U.S. Department of Transportation

COMPLETE TRIP

ITS4US

# Task 13 Training:
# Integrated Complete Trip Deployment Plan

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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

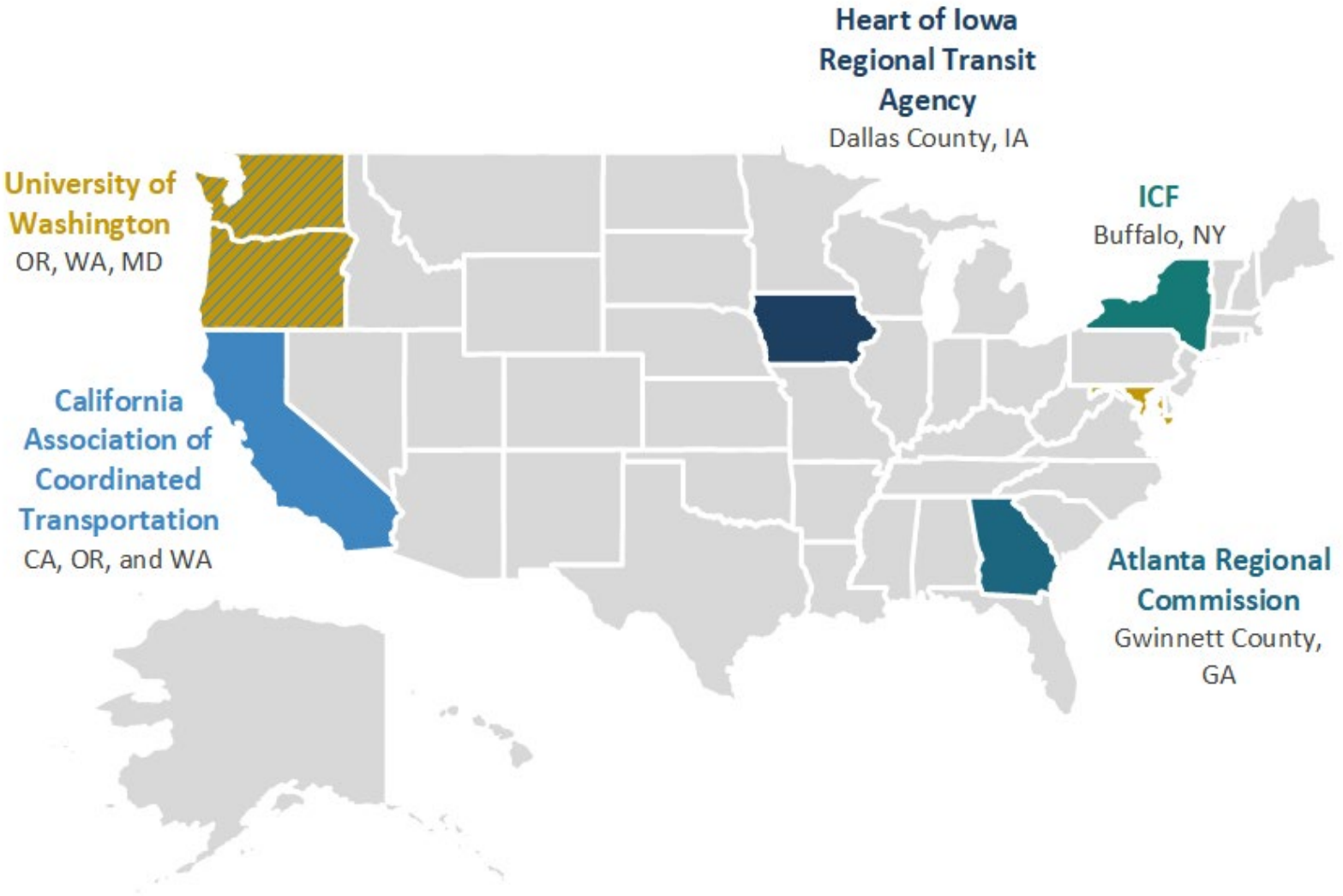
Identify needs and challenges by populations

