COMPLETE TRIP

ITS4US

University of Washington
Phase 1 Concept of Operations 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

University of Washington
OR, WA, MD

California Association of Coordinated Transportation
CA, OR, and WA

Heart of Iowa Regional Transit Agency
Dallas County, IA

ICF
Buffalo, NY

Atlanta Regional Commission
Gwinnett County, GA
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

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

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

Post-Deployment
- 5 years
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
Complete Trip Information Gaps

Travel Options Home:
- Bus
- Rideshare
- Metro
- Shuttle
- Light Rail

Confirm Trip Itinerary
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.
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
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 1: 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

<table>
<thead>
<tr>
<th>Data Generators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal infrastructure Owner-Operators</td>
</tr>
<tr>
<td>Private-sector pedestrian-built environment owner-operators</td>
</tr>
<tr>
<td>Elevation Data Provider</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transportation Service Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Agencies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Service Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowdsourced Sidewalk Reporters</td>
</tr>
<tr>
<td>Mapping Services</td>
</tr>
<tr>
<td>Weather Data Provider</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application Developers</th>
</tr>
</thead>
<tbody>
<tr>
<td>AccessMap Developers</td>
</tr>
<tr>
<td>Soundscape Developers</td>
</tr>
<tr>
<td>Digital Twin Developers</td>
</tr>
<tr>
<td>Third-Party Application Developers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digital Device End Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travelers With:</td>
</tr>
<tr>
<td>Sidewalk Preferences</td>
</tr>
<tr>
<td>Vison Disabilities</td>
</tr>
<tr>
<td>Hearing Disabilities</td>
</tr>
<tr>
<td>Older Adults</td>
</tr>
<tr>
<td>Low-Income Users</td>
</tr>
<tr>
<td>Rural Transit Users</td>
</tr>
<tr>
<td>Veterans</td>
</tr>
<tr>
<td>Multi-Lingual, Multi-Cultural Travelers</td>
</tr>
</tbody>
</table>
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