



U.S. Department of Transportation

## COMPLETE TRIP

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# ITS4US

The logo for ITS4US features the number '4' in a large, blue, stylized font. A dashed orange line with a red location pin at the top and bottom ends forms a path through the '4'. The rest of the text 'ITS' and 'US' is in a dark grey, bold, sans-serif font.

**Webinar #3: Enabling Components:  
Technologies and Services**

February 27, 2020



# Sofia Gallo

Special Assistant

Office of the Secretary

# USDOT Secretary Chao's Priority: Expanding Access to Transportation

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- USDOT is launching a new department-wide initiative to expand access to transportation for people with disabilities, older adults, and individuals of low income. The **Complete Trip Portfolio** will identify ways to provide more efficient, affordable, and accessible transportation for underserved communities.
- Secretary Chao announced her intent to fund 3 new programs as part of the Complete Trip Portfolio to develop and deploy innovations in technology and further interagency partnerships to improve mobility:
  - Complete Trip – ITS4US Deployment Program
  - Inclusive Design Challenge
  - Mobility for All Pilot Program

# Complete Trip - ITS4US Deployment Program

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- A USDOT Multimodal Deployment Effort, led by ITSJPO and supported by OST, FHWA and FTA
- Built upon previous USDOT research investments, the Complete Trip-ITS4US Deployment Program supports communities in developing innovative integrated technologies and creating public-private partnerships to move towards complete trip deployments

## *Vision*

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



# Elina Zlotchenko

Program Manager

ITS Joint Program Office

# Webinar Series

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- ✓ 1. Overview of the Complete Trip - ITS4US Deployment Program
- ✓ 2. Engaging Stakeholders, Developing Partnerships, and Following the Planning Process
3. Enablers and Technologies
4. Deployment Scenario Examples
5. Deployment Scenario Examples
6. Privacy, Security, and Open Data
7. Procurement Path

Links to webinar recordings will be available on the ITS4US website:

[https://its.dot.gov/its4us/its4us\\_webinar.htm](https://its.dot.gov/its4us/its4us_webinar.htm)

# Today's Agenda

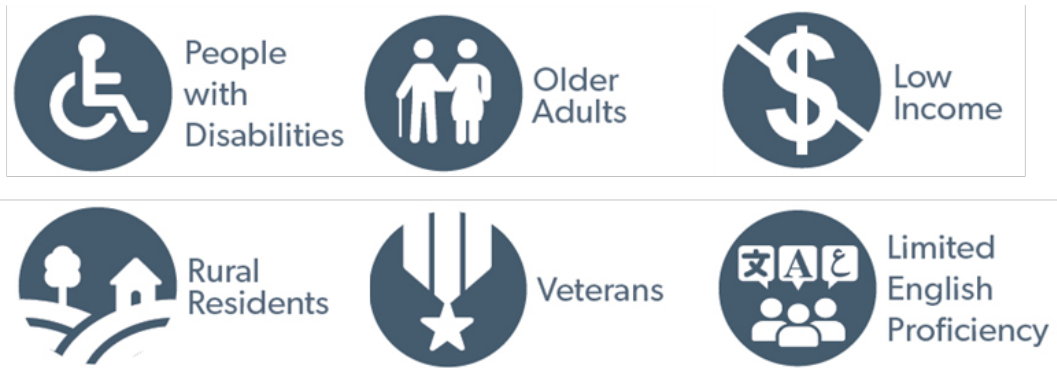
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- Program Overview
- Enabling Components
- Designing an Innovative Solution
- Technology and Service(s) Integration
- Deployment and Scalability
- Use Cases
- Stakeholder Q&A

# Program Overview

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- Up to \$40 million available for communities to demonstrate innovative and integrated complete trip deployments to support seamless travel for all users across all modes, regardless of location, income, or disability
- The Program aims to solve mobility challenges for all travelers, including:

