



U.S. Department of Transportation

COMPLETE TRIP

ITS4US

The logo for ITS4US features the text 'ITS4US' in a bold, sans-serif font. The '4' is stylized with a blue and white grid pattern. A dashed orange line with a red location pin at the top and bottom connects the top and bottom of the '4'.

University of Washington
Phase 1 Concept of Operations Webinar

July 26, 2021

Agenda

▪ Purpose of this Webinar

- To share the Concept Development Activities from the University of Washington's ITS4US Project

▪ Webinar Content

- Complete Trip – ITS4US Deployment Program Overview
- Site Orientation & Key Challenges
- Deployment Concept Overview
- Stakeholder Engagement Efforts
- Stakeholder Q&A
- How to Stay Connected

▪ Webinar Protocol

- Please mute your phone during the entire webinar
- You are welcome to ask questions via chatbox at the Q&A Section
- The webinar recording and the presentation material will be posted on the ITS4US website

Brief Program Overview

Kate Hartman, ITS JPO/FHWA

Complete Trip - ITS4US Deployment Program

- A USDOT Multimodal Deployment effort, led by ITSJPO 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

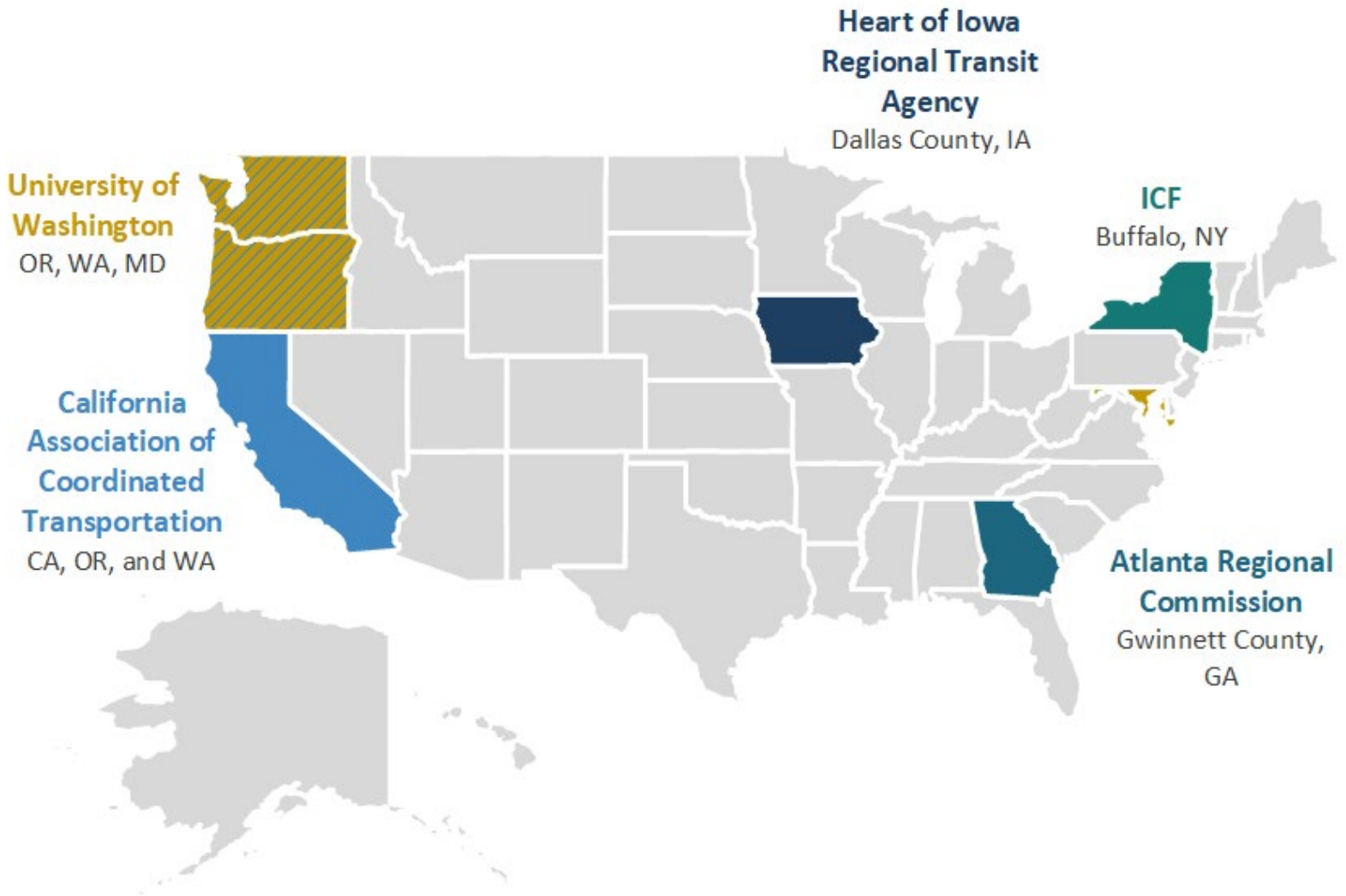


Measure impact of integrated deployments

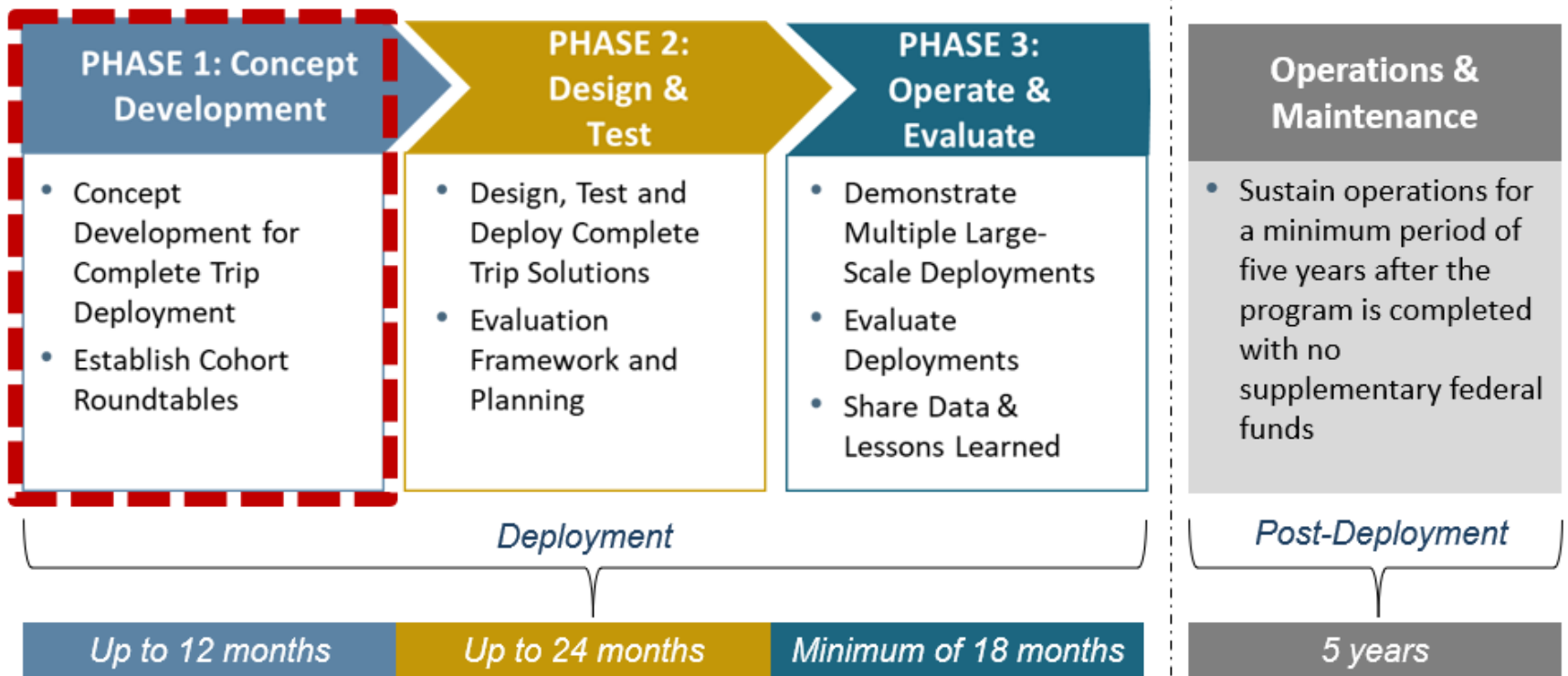


