation.

Example

To reduce the frequency and severity of crashes with pedestrians, it is most critical to improve visibility in the zone obstructed by the street-side A-pillar and mirror; the street side is the most problematic due to (1) the object viewing distance from the buses to pedestrians moving along the opposite side of the street and (2) the proximity of the bus operator's eyes to the pillar structure and mirror. Therefore, the design and demonstration of an optimized mirror solution set for street-side mirrors on low-floor transit buses could help reduce the number of serious crashes and enhance the effectiveness of transit vehicle visibility systems.

Objectives

The Objectives section should clearly state specific high-level details of how the objectives will be met. This should be concise and unambiguous. The objectives should tie back to the SRD Program objectives of exploring advanced technologies, designs, or practices to mitigate and prevent safety hazards and evaluating the cost-effectiveness and practicability of potential solutions. More information can be found at https://www.transit.dot.gov/research-innovation/safety-research-and-demonstration-program.

Example

The main objectives of this project are to:

- improve the safety of vulnerable road users and occupants of other vehicles
- improve bus operator visibility of the vehicle surroundings

To meet the main objectives, the ABC Transit project team will establish specific goals, as follows:

- Establish a baseline visibility assessment.
- Identify and test optional solution configurations.
- Pilot the preferred option to gain the necessary data to analyze the safety improvement, effectiveness, and return on investment to allow for sufficient knowledge dissemination throughout the industry.

These goals and objectives align with the SRD Program objectives of exploring advanced designs to mitigate and prevent safety hazards and evaluating their cost effectiveness and practicability.

Key Partners

The Key Partners section should identify the project manager, the principal investigator, and other key members of the project team and provide each identified person's responsibilities, role in the project, and organizational representation. If any key partners are from outside the grantee organization, those organizations should also be described in an introductory description.

Example

Transit Agency Lead

Jane Doe, ABC Transit Director of Safety Systems, has been with the transit agency for 7 years and has 16 years of experience managing safety systems in both the public and private sectors. She will serve as the project oversight and facilitator of committee communications.

Jane Doe works out of the ABC Transit Administration Facility at 1234 Sesame Street in City, State. Contact: (888) 888-8888, Jane.Doe@ABCtransit.com.

Technology Partner

John Smith, XYZ Inc. Senior Safety System Specialist, has been with XYZ Inc. for 4 years and has over 11 years of technology development experience. He will be instrumental in managing the daily operations related to the technology partner's role in the project.

John Smith works out of the XYZ Inc. Innovations Facility at 4321 Sesame Street in City, State. Contact: (777) 777-7777, John.Smith@XYZInc.com.

University Partner

Richard Roe, STV University Senior Research Associate, will oversee data support responsibilities, including the collection, management, and analysis related tasks.

Richard Roe works out of the STV University Administration Facility at 9876 Sesame Street in City, State. Contact: (555) 555-5555, Richard.Roe@STVU.edu.

Project Description

The Project Description section should include very specific data about technologies that will be purchased/evaluated. This should include details of the platform, system details, and vendor products if any were identified in the proposal. Following paragraphs in this section should describe the tasks that will be completed by phase. Each task should align with an explicit goal that is linked to a project objective defined in the Objectives section.

Example

In Phase A (Research and Planning phase), the ABC Transit project team will perform the research and planning necessary for the project. This will include the collection of baseline data to understand what visibility obstructions are present for various body configurations from the 5th percentile female to the 95th percentile male.

During Phase B (Development phase), the ABC Transit project team will work with the XYZ Inc. project team to apply those measures and user practices to develop guidelines for the development of different solution option concepts. These concepts will be reviewed by bus operators in Phase B. At the conclusion of Phase B, the single preferred concept solution will be chosen as the design to move forward through Phase C.

In Phase C (Demonstration phase), the demonstration of the preferred proof of concept will occur. During Phase C, the XYZ Inc. project team will support the ABC Transit project team and its partners at STV University, performing these tasks.

Table 1 displays the activities and the corresponding phase in which that activity will be completed. The three project phases include (A) Research, (B) Development, and (C) Demonstration. Additional phases may be included if appropriate. The first task, Project Management, remains ongoing throughout all phases of the project and includes the necessary scheduling, coordinating, and communicating associated with project management. Task 2, Kickoff Meeting, is necessary to ensure that all parties understand the goals and expectations of the project as part of establishing the baseline for the project. As part of the Research phase, a Data Management Plan (DMP) will be developed as Task 3. The DMP will include the specific performance measures used to evaluate the project.

The remainder of this paragraph should describe the details of each task defined in the table, and the phase(s) in which that task will occur.