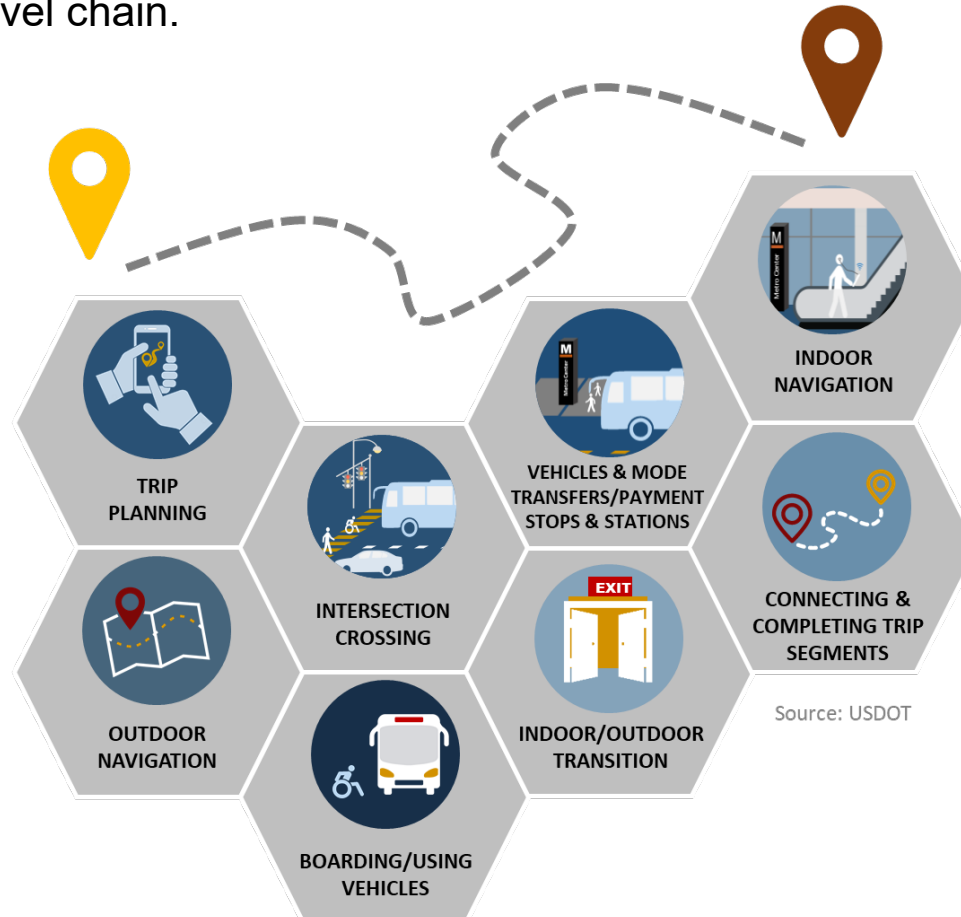


- Procure and award multiple large-scale, replicable deployments to address the challenges of planning and executing all segments of a complete trip



# The Complete Trip

- The *Complete Trip Concept*: An individual's ability to go from origin to destination reliably, spontaneously, confidently, independently, safely, and efficiently without gaps in the travel chain.