Develop and deploy mobility solutions that meet user needs

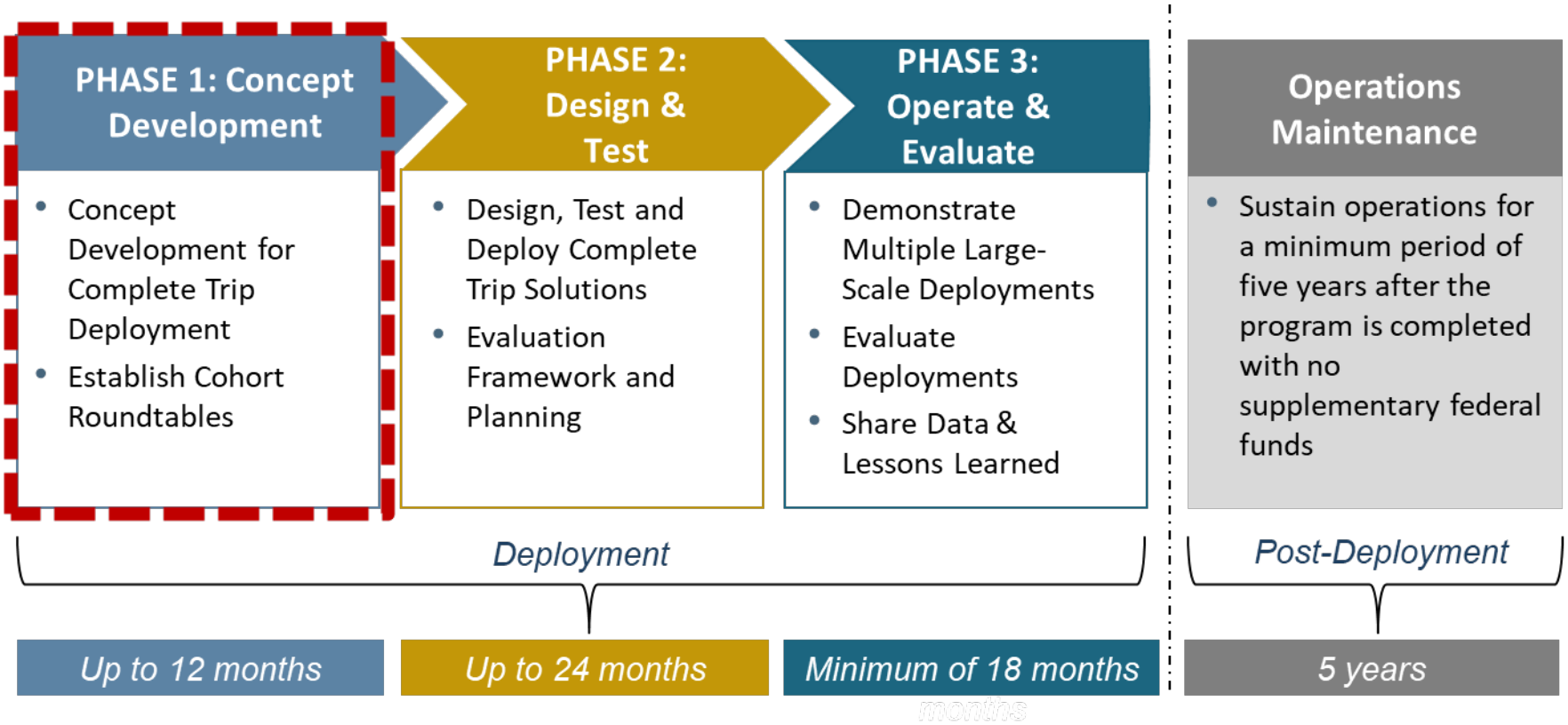
Measure impact of integrated deployments

Identify replicable solutions and disseminate lessons learned

# Complete Trip Phase 1 Awardees



# Deployment Phases



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# Task 13 Training: Integrated Complete Trip Deployment Plan (ICTDP)

