COMPLETE TRIP

ITS 4 US

Task 13 Training:
Integrated Complete Trip Deployment Plan
Deborah Curtis

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Office of Operations Research and Development
Program Overview
Complete Trip - ITS4US Deployment Program

- A USDOT Multimodal Deployment effort, led by ITS JPO and supported by OST, FHWA and FTA
- Supports multiple large-scale replicable deployments to address the challenges of planning and executing all segments of a complete trip

Vision

Innovative and integrated complete trip deployments to support seamless travel for all users across all modes, regardless of location, income, or disability
Program Goals

- Spur high-impact integrated Complete Trip deployments nationwide
- Identify needs and challenges by populations
- Develop and deploy mobility solutions that meet user needs
- Measure impact of integrated deployments
- Identify replicable solutions and disseminate lessons learned
Deployment Phases

PHASE 1: Concept Development
- Concept Development for Complete Trip Deployment
- Establish Cohort Roundtables

PHASE 2: Design & Test
- Design, Test and Deploy Complete Trip Solutions
- Evaluation Framework and Planning

PHASE 3: Operate & Evaluate
- Demonstrate Multiple Large-Scale Deployments
- Evaluate Deployments
- Share Data & Lessons Learned

Operations Maintenance
- Sustain operations for a minimum period of five years after the program is completed with no supplementary federal funds

Deployment
- Up to 12 months
- Up to 24 months
- Minimum of 18 months

Post-Deployment
- 5 years
Task 13 Training: Integrated Complete Trip Deployment Plan (ICTDP)
Kate Hartman
Chief – Research, Evaluation, and Program Management
ITS JPO
Agenda

- Integrated Complete Trip Deployment Plan (ICTDP) (Task 13) Overview

- Integrated Complete Trip Deployment Plan Template
  - Refined Phase 1 Deployment
  - Phase 2 and 3
    - Technical Approach
    - Schedule
    - Cost Estimates

- Deployment Readiness Summary Briefing (Task 14) Overview

- Public Webinar

- Final Thoughts
Integrated Complete Trip Deployment Plan (ICTDP)
Integrated Complete Trip Deployment Plan
Good News!

- The ICTDP is designed to support the development of the response to the future NOFO Phase 2 and 3 Volume 1

- Information from the ICTDP can be used directly in the future NOFO Phase 2 and 3 Volume 1, saving sites resources

- The ICTDP allow sites to get feedback from USDOT before submitting their NOFO response

- All work on ITS4US Tasks 1-12 should be summarized and integrated into this report

- **Summary** - The ICTD Plan summarizes the refined deployment concept developed in Phase 1; and sets forth high-level Phase 2 (Design/Build/Test) and Phase 3 (Operate/Maintain/Evaluate) Schedule; and is shared with the general public through a webinar.
ICTDP and Phase 2 and 3 Future NOFO
Volume 1

Phase 1 ICTDP
508 Not Required

Section 1: Refined Phase 1 Deployment Concept

Section 2: Phase 2 and 3 Technical Approach

Section 3: Phase 2 and 3 Deployment Schedules

Section 4: Phase 2 and 3 Deployment Cost Estimates

Future NOFO Volume 1:
Technical Application
508 Required

Part 1: Technical and Management Approach

75 Page Limit

40 Page Limit

All parts ICTDP may serve (with minor changes) as the Phase 2-3 ITS4US NOFO Volume 1, Part 1
ICTDP Interdependencies

Inputs

Task Milestones

- Task 1A: Prog Mgmt
- Task 1B: UNIRP
- Task 2: ConOps
- Task 3: Data Mgmt
- Task 4: Safety Mgmt
- Task 6: SyRS
- Task 7: Enabling Tech.
- Task 8: Human Use
- Task 9: Training Plan
- Task 10: Partner Plan
- Task 11: Outreach
- Task 12: SEMP

ICTDP

- Refined Phase 1 Deploy Concept
- Phase 2 and 3 Technical Approach
- Phase 2 and 3 Schedule
- Ph 2 & 3 Deployment Cost Estimate

Outputs

- Schedules and Cost Estimates
- Task 14: Dep. Briefing
## Task 13 Deliverables

<table>
<thead>
<tr>
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<th>BAA Section</th>
<th>Deliverable</th>
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<td>P1T13D1</td>
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<td>Integrated Complete Trip Deployment Plan - Draft*</td>
<td>Word</td>
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<td>P1T13D3</td>
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<td>Deployment Plan Webinar (Public)</td>
<td>PP</td>
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* For USDOT only and will not be released to the Public
ICTDP Major Components

**Refined Phase 1 Deployment Concept**
Concise summary of challenge(s) to be addressed, the overarching deploy. Concept to address challenges and expected outcomes.