Table 1. Example Project Goals and Tasks

Tasks	Phase	Goal 1: Establish Baseline	Goal 2: Optimize Solution	Goal 3: Pilot Solution
Task 1 – Project Management	A–C	✓	✓	✓
Task 2 – Kick-Off Meeting	A	✓		
Task 3 – Data Management Plan	A	✓		
Task 4 – Purchase/Service Contracts	A	✓		
Task 5 – Board Authorizations	A	✓		
Task 6 – Testing/Validation/Implementation	B		✓	
Task 7 – Installation/Validation	B		✓	
Task 8 – Interim Report	B		✓	
Task 9 – Technology Demonstration	C			✓
Task 10 – Data Collection/Analysis	C			✓
Task 11 – Final Report	C			✓
Task 12 – Disposition Plan/Project Closeout	C			✓

Project Management

The Project Management section should describe the tools and processes that will be used to manage the project, minimize scope creep, and support communications and information-sharing. This section should describe the gate management process that will be used to ensure that certain key tasks and phase objectives are completed prior to progression to subsequent phases when appropriate. Subsections within the Project Management section should define the project guideline requirements and the scheduling and communication protocol and include a description of the Risk Register that will be kept throughout the project. The Risk Register is a log of identified risk, along with the likelihood, impact, severity, mitigating actions, and subsequent progress of the project, which should be updated as risks are realized throughout the project. The project status information related to the various guidelines, scheduling, protocol and requirements identified in this Project Management section should be maintained and transferred accordingly upon any change in project management to ensure that all necessary project information is delivered according to the scope of work.

Example

The ABC Transit project team will use a gate management process to manage the project through the different tasks/phases; the gates involve a stakeholder review of the completed task/phase objectives before the research progresses into the next task/phase. This approach reduces the risk associated with scope creep, where research efforts deviate from the agreed-upon scope of work and fail to address established objectives. Meetings will be scheduled on a recurring basis to support communications and information sharing during the project period.

The ABC Transit project team will manage the project in accordance with FTA's requirements for a research demonstration. This will involve coordination with the FTA Project Manager and the FTA Independent Evaluator (IE) during the project's Period of Performance (POP). This effort will include providing information and updates to FTA during the POP using FTA's TrAMS System to submit Quarterly Progress Reports (QPRs), Federal Financial Reports (FFRs), and Milestone Progress Reports (MPRs).

Project Management Guidelines

The Project Management Guidelines section should identify the understood required deliverables and updates that will be submitted and updated in TrAMS throughout the project. This section should highlight any required deliverables outlined in the FTA Master Agreement, applicable Circulars, the Notice of Funding Opportunity (NOFO), and other guidance available. If any project partner or third-party agreements are made, they should be uploaded in TrAMS. At a minimum, this should define the frequency of the recurring status report meetings, the Data Management Plan (DMP), progress reports, financial reports, milestone progress reports, the interim and final reports, and equipment deposition plan.

Example

The ABC Transit project team and its partners will abide and be guided by the guidelines and requirements outlined in the FTA Master Agreement, any applicable Circulars, the Notice of Funding Opportunity, and guidance. The team will communicate with FTA as required through the following activities:

- Regularly-scheduled status report meetings (state recurring frequency)
- Data Management Plan (DMP)
- Quarterly Progress Reports (QPRs), Federal Financial Reports (FFRs), and Milestone Progress Reports (MPRs) through TrAMS
- Interim Report (after Year 2) and Final Report
- Disposition Plan

Scheduling and Communication

The Scheduling and Communications section should identify the key project stakeholders and the communication that will occur among those stakeholders as the project milestones progress. This section should also describe the software and other tools that will be used as a master schedule to keep all stakeholders informed of the progress by task and phase.

Example

Upon award, the ABC Transit project team will work with the XYZ Inc. and STV University project teams to establish project milestones on a master schedule at the earliest point consistent with resource requirements. This master schedule will also be used to track all critical resources related to personnel and facilities. If possible, lower-priority or non-time-critical project activities will be rearranged to expedite scheduling. ABC Transit will track the technical progress of the team members and work closely with XYZ Inc. and STV University to ensure that project milestones are met and technical issues are resolved in a timely manner. Team member costs and schedules will also be monitored by senior ABC Transit financial and administrative staff to ensure that all project deliverables are fulfilled on time and within budget. The master schedule will also be used to ensure a smooth transition if there is an unforeseen required change in project management.

The required Data Management Plan (DMP) will be submitted to the FTA Project Manager. The ABC Transit project team will coordinate with the XYZ Inc. and STV University project teams on revisions to account for any significant changes during the performance of this project. Any requested revisions to the submitted DMP will be presented for FTA project manager approval.