Identify replicable solutions and disseminate lessons learned

Complete Trip Phase 1 Awardees

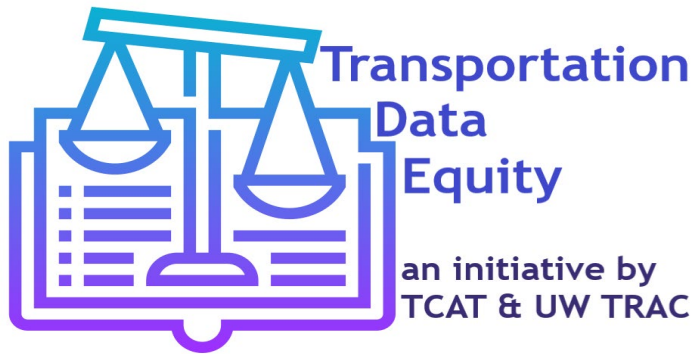


Deployment Phases

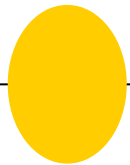


Site Orientation & Key Challenges

Anat Caspi, Concept Development Lead, PI



Introduction to the Transportation Data Equity Initiative



Anat Caspi, PhD,
Taskar Center for Accessible Technology
University of Washington, 2021-07-26



TCAT The Taskar Center for
Accessible Technology



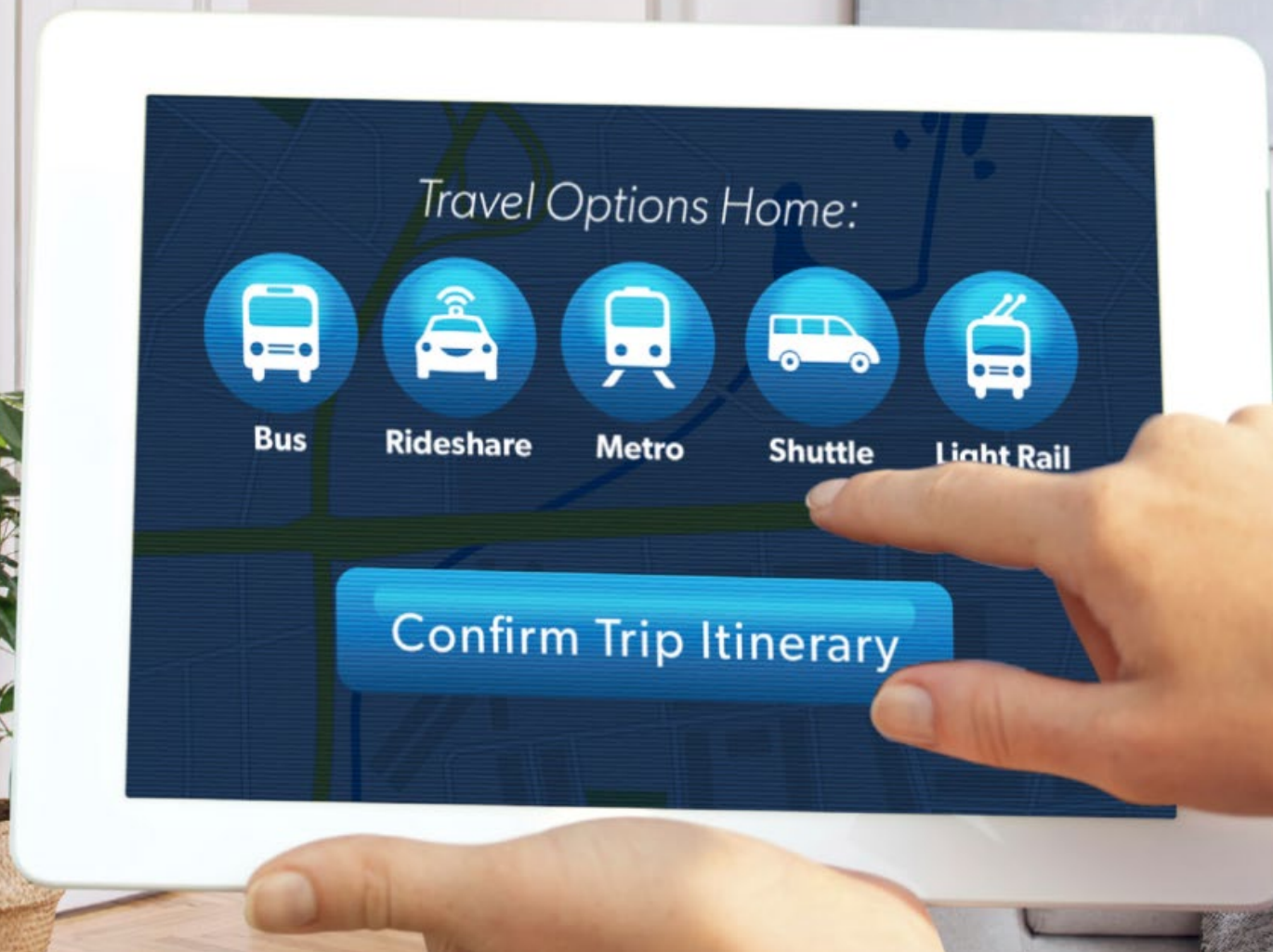
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U.S. Department of Transportation
ITS Joint Program Office