**Phase 2 and 3 Technical Approach**
Summary of the technical approaches the site plans to use for all the tasks for Phase 2 and 3

**Phase 2 and 3 Deployment Schedule**
High-level deployment schedule and some supporting information regarding the capability to acquire, configure, install, and test key elements of the proposed system.

**PH 2 and 3 Deployment Cost Estimate**
Summarizes the projected cost estimates at a high-level, and is intended to provide information and guidance for other deployers regarding the costs allocated for the project by Phase and Task.
ICTDP Sections
Section 1: Refine Phase 1 Deployment Concept

Slide 1 of 4

- 1.1 Introduction
- 1.2: Deployment Concept-
  - Drawing on all materials prepared in Tasks 2-11, this section of the ICTDP should first concisely summarize:
    - Problems/challenge(s) addressed
    - Overarching deployment concept to address these challenges
    - Expected outcomes
  - Also summarize:
    - Data to be generated by the system,
    - Key measures of performance and the methods of assessing these impacts on an ongoing basis,
    - Steps to be taken to ensure the safety and privacy of participants,
    - Steps to be taken to ensure system security, and
    - Any/all expected open-source software and other supporting contributions expected from the system design and development process.
Section 1: Refine Phase 1 Deployment Concept

Slide 2 of 4

- 1.2: Deployment Concept (continued)-
  - Also address:
    - A summary of site stakeholders and identified needs
    - Deployment objectives
    - Applications and services provided
    - System performance measures used to characterize the impact of the system deployment
    - Site boundaries and the proposed location of key deployment elements
      - Deployment map
Section 1: Refine Phase 1 Deployment Concept
Slide 3 of 4

1.3 At-Scale Deployment Summary

- The Summary shall indicate estimated numbers of participants, vehicles, mobile devices, service area dimensions, roadside/wayside infrastructure elements, and other relevant countable deployment elements envisioned as a part of at-scale deployment.
- This is your chance to change the initial scale of your project to match your planned schedule, budget, and staffing.
  - This could be larger or small number of deployments or engagements
  - Less or more complex deployment environments
  - And/or scaled back features.
1.4: Team Organization Structure

- Team Organization
- Key Personnel
- Changes in Org Form from Phase 1
- Summary of Financial and Org Models for Sustained
  - This section shall provide a concise description of the financial and organizational models envisioned to sustain operations for a minimum period of five years after the program is completed with no supplementary federal funds.

- Organization Risk
  - This section describes the most critical assumptions and organizational risks (maximum one page devoted to this section).
Section 2: Phase 2 and 3 Technical Approach

- 2.1 Introduction
- 2.2 Phase 2 Technical Approach
  - Task A-L – Technical approach for each task pulled from ITS4US Deployment Program – Phase 2 and 3 Task Descriptions
- 2.3 Phase 3 Technical Approach
  - Task A-F – Technical approach for each task pulled from ITS4US Deployment Program – Phase 2 and 3 Task Descriptions
### 3.1 Schedule Summary

- Graphical presentation of task dependencies by Phase, key deliverable, milestone for the POP, along with explanatory text.

<table>
<thead>
<tr>
<th>Phase 2 Task</th>
<th>Month From Award</th>
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<tr>
<td></td>
<td>1    2    3    4</td>
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<tr>
<td>2-A Program Mgt.</td>
<td></td>
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<tr>
<td>2-B System Arch/Design</td>
<td></td>
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<tr>
<td>2-C Data Mgt. Planning</td>
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<tr>
<td>2-D Acquisition/Install Plan</td>
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<td>2-E App Development</td>
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<tr>
<td>2-F Participant/Staff Train</td>
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<tr>
<td>2-G Test/Demo Planning</td>
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<tr>
<td>2-H Installation and Testing</td>
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<tr>
<td>2-I Maint and Ops Planning</td>
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<tr>
<td>2-J Stakeholder Outreach</td>
<td></td>
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<tr>
<td>2-K Perf Meas./IE Support</td>
<td></td>
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<tr>
<td>2-L Standards Development</td>
<td></td>
</tr>
</tbody>
</table>
3.1 Schedule Summary