Risk Register

The Risk Register section should identify the documentation process of realized risks, along with documentation of the ways in which the risk will be managed. A Risk Register should be established in the SOW and updated quarterly in the Narrative Progress Report (Appendix B) to detail each identified risk and the likelihood, impact, severity, mitigating actions, and subsequent progress of the project. The Risk Register should be maintained and transferred accordingly upon any change in project management to ensure that all necessary project risk information is communicated in the transition if one occurs.

Example

Although there is inherent risk in all activities, it is important to understand and measure risks and manage the impacts of that risk on project activities. The Risk Register, as shown in Table 2, will be used to document realized risks associated with the project, along with the likelihood, impact, severity, mitigation measures, and subsequent progress. This Risk Register will be updated as an ongoing task and will be documented within the required quarterly narrative report, and all realized risks will be shared with the FTA Project Manager and appropriate stakeholders at regularly scheduled progress meetings.

Table 2. Risk Register

Risk (Description)	Project Tasks Impacted (list)	Likelihood (Low, Medium, High)	Impact (Low, Medium, High)	Severity (Low, Medium, High)	Mitigation Measures (Description)	Subsequent Progress (Description)

Project Tasks

The Project Tasks section should describe the specific tasks that will be completed throughout each phase of the project, from Research through the Development and Demonstration phases. Each project task description should identify the task lead and team members, timeline, and associated deliverables or milestones. The tasks should be listed in chronological order from kick-off meeting through project closeout. The identified project tasks should align with the overarching activities identified in the Project Description and Partners sections.

The format of the tasks should follow the example provided below. It is based on a 36-month project contract, so the specific timeline of each task will vary depending upon specific project timelines. The main Project Tasks section should contain subsections for the Research, Development, and Demonstration

phases. Each subsection should identify the specific tasks and associated deliverables. At a minimum, the Research subsection should include tasks for the kick-off meeting with FTA and the DMP. The Development subsection should include a task for the interim report, a required deliverable at two years post award. The Demonstration subsection should include tasks for the disposition plan, the final report, and project end closeout requirements.

Example

The work under this project will be carried out in three phases: (A) Research, (B) Development, and (C) Demonstration. Tasks to be completed in each phase are detailed below. The timing for each phase is provided as after Project Award and the duration of the Period of Performance (POP). The estimated budget, inclusive of local and federal share details, are included in each phase.

Task 1: Administrative/Monitoring and Project Management

Lead: ABC Transit Project Manager

Timeline: Months 0–36 after Project Award (POP duration: Project Duration).

Throughout the project, the Project Manager will be responsible for administrative tasks including monitoring the progress of each task within each phase of the project.

Deliverables/Milestones: Administrative tasks

Task 2: Kick-Off Meeting with FTA (M)

Lead: ABC Transit Project Manager

Team Members: Project Partners

Timeline: Months 0–2 after Project Award (POP duration: 0 Months).

The objective of the kick-off meeting is to ensure that all project partners, including FTA and the FTA Independent Evaluator IE), understand the expectations and project management requirements. ABC Transit will initiate the project formally during the first month by presenting the project plan to FTA and the FTA IE through an onsite meeting at USDOT headquarters in Washington, D.C. or via webinar, as instructed by the sponsor. During the kick-off meeting, the research team will collect feedback and recommendations on the plan that will be captured in the final Scope of Work.

Phase A: Research (Tasks 3–5)

The Research Phase should include a description of the tasks and deliverables required as part of project activation and research phases of the project. The description should include a definition of the Task Lead, team members that will be included in the task, the budget with specificity of federal and local shares, the timeline, and a general description of the task and the associated deliverables. At a minimum, the Research phase should include tasks for the DMP in addition to any purchase and/or service contracts and/or board authorizations if necessary.

Example

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Budget: $XX Federal and $XX Local

Tasks: Tasks 3–5

Timeline: Months 0–6 after Project Award (POP duration: 6 months)

Task 3: Data Management Plan (DMP)(D)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Timeline: Months 1–4 after Project Award (POP duration: 3 months).

The primary objective of the DMP is to explicitly define the specific performance metrics that will be measured to align with the overarching evaluation pillars of the FTA SRD program—safety evaluation, system operation and effectiveness, return on investment, and outreach—as defined in the guidance (https://www.transit.dot.gov/sites/fta.dot.gov/files/2020-10/FTA-Guidance-Document-0001.pdf). The DMP will define the collection and management process that is conducive to the evaluation of the project. ABC Transit, with assistance from XYZ Inc. and STV University project partners, will work with FTA and the FTA Independent Evaluator (IE) to formalize a DMP within the timeframe indicated in the Notice of Funding Opportunity. The DMP will be used to ensure the proposed plans align with the visions and expectations of the safety research demonstration project.

