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IT'S TRANSPORTATION FOR ALL OF US

2022 AMPO Annual Conference

Improving Mobility for Vulnerable Communities

October 25, 2022

Elina Zlotchenko

Program Manager
ITS Joint Program Office

U.S. Department of Transportation
ITS Joint Program Office

Agenda

- ITS4US Program Overview
- ITS4US Site Summaries
  - □ Georgia Department of Transportation (GDOT)
  - □ Heart of Iowa Regional Transit Agency (HIRTA)
  - □ Niagara Frontier Transportation Authority (NFTA)/Buffalo
  - □ University of Washington (UW)
- Q&A

> MPOs will need to consider ITS4US-related deployments early in the planning process.

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ITS4US Program Overview

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Program Overview

- 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
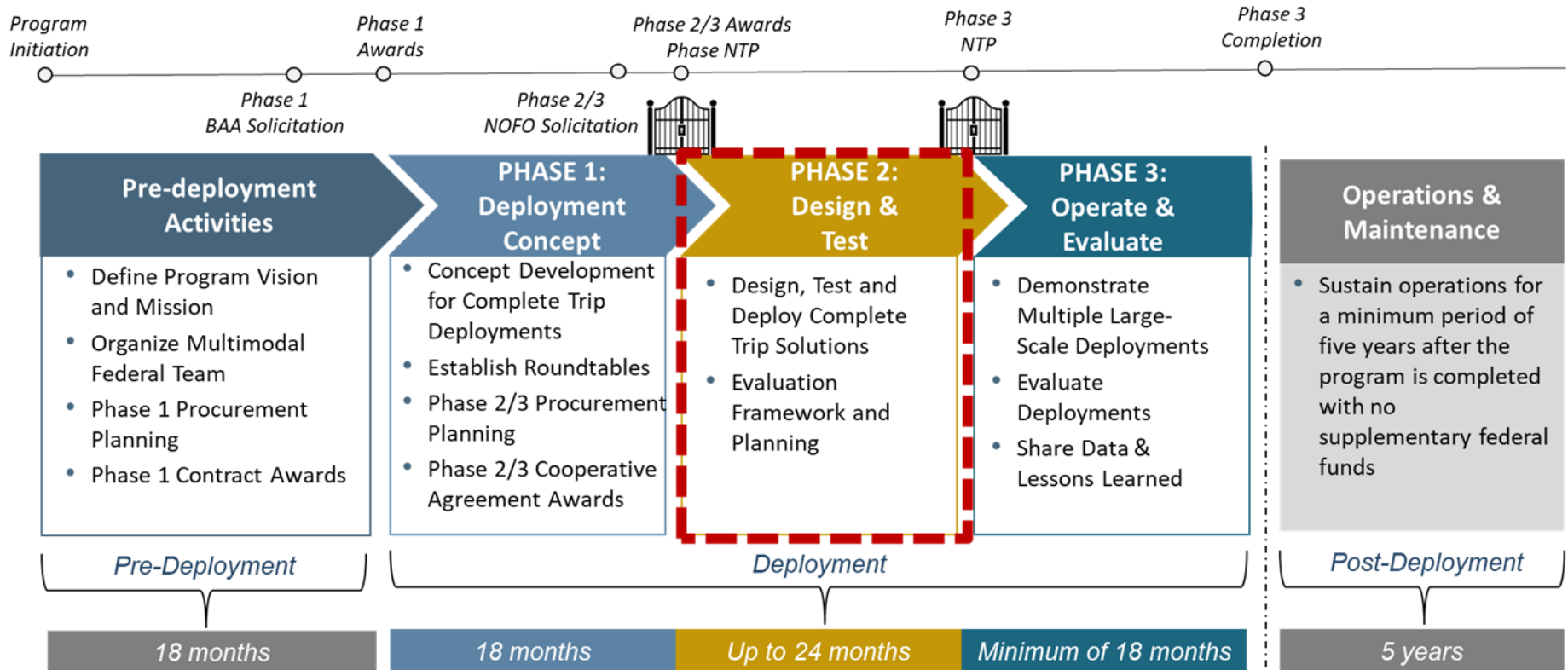
Vision