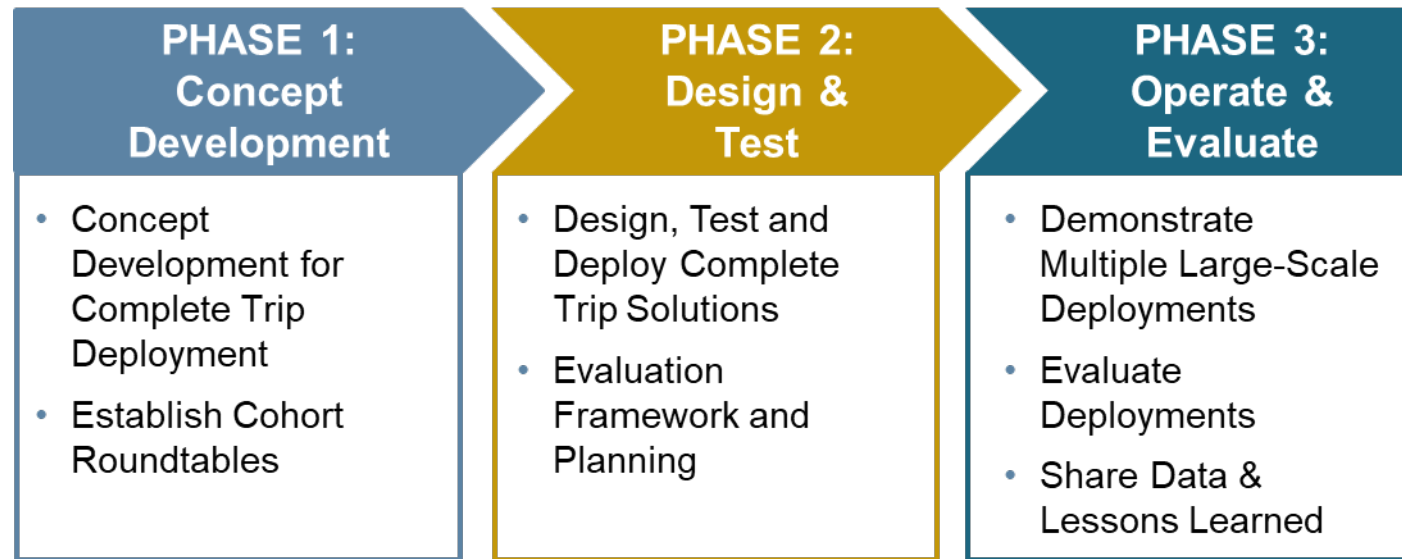


# Complete Trip Deployment Concept: Fundamental Elements

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- Complete Trip deployments will be real-world environment **deployments**
  - If successful, deployed technologies are expected to remain as permanent operational elements
  - Successful sites will serve as replicable models for other candidate deployers
- There will be **multiple** Complete Trip deployments
  - Each site will have different solutions based on their population travel needs
    - Deployments must address their populations' challenges of planning and executing complete trips
    - The unique needs of each site must drive the deployment process
- Complete Trip deployments are expected to be both **large-scale and multi-modal**
  - **Large-scale** implies deployments will have measurable impact, not a specific minimum geographic size
  - Sites will deploy **multiple technologies and modes**

# Deployment Phases and Schedule



## ■ Program 2020 Schedule

- Pre-Deployment Outreach Webinars (Winter-Spring)
- Solicitation for Deployment Phase 1 Released (Summer 2020)
- Solicitation Award (Fall 2020)



# Deborah Curtis

Highway Research Engineer

Office of Operations Research and  
Development

# Trip Segment Overview



Source: USDOT

# Enabling Components

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- What is an Enabling Component?
  - An Enabling Component is a technology or service that can be leveraged to build solutions that address the challenges to trip segments.
  - Multiple enabling components may be used in a single solution.
  - Deployments should include multiple solutions that are integrated together to support complete trips for all.
- Since there is a wide-variety of technologies and services that can be used as part of a complete trip deployment and many more are being developed, the enabling components are categorized into four areas:
  - Software
  - Hardware
  - Communications
  - Service Model(s)

# Enabling Components: Software

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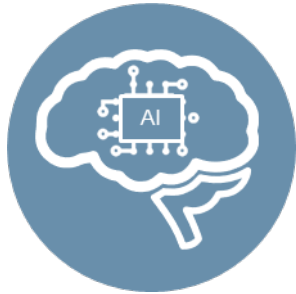
Web-based Application



Device-based Application



mL Application



A.I. Application



Automation Application



AR Application



VR Application

# Enabling Components: Hardware

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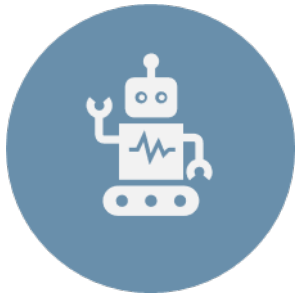
Automated Vehicle