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ITS JPO

# Agenda

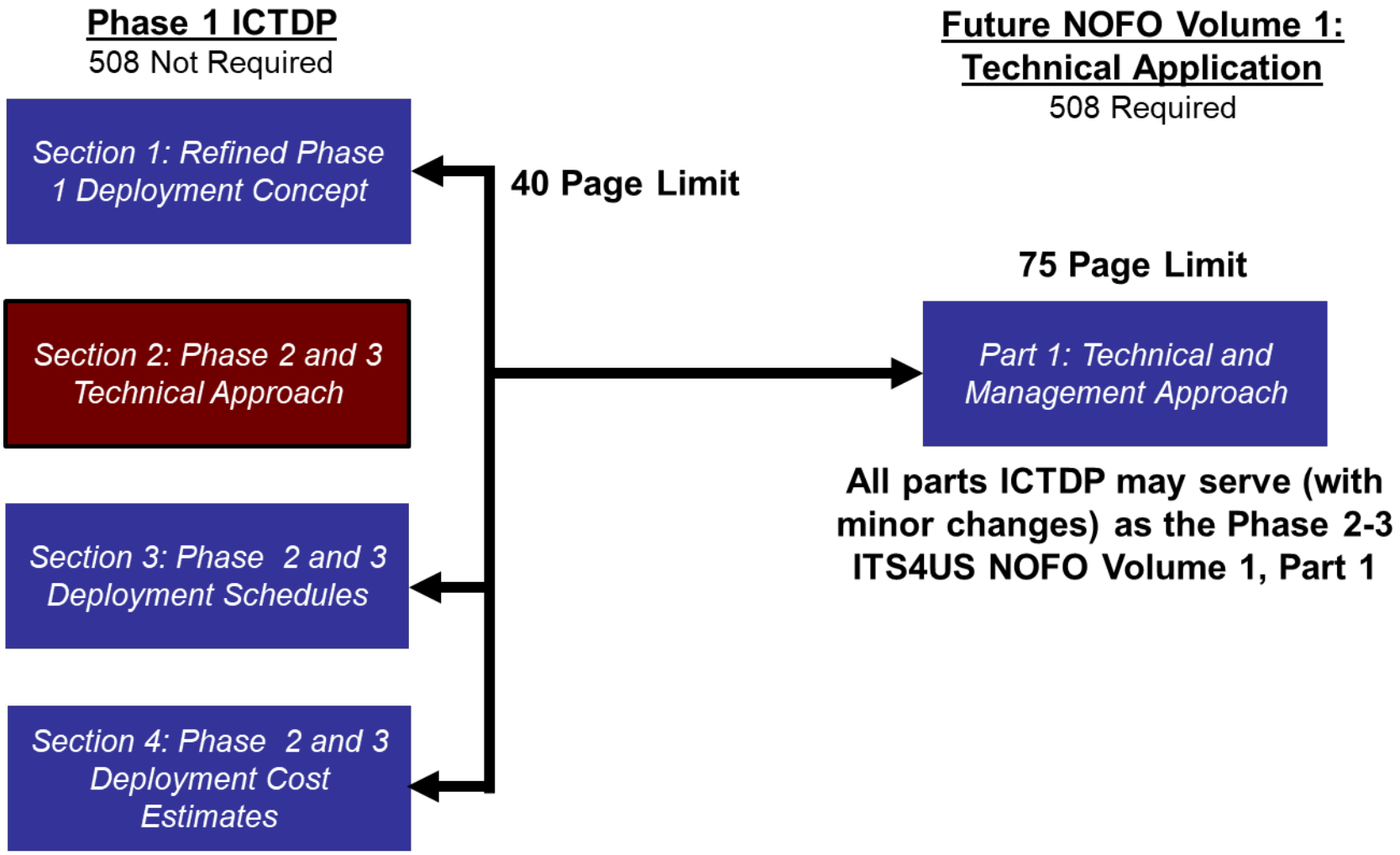
- **Integrated Complete Trip Deployment Plan (ICTDP) (Task 13) Overview**
- **Integrated Complete Trip Deployment Plan Template**
  - Refined Phase 1 Deployment
  - Phase 2 and 3
    - Technical Approach
    - Schedule
    - Cost Estimates
- **Deployment Readiness Summary Briefing (Task 14) Overview**
- **Public Webinar**
- **Final Thoughts**