Deliverables/Milestones: Data Management Plan: ABC Transit, XYZ Inc., STV University Project Partners

Task 4: Purchase and/or Service Contracts(M)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., and STV University Project Partners

Timeline: Months 1–4 after Project Award (POP duration: 3 months)

The purchasing and/or service contracts are developed with the objective of formalizing the agreements in place to ensure that the subsequent development and demonstration phases of the SRD project occur.

Deliverables/Milestones: Purchase and/or service contracts: ABC Transit, XYZ Inc., STV University Project Partners

Task 5: Board Authorizations(M)

Lead: ABC Transit

Team Members: ABC Transit Project Partners

Timeline: Months 2–6 after Project Award (POP duration: 4 months)

Describe any board authorizations that are planned to occur in the Research phase of the project, with descriptive details of the authorizations.

Deliverables/Milestones: Board authorizations: ABC Transit

Phase B: Development (Tasks 6–8)

The Development phase should define the tasks that will occur after the Research phase has informed the development of the technology or other potential solution. This phase will typically include testing plans, validation plans, implementation plans, hardware and/or software installation, equipment validation, and other feedback mechanisms as tasks to guide the project transition to the Demonstration phase. As with the other phases, this should identify the phase lead, team members, budget split by federal and local share, and timeline followed by defined tasks, in the same format as the previous phase. At a minimum, tasks in the Development phase should include testing/validation/implementation plans, hardware/software/equipment installation/validation, and the Interim Report deliverable, which is required two years post award.

Example

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., and STV University Project Partners

Budget: $XX Federal and $XX Local

Tasks: Tasks 6–8

Timeline: Months 2–24 after Project Award (POP duration: 22 months)

Task 6: Testing/Validation/Implementation Plans (M)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Timeline: Months 2–3 after Project Award (POP duration: 1 month)

Led by ABC Transit, the project team will produce testing, validation, and implementation plans, as appropriate, to ensure that the project is conducted as intended.

Deliverables/Milestones: Testing/validation/implementation plans: ABC Transit, XYZ Inc., STV University Project Partners

Task 7: Hardware/Software Installation and Validation (M)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Timeline: Months 3–6 after Project Award (POP duration: 3 months)

Led by XYZ Inc., the hardware/software installations will allow for data collection to ensue. The hardware/software was installed on all active vehicles in the fleet, and data will be uploaded daily to ensure data consistency with expectations. The equipment installed will also be validated to ensure that it is performing as expected.

Deliverables/Milestones:

- Hardware/software installation: XYZ Inc.
- Equipment validation: ABC Transit, XYZ Inc., STV University Project Partners

Task 8: Interim Report(D)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Timeline: Month 24 after Project Award (POP duration: 1 month)

Led by ABC Transit, the project team will provide an interim report to meet the FTA requirement to evaluate every demonstration project within two years after award (Reference: 49 U.S.C. Section 5312). The interim report will provide details from the project scope, data collection plan, Risk Register, progress to date, and lessons learned in the first two years.

Deliverables/Milestones: Interim Report: ABC Transit

Phase C: Demonstration (Tasks 9–12)

The Demonstration phase should define the tasks that will occur to accomplish the demonstration of the technology or tool. As with the other phases, this should identify the phase lead, team members, budget split by federal and local share, and timeline followed by defined tasks in the same format as the previous phase. At a minimum, the Demonstration phase must include tasks for data collection and analysis, a final report, a disposition plan, and project closeout activities. It is necessary to ensure that both hours and funding are allocated to the development of the final report.

Example

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Budget: $XX Federal and $XX Local

Tasks: Tasks 9–12

Estimated Timeline: Months 10–36 after Project Award (POP duration: 26 months)

Task 9: Technology Demonstration Begins (M)

Lead: ABC Transit

Team Members: ABC Transit Project Partners

Timeline: Month 10 after Project Award (POP duration: 0 months)

The start of the technology demonstration phase will be defined by ABC Transit, signifying that the start of the data collection task will begin.

Deliverables/Milestones: Technology demonstration starts: ABC Transit

Task 10: Data Collection and Analysis((M)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., and STV University Project Partners

Timeline: Months 6–30 after Project Award (POP duration: 24 months)

Data collection and analysis will be performed as part of the Demonstration phase of the project and will continue as an ongoing task throughout the project.