Automated Aerial Vehicle



Connected Vehicle



Assistive Robotics



IoT Device



Infrastructure Device



Handheld/Wearable Device



# Enabling Components: Communications

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LTE



WiFi



5G



C-V2X



Bluetooth



DSRC

# Enabling Components: Service Models

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Trip-Planning and Concierge Service



Mobility Service



Public / Government Transportation Service



Trip Replacement

# Designing Innovative Solutions

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- Understand the complete trip challenges by:
  - Trip Segments
  - Underserved Populations
  
- Design solutions that fit your deployment site:
  - Leveraging **enabling components** to create innovative solutions
  - Flexibility - multiple solutions can solve one or more travel challenges
  
- Successful solutions should:
  - Mitigate or eliminate barriers
  - Extend to other underserved populations
  - Be comprised of multiple enabling components
  - Integrate across trip segments and into existing infrastructure, technologies and services
  - Allow for spontaneity
  - Allow for scalability
  - Include performance metrics



# Murat Omay

Senior Transportation Program Analyst

FTA: Office of Research, Demonstration  
and Innovation

# Technology and Services Integration

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- Create seamless transitions between trip segments by utilizing solutions that integrate enabling components across trip segments.
  - Integrated solutions would further improve a traveler's mobility by providing seamless travel across trip segments.
- In addition to providing a seamless travel experience, mobility solutions should allow travelers the flexibility and option to make changes along their trip in case of emergency, person needs, etc. without incurring additional travel challenges.



# Deployment and Scalability



## Integrate or augment existing ITS systems

- Utilize existing infrastructure and services when feasible
- Deploy new capabilities without adversely impacting current services



## Plan for Scalability

- Consider phased roll-out to beta users
- Identify scalability risks and how to mitigate them



## Performance Measure Plan

- Identify how you will collect the data to measure performance metrics
- Identify if you need to collect pre-deployment performance data

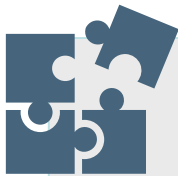
# Use Cases

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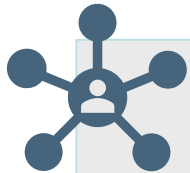
## Flexibility

- Solutions can leverage different enabling components to solve the same mobility challenge



## Integration

- Solutions across multiple trip segments need to work together in series for maximum impact