# Integrated Complete Trip Deployment Plan (ICTDP)

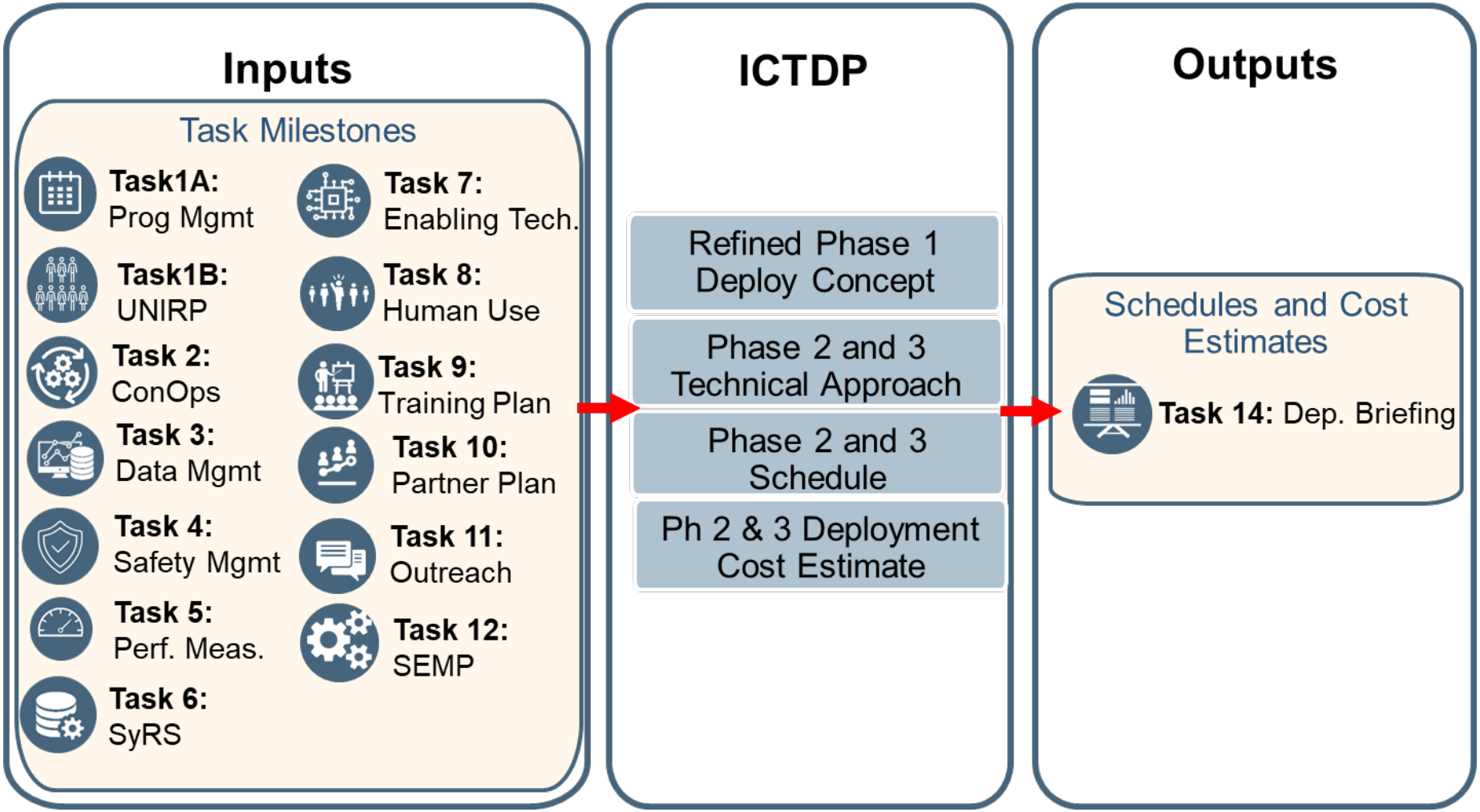
# Integrated Complete Trip Deployment Plan Good News!

- **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



# ICTDP Interdependencies



# Task 13 Deliverables

| ID | BAA Section | Deliverable | Format |
|---|---|---|---|
| P1T13D1 | 5.13 | Integrated Complete Trip Deployment Plan - Draft* | Word |
| P1T13D2 | 5.13 | Integrated Complete Trip Deployment Plan - Final* | Word |
| P1T13D3 | 5.13 | Deployment Plan Webinar (Public) | PP |

** 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



- **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



- **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



- **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.