- Phase 2
  - Phase 2 shall include milestones from the Task 12 SEMP
  - Acceptance testing to be observed by USDOT staff prior to approval to move to Phase 3
    - USDOT will not consider a Phase 2 Deployment Schedule in excess of 24 months

- Note the USDOT will provide a sample Phase 2 Deployment Schedule which a Site can use if they want, but they are also welcome to develop their own.
Section 3: Phase 2 and 3 Deployment Schedule

3.1 Schedule Summary

- **Phase 3**
  - O&M milestones, Outreach activates, and PM reporting
  - Deployment milestones of 20%, 50%, 80%, and 100% at-scale deployment target
  - USDOT will not consider a Phase 3 Deployment Schedule with a duration less than 18 months.

- Note the USDOT will provide a sample Phase 3 Deployment Schedule which the Site can use if they want but they are welcome to develop their own also.
Phase 2 and 3 Planning

**PHASE 1: Concept Development**
- Concept Development for Complete Trip Deployment
- Establish Cohort Roundtables

**PHASE 2: Design & Test**
- Design, Test and Deploy Complete Trip Solutions
- Evaluation Framework and Planning

**PHASE 3: Operate & Evaluate**
- Demonstrate Multiple Large-Scale Deployments
- Evaluate Deployments
- Share Data & Lessons Learned

**Operations & Maintenance**
- Sustain operations for a minimum period of five years after the program is completed with no supplementary federal funds

Deployment
- Up to 12 months
- Up to 24 months
- Minimum of 18 months

System is safe and operates as designed
- At Scale
- 12 month minimum at 80%

Post-Deployment
- 5 years
3.2 Schedule Risks

This section summarizes the most critical schedule-related assumptions and risks, and planned counter-measures (maximum one page).
Section 4: Phase 2 and 3 Deployment Cost Estimate

Slide 1 of 2

- **4.1 Cost Summary**

  - Projected cost estimates at a high-level, and is intended to provide information and guidance for other deployers regarding the costs allocated for the project by Phase and Task

  - *Detailed cost elements should NOT be included.*

- **Two Tables**
  - Phase 2-3 monthly cost report table in template
  - Summarize (by phase) costs by area of expenditure (labor, material, travel, equipment, software development, system integration, etc.)

- **USDOT will not consider Phase 2 and Phase 3 Cooperative Agreements in excess of the total federal funding estimated for these phases submitted as a part of the original Phase 1 proposal. However, a higher estimate will be considered if the Recipient provides the excess to federal funding via a cost share.**
### Phase 2-3

**Monthly Cost Report Table**

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<thead>
<tr>
<th>Task</th>
<th>Cost Share</th>
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<td>2-C</td>
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<td>2-F</td>
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<td>System Test Planning</td>
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<td>2-H</td>
<td>Installation and Operational Readiness Testing</td>
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<td>2-I</td>
<td>Maintenance and Operations Planning</td>
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<td>2-J</td>
<td>Stakeholder Outreach</td>
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<td>2-K</td>
<td>Performance Measurement and Independent Evaluation Support</td>
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<td>2-L</td>
<td>Participation in Standards Development</td>
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<td>3-A</td>
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<td>3-C</td>
<td>Stakeholder Outreach</td>
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<td>3-D</td>
<td>Performance Measurement and Independent Evaluation Support</td>
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<tr>
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<td>Post-Deployment Transition Planning</td>
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Task 13: Deployment Plan Webinar (Public)
Public Webinar

- After the COR’s concurrence with the ICTDP:
  - Site can begin to develop their Public Webinar (template and schedule will be provided by the USDOT)

- Webinar will
  - Describe comprehensive deployment concept for interested internal and external stakeholders.
  - Inform and engage the broader deployment community

- Coordinate with the COR in scheduling, promoting, and delivering this webinar.
Task 14 - Deployment Readiness
Summary Briefing
## Task 14 Deliverables