Complete Trip Information Gaps

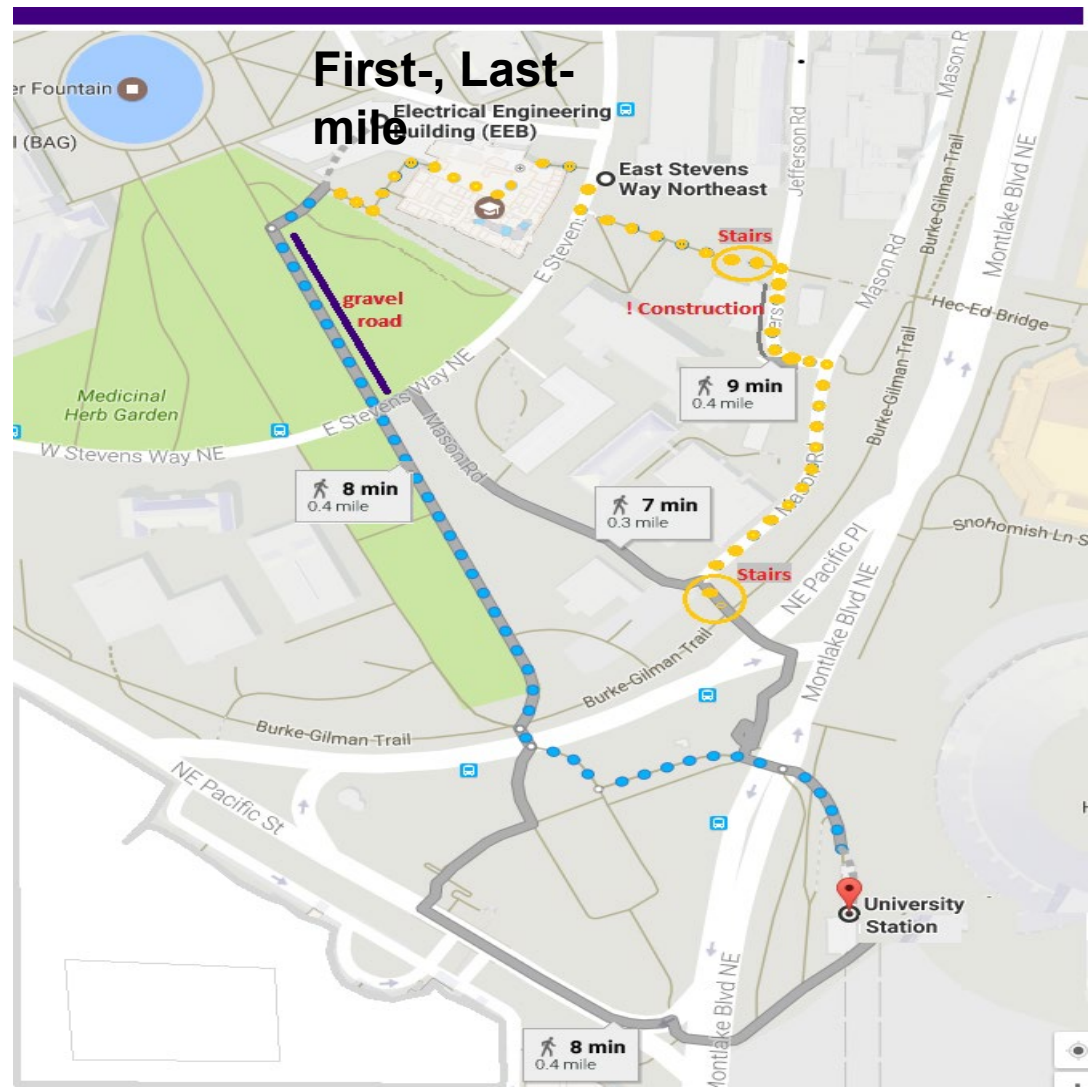


*Using a tool like directions on Google Maps doesn't really help me get around. **Actually sometimes this does more harm than good.** I'm sent down streets I can't cross, or up inclines that are impossible to climb. It can be deeply frustrating.*

“

Traveler Quote

Current “Pedestrian” Trip Planning





What information do people want?

We talked to people. And they all disagreed with one another all the time, including those normally treated as a monolith, like manual wheelchair users.

AccessMap follows a **participatory design** approach.





Current "accessibility" Resources

Static maps that are:

- Cluttered
- Complex
- Moderately accurate
- Difficult and costly to maintain
- Non-routable

(PDF)

Barriers for Travelers with Specific Travel Preferences

Accessible sidewalk routes remain largely unknown, particularly when factoring in user-specific preferences.

Flexible paratransit service is not shared in a standard format, even among agencies that utilize GTFS.

Transit station pathways and features are not currently available in digitized 3D formats.

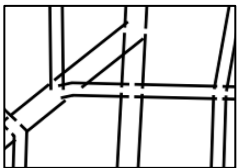