# Section 1: Refine Phase 1 Deployment Concept



- **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

# Section 3: Phase 2 and 3 Deployment Schedule

Slide 1/4

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

| Phase 2 | Month From Award | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Task** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| 2-A Program Mgt. | | | | | | | | | | | | | | | | | | | | |
| 2-B System Arch/Design | | | | | | | | | | | | | | | | | | | | |
| 2-C Data Mgt. Planning | | | | | | | | | | | | | | | | | | | | |
| 2-D Acquisition/Install Plan | | | | | | | | | | | | | | | | | | | | |
| 2-E App Development | | | | | | | | | | | | | | | | | | | | |
| 2-F Partcipant/Staff Train | | | | | | | | | | | | | | | | | | | | |
| 2-G Test/Demo Planning | | | | | | | | | | | | | | | | | | | | |
| 2-H Installation and Testing | | | | | | | | | | | | | | | | | | | | |
| 2-I Maint and Ops Planning | | | | | | | | | | | | | | | | | | | | |
| 2-J Stakeholder Outreach | | | | | | | | | | | | | | | | | | | | |
| 2-K Perf Meas./IE Support | | | | | | | | | | | | | | | | | | | | |
| 2-L Standards Development | | | | | | | | | | | | | | | | | | | | |

# Section 3: Phase 2 and 3 Deployment Schedule



- **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**

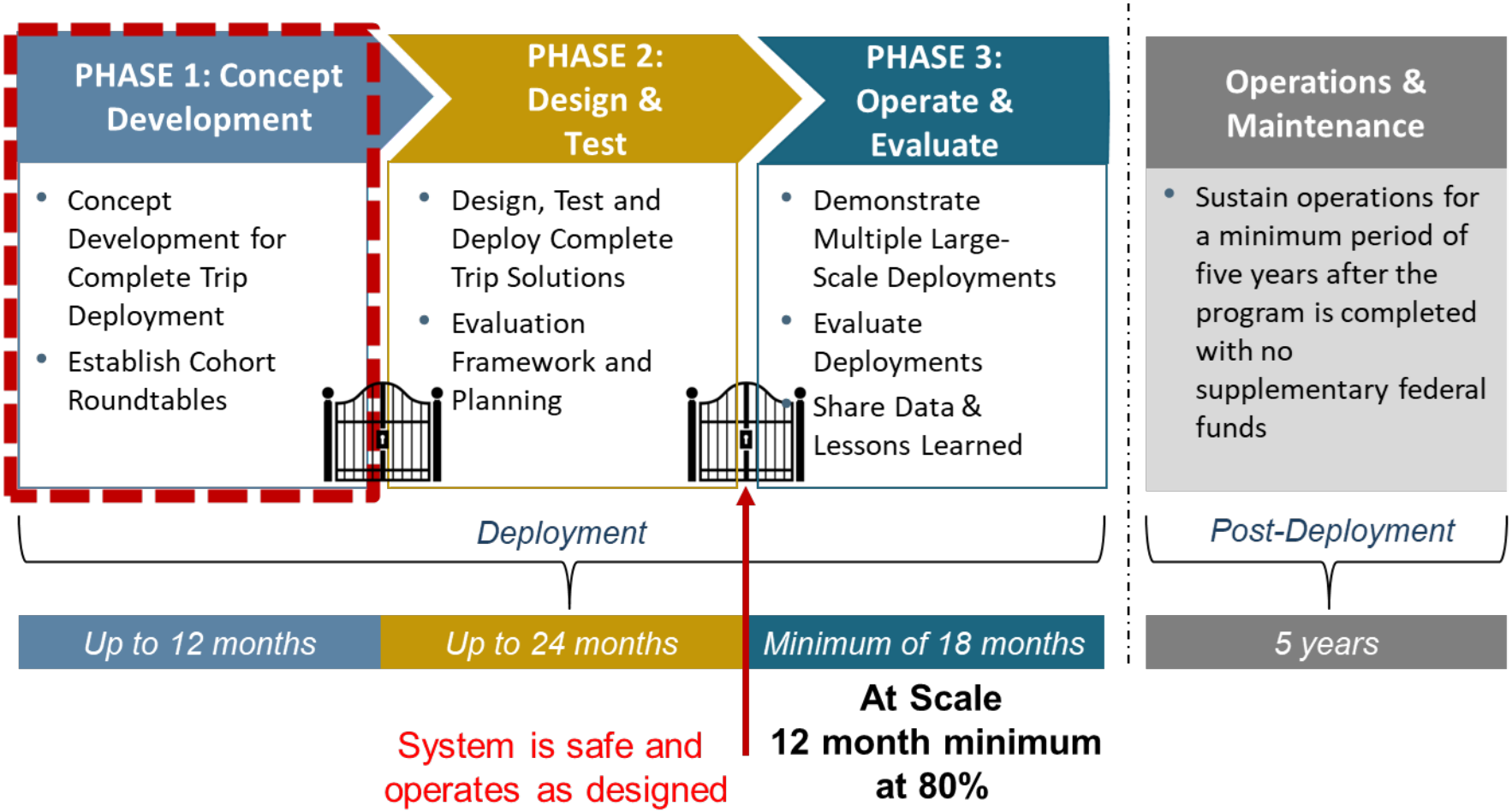
- **Note the USDOT will provide a sample Phase 2 Deployment Schedule which a Site can use if they want, but they are also welcome to develop their own.**