Innovative and integrated complete trip deployments to support seamless travel for all users across all modes, regardless of location, income, or disability
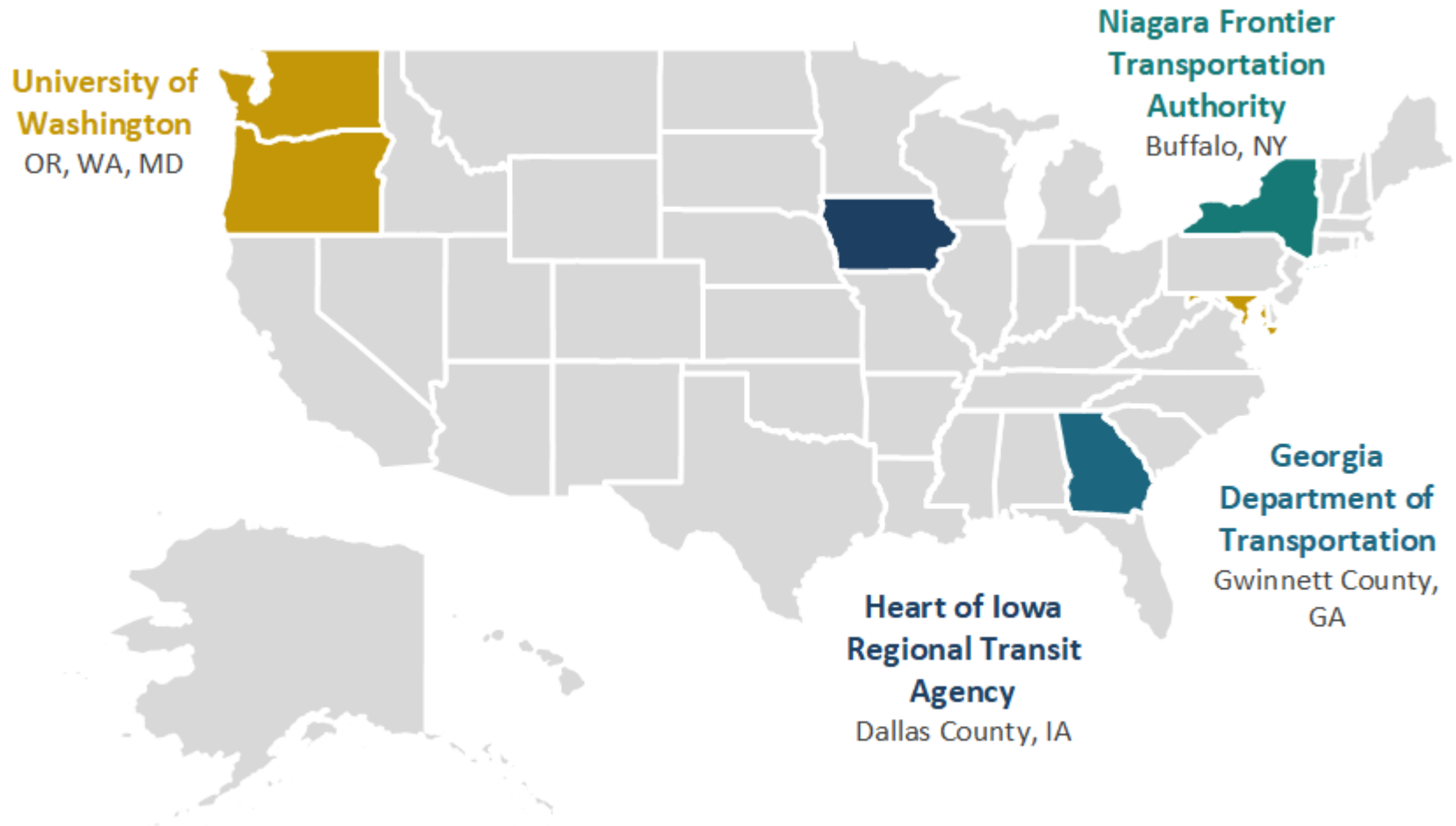
ITS4US Program Fundamental Elements