Limited mobile applications exist to create accessible Complete Trip information across multimodal links.

Current Challenges with Sidewalk and Transit Data

- Siloed systems
- Data is not standardized
- Data differs in availability based on geography
- Data about infrastructure rarely describes connectivity of paths or transportation network

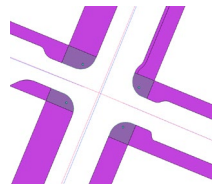
Seattle:

disconnected centerlines



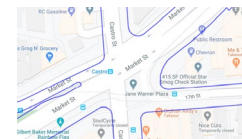
Portland:

polygons with holes in them for planters



San Francisco:

just the curbs and they're not even right



Our Regional Foci and Partners



Baltimore and Harford Counties, MD



Multnomah and Columbia Counties, OR



King and Snohomish Counties, WA



Source: Geology.com

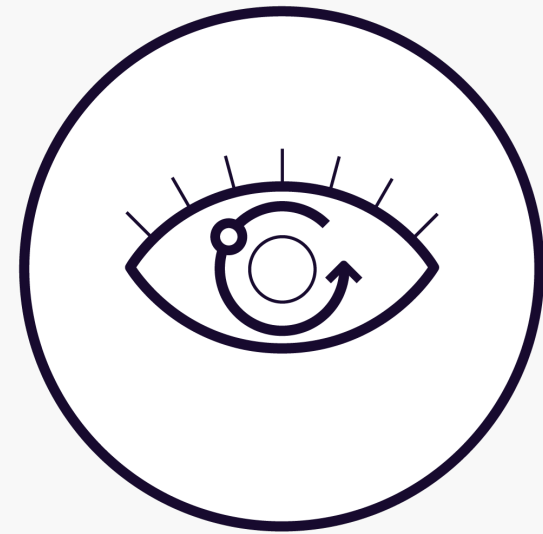
Deployment Concept Overview

Anat Caspi, Concept Development Lead, and
PI

Our Vision

The UW ITS4US project envisions a world where people can choose from multiple options for travel, whether by walking, rolling, cycling, carpooling, and specifically **using public or on-demand transit.**

Our team strives to make it **easy and efficient for travelers of all abilities and means** to access the complete trip wherever they go.