# 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



# Section 3: Phase 2 and 3 Deployment Schedule



- **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



- **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.***

# Section 4: Phase 2 and 3 Deployment Cost Estimate



Phase 2-3 Monthly Cost Report Table

| Task | | Cost Share | | | Federal Share | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Budget | Cost to Date | Remaining | Budget | Cost to Date | Remaining | Budget | Cost to Date | Remaining |
| 2-A | Program Management | | | | | | | | | |
| 2-B | System Architecture and Design | | | | | | | | | |
| 2-C | Data Management Planning | | | | | | | | | |
| 2-D | Acquisition and Installation Planning | | | | | | | | | |
| 2-E | Software Development and Integration | | | | | | | | | |
| 2-F | Participant and Staff Training | | | | | | | | | |
| 2-G | System Test Planning | | | | | | | | | |
| 2-H | Installation and Operational Readiness Testing | | | | | | | | | |
| 2-I | Maintenance and Operations Planning | | | | | | | | | |
| 2-J | Stakeholder Outreach | | | | | | | | | |
| 2-K | Performance Measurement and Independent Evaluation Support | | | | | | | | | |
| 2-L | Participation in Standards Development | | | | | | | | | |
| **Phase 2 Subtotal** | | | | | | | | | | |
| 3-A | Program Management | | | | | | | | | |
| 3-B | System Operations and Maintenance | | | | | | | | | |
| 3-C | Stakeholder Outreach | | | | | | | | | |
| 3-D | Performance Measurement and Independent Evaluation Support | | | | | | | | | |
| 3-E | Post-Deployment Transition Planning | | | | | | | | | |
| 3-F | Participation in Standards Development | | | | | | | | | |
| **Phase 3 Subtotal** | | | | | | | | | | |
| **Total** | | | | | | | | | | |

# 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

| ID | BAA Section | Deliverable | Format |
|---|---|---|---|
| P1T14D1 | 5.14 | Deployment Readiness Summary Briefing* | Oral Presentation |
| P1T14D2 | 5.14 | Deployment Readiness Summary (Draft)* | PP |
| P1T14D3 | 5.14 | Deployment Readiness Summary (Final)* | PP and PDF |

** For USDOT only and will not be released to the Public*

# 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)
    - Report - https://rosap.ntl.bts.gov/view/dot/31723 and Slides https://www.its.dot.gov/pilots/pdf/CVP_WyomingComprehensiveDeploymentPlanWebinar.pdf
  - NY Final Deployment Plan (FHWA-JPO-16-309)
    - Report - https://rosap.ntl.bts.gov/view/dot/31730 and Slides https://www.its.dot.gov/pilots/pdf/CVP_NYCDOTComprehensiveDeploymentPlanWebinar.pdf
  - Tampa Final Deployment Plan Final Plan (FHWA-JPO-16-321)
    - Report - https://rosap.ntl.bts.gov/view/dot/31720 and Slides - https://www.its.dot.gov/pilots/pdf/CVP_TampaComprehensiveDeploymentPlanWebinar.pdf

# 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
  - THEA Final Deployment Readiness Summary (FHWA-JPO-16-310) - 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

# 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