## Spontaneity

- Solutions should allow for spontaneous travel

# Use Case: Ped Crossing at an Intersection: 1A

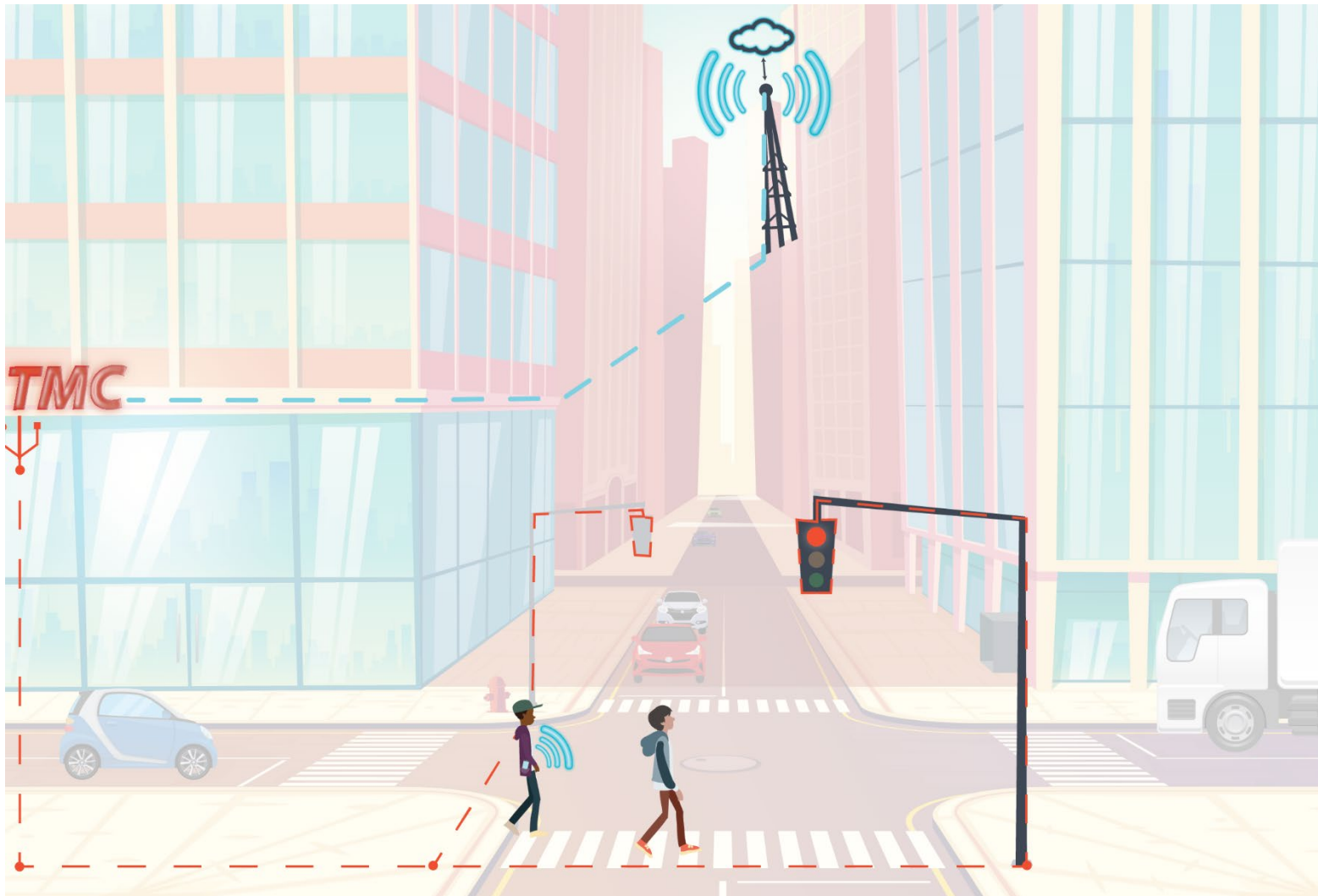




# Use Case: Ped Crossing at an Intersection: 1B



# Use Case: Ped Crossing at an Intersection: 1C



# Use Case: Indoor Navigation and Ride Transfer



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# Use Case: Re-route Assistance



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# Use Case Takeaways

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- Multiple solutions to solve travel barriers at the trip segment level.
  - It is important to deploy a best-fit solution for your deployment site.
- Integrating the solutions across trip segments to create seamless transitions to obtain the complete trip concept.
- Providing technologically driven and innovative solutions to allow for spontaneous travel.
  - Solutions should allow individuals spontaneity when traveling in order to address emergencies or different traveler needs thus increasing their freedom for travel.



# Elina Zlotchenko

Program Manager

ITS Joint Program Office

# Upcoming Outreach Activity

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- Save the date for the remainder of the webinar series:
  - Deployment Scenario Examples: March 12, 2020, 1:00 – 2:00 PM ET
  - Deployment Scenario Examples: March 26, 2020, 1:00 – 2:00 PM ET
  - Privacy, Security, and Open Data: April 9, 2020, 1:00 – 2:00 PM ET
  - Procurement Path: April 23, 2020, 1:00 – 2:00 PM ET
- All webinars will be recorded. Recordings and slide decks will be posted on the program website: <https://its.dot.gov/its4us/>

# Enabling Components Q&A

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For more information please contact:

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Visit the Complete Trip - ITS4US Deployment Program  
Website:

<https://its.dot.gov/its4us/>