Deliverables/Milestones: Data collection and analysis: ABC Transit, XYZ Inc., STV University Project Partners

Task 11: Final Report (D)

Lead: ABC Transit

Team Members: ABC Transit, XYZ Inc., STV University Project Partners

Timeline: Months 30–36 after Project Award (POP duration: 6 months)

The Draft Final Report will expand upon the information provided in the Interim Report to include an analysis of the data collected, the completed Risk Register, and the findings and lessons learned from the project. The Draft Final Report will be provided to FTA, the FTA Independent Evaluator (IE), ABC, and stakeholders for review. The Final Report will subsequently be edited to accommodate the reviews, and ABC Transit will support the FTA editing team in making the Final Report accessible (508-compliant) for publication. ABC Transit will also coordinate with FTA and ABC to support dissemination activities at industry and safety conferences.

Deliverables/Milestones:

- Draft Final Report: ABC Transit, XYZ Inc., STV University Project Partners
- Report review: FTA, FTA IE, other appropriate agencies
- Final Report publication and dissemination: ABC Transit

Task 12: Disposition Plan and Project Closeout (D)

Lead: ABC Transit

Team Members: ABC Transit Project Partners

Timeline: Month 36 after Project Award (POP duration: 1 month)

All equipment valued at $5,000 or greater purchased with FTA funding will be tracked and its disposal or release documented. A disposition plan, which details what was done with the equipment after the demonstration period of performance has ended, will be submitted to and approved by FTA prior to closing the project. XYZ will also coordinate with FTA and ABC to support dissemination activities at industry and safety conferences. Project closeout will occur once all deliverables have been delivered to FTA.

Deliverables/Milestones:

- Disposition Plan: ABC Transit
- Project closeout in TrAMS: ABC Transit

Timeline and Key Milestones

The Timeline and Key Milestones sections should define the start and duration of each task defined in each phase of the Project Tasks section. The timeline details should be displayed in a table, preceded by a descriptive paragraph, as shown in the example below. The example is based on a 36-month project period.

Example

ABC Transit will work with the XYZ Inc. and STV University Project Partners to meet the project deliverable schedule according to the timing estimates in Table 3. The tasks and estimates of duration of the tasks during each phase are listed in the Gantt chart in Appendix A.

Table 3. Schedule of Tasks and Key Milestones/Deliverables

Task	Description Milestone (M), Deliverable (D)	Months After Project Award	POP Months
	Quarterly Progress Report, Federal Financial Report, Milestone Report	0	Project duration
1	Administrative/Project Management	0	Project duration
2	Kick-Off Meeting with FTA (M)	0	0
Phase A: Research			
3	Data Management Plan (D)	4	3
4	Purchase and/or Service Contracts (M)	4	3
5	Board Authorizations (M)	5	5
Phase B: Development			
6	Testing/Validation/Implementation Plans (M)	6	2
7	Hardware/Software Installation and Validation (M)	8	2
8	Interim Report (D)	24	3
Phase C: Demonstration			
9	Technology Demonstration Begins (M)	10	24
10	Data Collection and Analysis (M)	10	24
11	Final Report (D)	34	2
12	Disposition Plan and Project Closeout (D)	36	1

Project Evaluation/Performance Metrics

The Project Evaluation and Performance Metrics section should provide an understanding of the SRD Program evaluation pillars that will be used as the guiding principles to define the necessary performance metrics to track throughout the project. FTA provides guidance for grantees to assist in the

development of the appropriate performance metrics at https://www.transit.dot.gov/sites/fta.dot.gov/files/2020-10/FTA-Guidance-Document-0001.pdf.

The SRD Program evaluates all projects on safety improvement, system effectiveness, return on investment, and knowledge transfer. The section should begin with an introductory paragraph, followed by subsections for each evaluation pillar that include a descriptive paragraph and a table with specific performance metrics, data source, frequency in which the data will be collected throughout the project, and data format. An example is provided for the safety improvement evaluation pillar; the other evaluation pillars should follow a similar structure.

Example

ABC Transit will use performance metrics to ensure that project objectives are being met across all phases of the project. Metrics will focus on four categories, including Safety Improvement, System Effectiveness, Return on Investment, and Knowledge Transfer. Improvements in customer service and reductions in crashes and fatalities are anticipated in the long term.; improvements for other agencies and the industry as a whole are anticipated to result from sharing the guidelines and data.

Safety Improvement

Safety is a key research goal of the SRD program and this project, with a primary objective of preventing transit collisions. Given the low probability of observing statistically-significant differences in injuries and fatalities sustained between treated and control samples, avoided near-miss incidents will serve as the most informative safety improvement measure. A near-miss is defined as an event that had the potential to lead to injury, fatality, or property damage but that is not actualized. Near-miss incidents can be used as a basis to impute expected reductions in incidents, injuries, and fatalities to establish potential benefits in the cost-benefit analysis.