TDEI motivation I : Behind every useful mobility app is a **complex data pipeline**. To provide reliable & intuitive travel discovery and directions, public agencies and private companies need **shared data and tools to represent all travel environments and services**.

What is a Data Pipeline?

- A data pipeline is a set of actions that receive raw data from disparate sources, may clean, denoise and manipulate the data, and finally move the data to a destination for storage, query and analysis.
- What happens to the data along the way depends upon the business use case and the destination itself.



Focus: travel environments/services



OpenSidewalks-Sidewalks and Pedestrian Paths

GTFS-Flex - Partly adopted, not representative of community interests

GTFS-Pathway - not fully representative of communities of interest





TDEI motivation II : Reliable, **objective, detailed consistent, standardized** shared data and tools can enable neutral data analysis, to better understand travel barriers and inequities, and to improve data-driven resource allocation.

Specifically: No subjective labeling (accessible/inaccessible)

UW ITS4US Project Main Goals

This project is designed to create, modify and improve data standards and data integration, validation and maintenance tools necessary for modern applications to provide mobility benefits more equitably.



Coordinate collaborative releases of data standards

OpenSidewalks

GTFS-Pathways

GTFS-Flex

Publish and maintain interoperable data infrastructure

Data Collection

Data Vetting

Data Provisioning Services

Deploy and sustain three accessible mobility applications

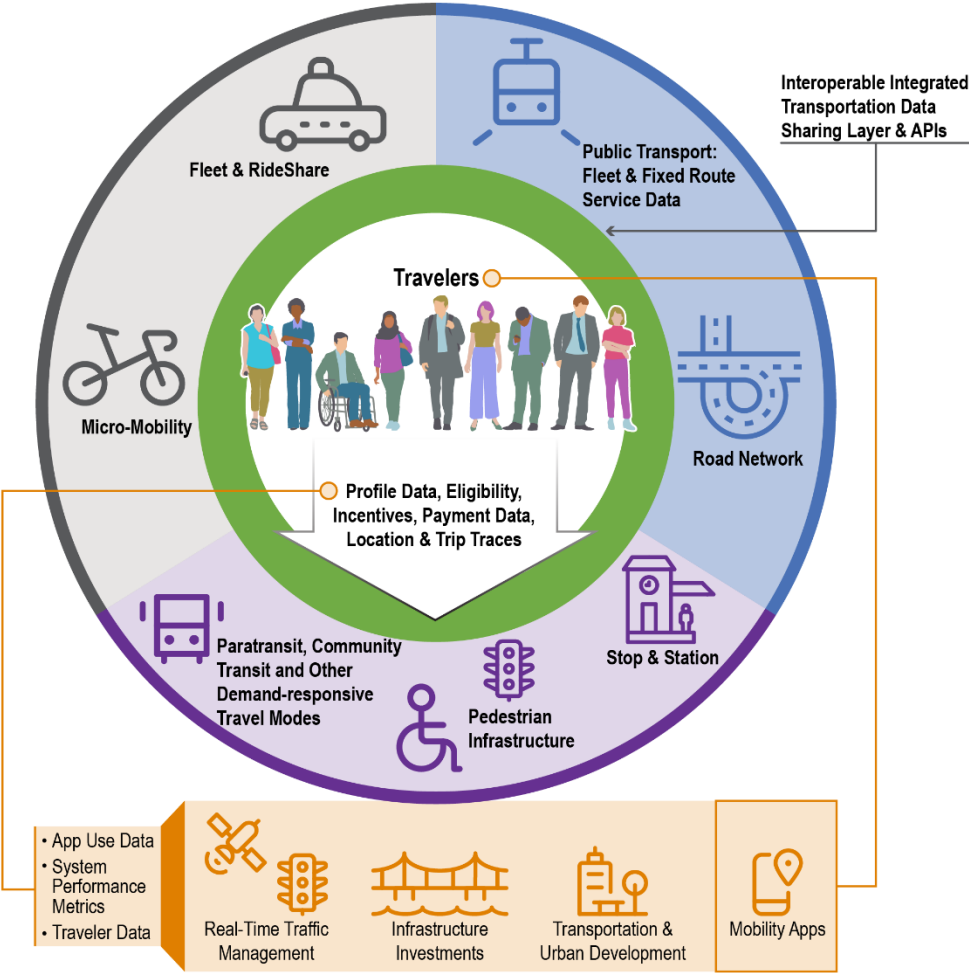