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<tr>
<td>P1T14D3</td>
<td>5.14</td>
<td>Deployment Readiness Summary (Final)*</td>
<td>PP and PDF</td>
</tr>
</tbody>
</table>

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Deployment Readiness Summary Briefing Process

1. Sites present orally their draft Deployment Readiness Summary Briefing to the USDOT*

2. USDOT provide comments on the material soon after the briefings are completed

3. Sites then update their briefings based on USDOT comments into the Draft Deployment Readiness Summary Briefing (PPT) and submit it back to the USDOT

4. USDOT will comment again on the updated slide deck

5. Sites do a final update of the slides based on any new comments and deliver the 508-compliant Final Deployment Readiness Summary Briefing (PPT and PDF)

*Note this is not the same as the Public Webinar for Task 13
Final Thoughts
ICTDP Challenges

- **Issue 1:** Now that Phase 1 is complete, the deployment concept has evolved and the full extent of required activity in Phase 2-3 is better understood – what can be done if the full concept is now more expensive than the original BAA submittal budget?
  - **Possible Strategy:** Sites have two options. First, the cap on the Phase 2-3 budget is restricted to the federal share only. Local share may be increased to cover the additional costs. Second, the scope of the effort may be adapted to fit within the target budget. The scope of the Phase 2-3 effort is detailed in the “at-scale” deployment features defined by the site.

- **Issue 2:** With all the steps and testing required in Phase 2, it is difficult to complete the work in 24 months.
  - **Possible Strategy:** Clearly identify in ICTDP the number and type of deployment areas before committing users and locations. Look at options to scale back deployments to meet USDOT agreed upon numbers.
ICTDP Challenges Continued

- **Issue 3:** Our approach is to use an Agile development process, but the deliverable schedule follows a more traditional waterfall SE process
  
  - **Possible Strategy:** The schedule may be adapted by the sites to match the approach outlined in site SEMPs. All deliverables are required, but the schedule should be adapted to reflect the way the site will be conducting the work in Phase 2.
Useful References

- ITS4US Deployment Program – Phase 2 and 3 Task Descriptions (Draft)
- Tasks 1-12 ITS4US Deliverables
- Connected Vehicles (CV) Deployment Plan (Task 13):
  - WYDOT Final Deployment Plan (FHWA-JPO-16-297)
  - NY Final Deployment Plan (FHWA-JPO-16-309)
  - Tampa Final Deployment Plan Final Plan (FHWA-JPO-16-321)
Useful References (Continued)

- Connected Vehicles (CV) Deployment Readiness Summaries (Task 14):
  - WYDOT Final Deployment Readiness Summary (FHWA-JPO-16-298) - [https://rosap.ntl.bts.gov/view/dot/31724](https://rosap.ntl.bts.gov/view/dot/31724)
  - THEA Final Deployment Readiness Summary (FHWA-JPO-16-310) - [https://rosap.ntl.bts.gov/view/dot/31731](https://rosap.ntl.bts.gov/view/dot/31731)
  - NYC Final Deployment Readiness Summary (FHWA-JPO-16-322) - [https://rosap.ntl.bts.gov/view/dot/31721](https://rosap.ntl.bts.gov/view/dot/31721)
Stay Connected

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Visit the Complete Trip - ITS4US Deployment Program Website:
https://its.dot.gov/its4us/
Q&A

Any questions?
Additional Information
Task 14 Deliverables – Clarifications*

Deployment Readiness Summary:

- **Location:**
  - Deployment Readiness Summary Briefing – Virtual only

- **Format:**
  - Acceptable Format – PPT.
  - NOTE: The final version of the briefing deck is required to be 508 compliant, delivered as a PPT file and accompanying 508 compliant PDF.

*summarized from e-mail sent 11/15
Phase 2/Phase 3 NOFO Status Update and Potential Impacts on Phase 1 Schedule

- **Phase 2/Phase 3 NOFO Status**
  - Estimated Release date: December 2021 (estimated, not guaranteed)
  - Estimate Phase 2 Start – Early Summer 2022

- **Potential Impacts to Phase 1 Deliverable Schedule.**
  - Key Phase 1 deliverables linkages to Phase 2/3 application
  - Phase 1 deliverable schedule revision and proposed POP MOD