Table 4. Example of Safety Improvement Metrics

Data Name	Description	Source	Frequency	Format
Near-Miss Events	Number of near-miss events	Telematics data recording from deployed application	Daily	Comma-separated values (.csv)
Collisions	Number of collisions, rate of collisions per 1,000 vehicle miles	Collision reports from agency records during demonstration	Monthly	Excel file (.xls or .xlsx)
Fatalities	Number of fatalities, rate of fatalities per 1,000 vehicle miles	Fatality reports obtained from agency NTD S&S reports during demonstration	Entire deployment duration	Excel file (.xls or .xlsx)

System Effectiveness

The effectiveness of the technology will be measured to ensure that the technology performs as intended from the perspective of the operator and consumer and that there are no technical hinderances to its widespread adoption. System effectiveness will be assessed through system accuracy and system reliability; system accuracy is the ability to distinguish between false positive, false negative,

and true alerts; system reliability is the ability to perform as expected, measured through system acceptance.

Return on Investment

The return on investment will be based on the resulting reduction in life cycle cost of maintenance related to reportable incidents and non-reportable incidents. The return on investment will consider costs of equipment, additional labor, and maintenance required to install and maintain the deployed technology. These costs will be compared to potential cost savings, at a minimum in terms of liability and collision maintenance costs, time savings, and increased reliability and productivity values in terms of potential decreased incidents. The return-on-investment analysis will consider insurance costs, medical costs, collision avoidance benefits, reductions in lost time due to employee leave, and other potential costs or cost avoidances realized throughout the project.

Outreach and Knowledge Transfer

Knowledge transfer is an important outcome of research demonstration projects. The research team will present key findings to FTA and at least one industry group or conference and will facilitate the dissemination of findings through various venues such as APTA conferences, TRB conferences, and other applicable venues. Each outreach effort will be organized and documented by the project manager.

Budget

The Budget section should include a table that details the cost by item description by phase, including details of federal and cost share totals. The table should be preceded by a descriptive paragraph that defines cost-share targets and whether a local match deferral or Letter of No Prejudice was required. All invoicing or reimbursement requests should be submitted at a defined frequency through Delphi, which should be described. Information related to the Delphi eInvoicing System can be found on page III-22 of FTA Circular 6100.1E, Research, Technical Assistance, and Training Programs: Application Instructions and Project Management Guidelines, at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Cir_6100.1E.docx_4.08.2015_%282%29_1.pdf. The budget information in this section should conform to the project's Award Funds Status and other budget details in TrAMS and Delphi eInvoicing.

Example

As shown in Table 5, the budget includes cost-share funds from FTA and ABC Transit and their partners. Activities associated with the installation of the technology are included in Phases A and B, and the overall project cost share is XX%. If ABC Transit believes that meeting the local match requirements for all reporting periods will not be possible, a deferral for cost share per phase has been requested for approval from FTA. The cost share targets will be met per phase according to the following structure: Phase A, XX%; Phase B, XX%; and Phase C, XX%.

Table 5. Example of Federal Funding and Cost Share by Phase

Item Description		Federal Amount $	Cost Share $	Total Cost $	Fund Ratio
ABC Transit	Administrative (all phases)				
	Kick-off meeting				
Phase A	Data Management Plan				
	Contracts				
	Authorizations				
Phase B	Testing/install plans				
	Installation/validation				
	Interim Report				
Phase C	Demonstration start				
	Data collection/analysis				
	Final Report				
	Disposition Plan/closeout				
Subtotal					%
XYZ Inc.	Kick-off meeting				
Phase A	Data Management Plan				
	Contracts				
Phase B	Testing/install plans				
	Installation/validation				
	Interim Report				
Phase C	Data collection/analysis				
	Final Report				
Subtotal					%
STV University	Kick-off meeting				
Phase A	Data Management Plan				
	Contracts				
Phase B	Testing/install plans				
	Installation/validation				
	Interim Report				
Phase C	Data collection/analysis				
	Final Report				
Subtotal					%
Totals	Phase A				
	Phase B				
	Phase C				
Subtotal					%
Total					%

Appendix A: Project Timing Gantt Chart

Task Description	Period of Performance Month	Month of Project																																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Project Management	Ongoing																																				
Kick-Off Meeting (M)	0	M																																			
Phase A – Research																																					
Data Management Plan (D)	4				D																															
Purchase and/or Service Contracts (M)	4				M																															
Board Authorizations (M)	5					M																														
Phase B – Development																																					
Testing/Implementation Plans (M)	6						M																														
Equipment Installation/ Validation (M)	8									M																											
Interim Report (D)	24																								D												
Phase C – Demonstration																																					
Technology Demonstration Begins (M)	10										M																										
Data Collection and Analysis (M)	10										M																										
Final Report (D)	34																																		D		
Disposition Plan/Project Closeout (D)	36																																				D
FTA Final Report, Final FFR, and Final MPR																																					+ 90 days