Multimodal AccessMap

Soundscape

Digital Twin

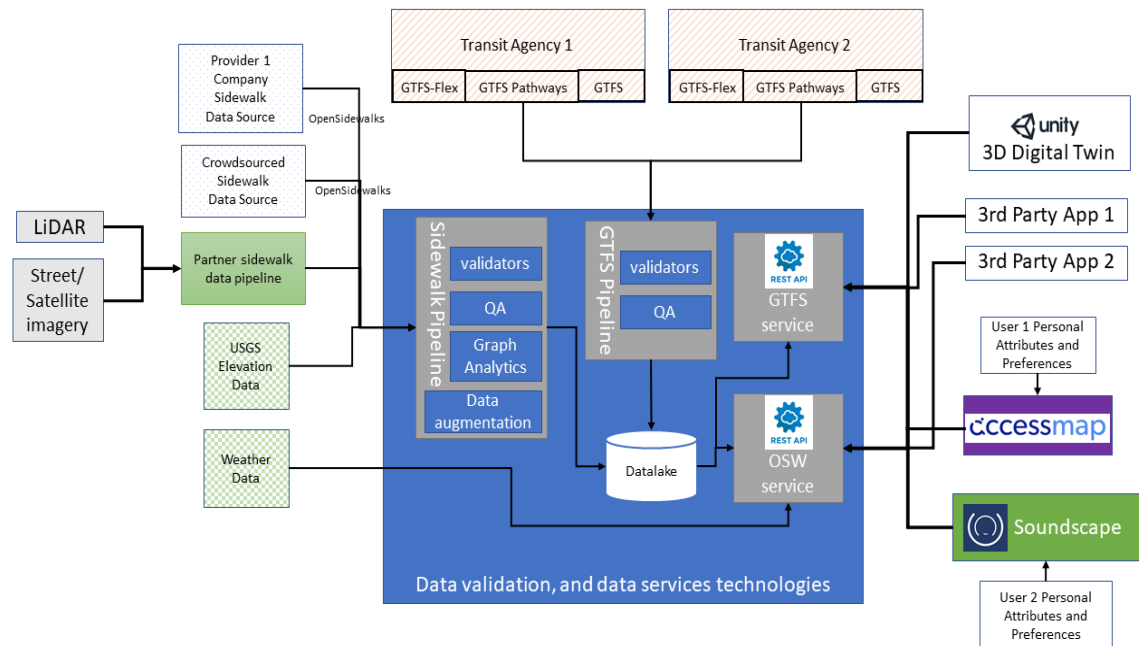
Complete Trips Informed by Data Standards

Problem:
All travelers need usable information they can trust.



Integrated Deployment

- Our data standards and data tools work directly to generate the data our user facing applications require to meet user needs
- Our partnerships with industry are designed to scale that data nationally, with supporting data licensing agreements
- Our applications demonstrate the use of the APIs – and are designed to lead to large numbers of additional, nationally available applications



Stakeholder Engagement Summary

Mark Jensen, Cambridge Systematics

The US ITS4US Project ConOps

- Was Held June 16 – 18, 2021
- Video of the event is available (currently upon request)

Stakeholder Groups for the ConOps

Data Generators	Transportation Service Providers	Data Service Providers	Application Developers	Digital Device End Users
<ul style="list-style-type: none"> • Municipal infrastructure Owner-Operators • Private-sector pedestrian-built environment owner-operators • Elevation Data Provider 	<ul style="list-style-type: none"> • Transit Agencies 	<ul style="list-style-type: none"> • Crowdsourced Sidewalk Reporters • Mapping Services • Weather Data Provider 	<ul style="list-style-type: none"> • AccessMap Developers • Soundscape Developers • Digital Twin Developers • Third-Party Application Developers 	<p>Travelers With:</p> <ul style="list-style-type: none"> • Sidewalk Preferences • Vision Disabilities • Hearing Disabilities • Older Adults • Low-Income Users • Rural Transit Users • Veterans • Multi-Lingual, Multi-Cultural Travelers