- Site deployments will be real-world environment **deployments**
- Serve as replicable models and remain in operation
- There are **multiple** site deployments
- Unique solutions to address critical, local challenges
- Deployments are expected to be both **large-scale and multi-modal**
- **Large-scale** implies deployments will have measurable impact
- Sites will deploy **multiple technologies and modes**

Deployment Phases

Program Initiation

Phase 1 Awards

Phase 2/3 Awards / **Phase NTP**

Phase 3 NTP

Phase 3 Completion

Phase 1 BAA Solicitation

Phase 2/3 NOFO Solicitation

Pre-deployment Activities	PHASE 1: Deployment Concept	PHASE 2: Design & Test	PHASE 3: Operate & Evaluate	Operations & Maintenance
• Define Program Vision and Mission • Organize Multimodal Federal Team • Phase 1 Procurement Planning • Phase 1 Contract Awards	• Concept Development for Complete Trip Deployments • Establish Roundtables • Phase 2/3 Procurement Planning • Phase 2/3 Cooperative Agreement Awards	• Design, Test and Deploy Complete Trip Solutions • Evaluation Framework and Planning	• Demonstrate Multiple Large-Scale Deployments • Evaluate Deployments • Share Data & Lessons Learned	• Sustain operations for a minimum period of five years after the program is completed with no supplementary federal funds
Pre-Deployment	*Deployment*			*Post-Deployment*
18 months	18 months	Up to 24 months	Minimum of 18 months	5 years

Phase 2 and 3 Awardees

University of Washington
OR, WA, MD

Niagara Frontier Transportation Authority
Buffalo, NY

Georgia Department of Transportation
Gwinnett County, GA

Heart of Iowa Regional Transit Agency
Dallas County, IA

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Georgia Department of Transportation (GDOT)
Safe Trips in a Connected Transportation Network (ST-CTN)

Natalie Smusz-Mengelkoch (ICF)

# Natalie Smusz-Mengelkoch

Co-Deployment Lead GDOT Site
ICF

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Safe Trips in a Connected Transportation Network (ST-CTN)

- Deployment area: Gwinnett County, Georgia

- Uses a mobile application with ability for users to:
  - Create personalized trip plans based on needs and preferences
  - Receive alternative trip routes

- Comprised of an integrated set of advanced transportation technologies including:
  - Connected vehicles
  - Transit signal priority
  - Machine learning
  - Predictive analysis