Appendix B Quarterly Progress Report (QPR) Template

Project Title:

FAIN/TrAMS Number:

Grantee Project Manager:

Performance Progress

Period Ending:

Start Date:

End Date:

Financial Progress

Project Cost:	Federal_____	Local Cost Share_____
Expended:	Federal_____	Local Cost Share_____
Remaining:	Federal_____	Local Cost Share_____
Percent Expended:	Federal_____	Local Cost Share_____

Project Description

This section should include high-level description data about the project, including the main objectives and a description of what the project is looking to demonstrate. It should also include a brief description of the phases of the project and what is entailed in each phase.

Significant Accomplishments this Period

This section should define the status of specific tasks addressed in the project report period. If there are more than seven tasks, continue with additional tasks and descriptions completed throughout the period in the same format.

Technical Progress

Table B-1. *Technical Progress of Tasks*

Technical Progress of Tasks		Start Date	Planned Complete Date	Actual Complete Date	Actual % Complete (approx.)
Task 1	Project Management				
Task 2	Kick-off Meeting				
Phase A – Research					
Task 3	Data Management Plan				
Task 4	Purchase/Service Contracts				
Task 5	Board Authorizations				
Phase B – Development					
Task 6	Testing/Validation Plans				
Task 7	Equipment Installation/Validation				
Task 8	Interim Report				
Phase C – Demonstration					
Task 9	Technology Demonstration Begins				
Task 10	Data Collection and Analysis				
Task 11	Final Report				
Task 12	Disposition Plan and Project closeout				

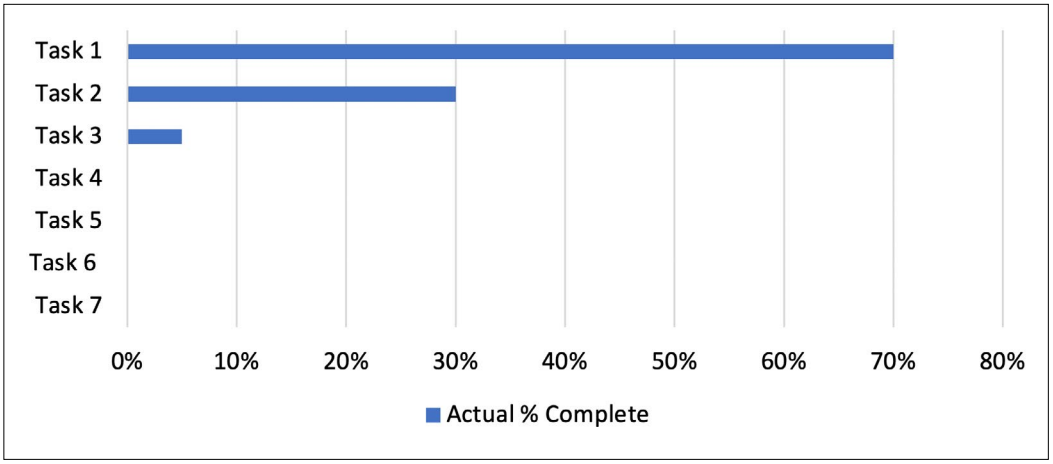

Figure B-1. *Actual Percent Completion by Task*

Technical Issues Encountered and Mitigations

Describe any technical issues encountered over the past quarter, including details of how those challenges were (or are in the process of being) overcome.

Cost Issues Encountered and Mitigations

Describe details of any issues that caused the actual cost to vary from the estimated cost. Also describe mitigations that will be put in place to ensure that the project is completed within budget.

Schedule Issues Encountered and Mitigations

Describe any issues that were encountered that led to a delay or change in schedule of any activities planned for the quarter. Also describe how those delays are anticipated to affect the overall schedule of the project and any mitigations that were put in place to ensure that the project is completed within the timeline.

Meetings Held this Quarter and Future Meetings Scheduled

List each meeting held in this period, and list any that are scheduled to occur.

Work Planned for Next Period

Describe the work planned to be completed next period.