Overall Takeaways from ConOps Stakeholder Review (1 of 2)

- Lots of overall support of the needs identified as well as the basic concepts of the project. No major changes in project direction are required
- Modest changes to some of those needs were recommended (e.g., removal of technical lingo)
- The agency stakeholders were both enthusiastic about the potential outcomes of the project, and worried about
 - 1) Many of the technical details of how they will interact with the system, and
 - 2) The resources required of their agencies

Overall Takeaways from ConOps Stakeholder Review (2 of 2)

- End users have plenty of insights for the project, especially in the following areas:
 - Specific discussions on data attributes and features that are needed (will follow in the data specification special interest groups)
 - Specific discussions on data governance, data quality and assurance, data sharing and licensing (will follow in the data infrastructure and tooling discussion groups)

Next Steps with Stakeholders

- **Incorporation of stakeholder feedback** into the final ConOps.
- A series of **Advisory Committee meetings** for stakeholders to
 - Develop data standards
 - Discuss data collection
 - Discuss data outputs: How is the data interpretable to application end users? Are there concerns about data provenance, privacy, security?
 - What additional data will be required to enhance confidence, trust and independence in trip planning and how that information is best conveyed?

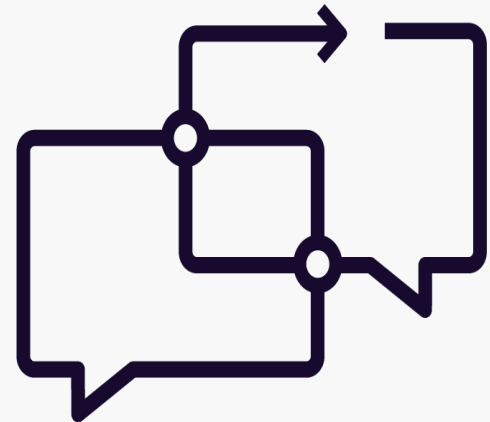
Ongoing Community Engagement

Advisory Committee:

- Anyone who wishes to contribute to data specification conversations- what attributes are collected, how, why, and priorities
- Offering incentives for participation for travelers who experience travel barriers

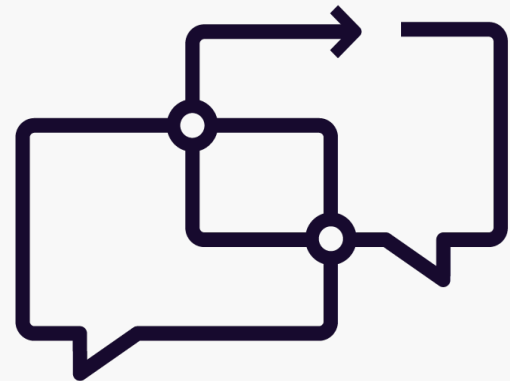
Agencies:

- Agency data contributions in pilot locations
- Architecting region-specific and scalable deployments
- Provide APIs for downstream applications



Local Community Organization Engagement:

- Data contribution:
 - Street-level collection with GPS track
 - imagery -
 - Where are sidewalks?
 - How are sidewalks connected?
 - Width of sidewalks
 - Assessment and data vetting
 - Quality of surface
 - Surface Evenness
 - Cross-slope
- Data standard specification development
- Improve data richness and density in pilot locations



Interested in participating? We'd like to hear from you...

- **Further involvement:**
 - **Interested in Advisory Committees?**
 - **Interested in development of data specifications?**
 - **Interested in newsletter to keep up with the UW ITS4US project?**

- **<https://transitequity.cs.washington.edu/>**

Stakeholder Q&A

- Please keep your phone muted
- Please use chatbox to ask questions
- Questions will be answered in the order in which they were received

Stay Connected

For more information please contact:

Elina Zlotchenko, ITS JPO
ITS4US Program Manager
Elina.Zlotchenko@dot.gov

Kate Hartman
Site COR
Kate.Hartman@dot.gov

Anat Caspi
Site Lead
caspian@cs.Washington.edu
<https://transitequity.cs.washington.edu/>

Visit the Complete Trip - ITS4US Deployment Program Website and FAQs:

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

https://www.its.dot.gov/its4us/its4us_faq.htm

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