Cumulative Financial Trends

Table B-2. *Cumulative Financial Trends by Quarter*

(in $1000s)	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2
Estimated Monthly		$ 5.00	$ 45.00	$ 350.00	$ 1,000.00	$500.00
Actual Monthly	$ 1.20	$ 6.00				
Labor	$ 1.20	$ 2.00				
Equipment*		$ 4.00				
Other						
Quarterly Cumulative	$ 1.20	$ 7.20	$ 52.20	$ 402.20	$ 1,402.20	$1,902.20

**All equipment $5k or more must be detailed in Table B-3.*

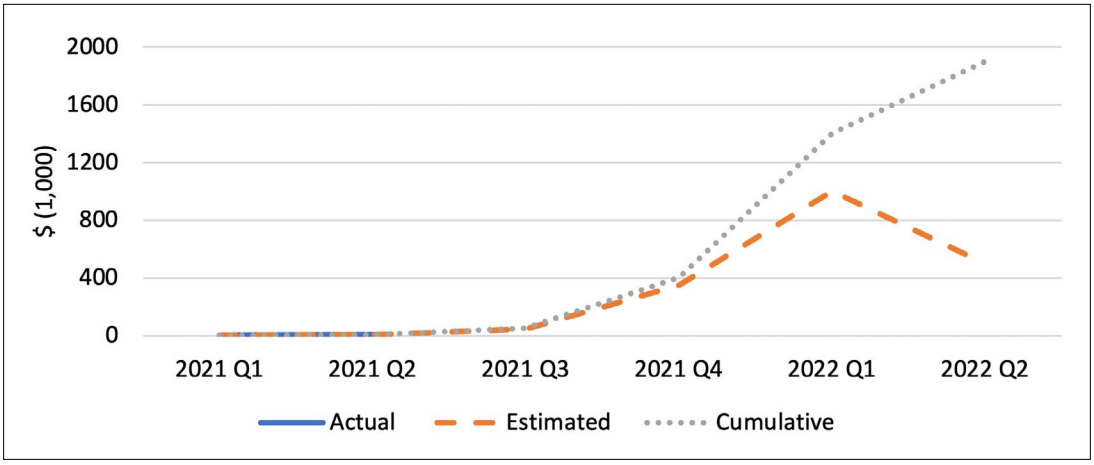

Figure B-2. *Cumulative Financial Trends*

Equipment Purchased to Date with FTA Funding

Table B-3 should be edited each period to include all equipment purchased with federal funding throughout the project period of performance.

Table B-3. *Federal Funding and Cost Share of Equipment*

Item Description	Quantity	Federal Amount $	Cost Share $	Total Cost $	Date Purchased
ABC	25	$5,000	$8,000	$13,000	1/1/2024
Subtotal					
Total					

Appendix C

FTA Documents/ References

The documents and references included in this appendix are subject to change and/or updates. The links provided should be used as a reference, but should be updated, if appropriate, when used in a grantee's scope of work.

1. **FTA 2021 Master Agreement (Version 27, October 2020)**
   https://www.transit.dot.gov/grantee-resources/sample-fta-agreements/fta-master-agreement-fiscal-year-2021
2. **Circular 6100.1E. (May 2015)**
   https://www.transit.dot.gov/regulations-and-guidance/fta-circular-61001e-research-technical-assistance-and-training-programs
3. **FY2021 Annual Certs and Assurances (last updated January 2021)**
   https://www.transit.dot.gov/grantee-resources/certifications-and-assurances/fy2021-annual-list-certifications-and-assurances-0
4. **For Procurement, FAQs (last updated February 2020), and Contracting Guidance (last updated February 2016)**
   https://www.transit.dot.gov/funding/procurement/third-party-procurement/third-party-procurement-faqs
   https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/third-party-contracting-guidance
5. **Final Report Format (last updated January 2021)**
   https://www.transit.dot.gov/research-innovation/preparation-instructions-fta-final-reports-0#6 TrAMS (last updated August 2021):
   https://www.transit.dot.gov/funding/grantee-resources/teamtrams/transit-award-management-system-trams
6. **TrAMS User Guide for Recipients (Version 1.2, January 2018)**
   https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grantee-resources/teamtrams/22871/trams-recipient-user-guide-v1-2.pdf
7. **Buy America**
   https://www.govinfo.gov/content/pkg/CFR-2012-title49-vol7/pdf/CFR-2012-title49-vol7-part661.pdf
   https://www.transit.dot.gov/buyamerica
8. **Certification of Employee Protective Provisions for Grant Application (DOL Certification – required for all projects that affect transit operation) (last updated February 2021):**
   https://www.dol.gov/agencies/olms/compliance-assistance/mass-transit-employee-protections
9. **Delphi eInvoice System General Info, FAQs, Videos and Training Material**
   https://einvoice.esc.gov

10. **Data Management Plan (October 2020)**
    https://www.transit.dot.gov/sites/fta.dot.gov/files/2020-10/FTA-Guidance-Document-0001.pdf
11. **NOFO – SRD Requirements (Vol. 85, No. 30, February 2020)**
    https://www.govinfo.gov/content/pkg/FR-2020-02-13/pdf/2020-02844.pdf

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Federal Transit Administration

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