Deployment Concept – Phase 2/3 Project Team
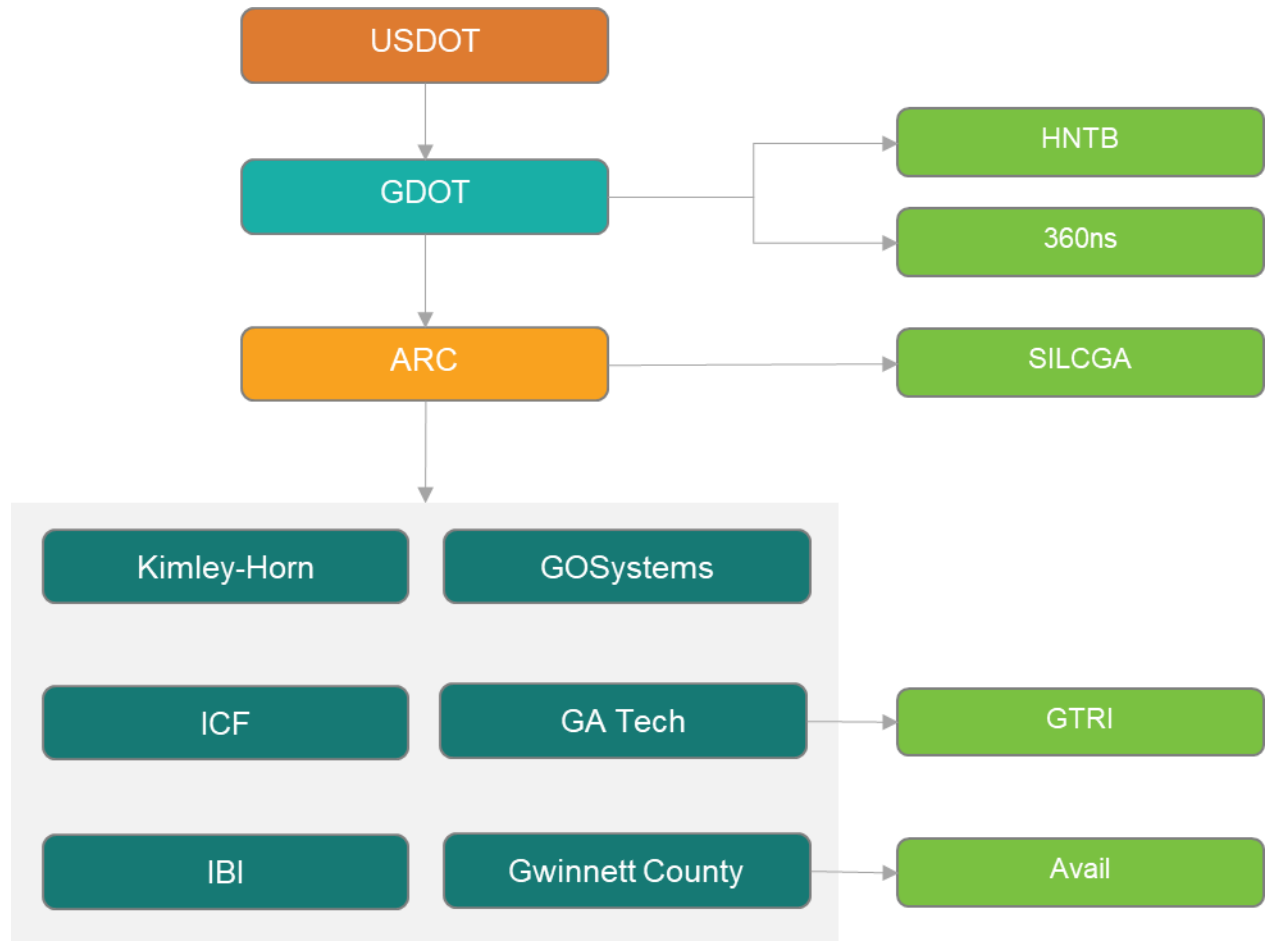
Project Foundation

- **Regional TSMO Plan Priorities**
  - Optimizing Safety; Reliable Travel Times; Efficient, Seamless Travel; Equitable Access; Environmental Benefit
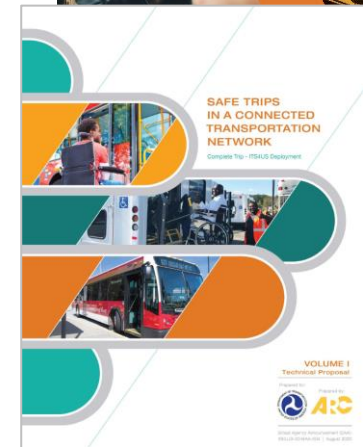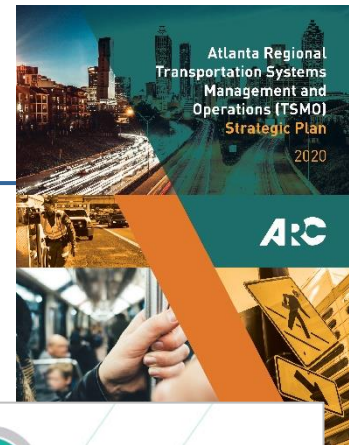
- **Strategic Action Plan Initiatives**
  - Initiative 1: Strengthen TSMO Planning and Institutions
  - Initiative 2: Enhance Data Sharing and Management
  - Initiative 3: Encourage TSMO Innovation
  - Initiative 4: Deploy Connected and Automated Vehicle Technologies
  - Initiative 5: Advance Regional Coordination and Network Comm
  - Initiative 7: Enhance Transit Operations

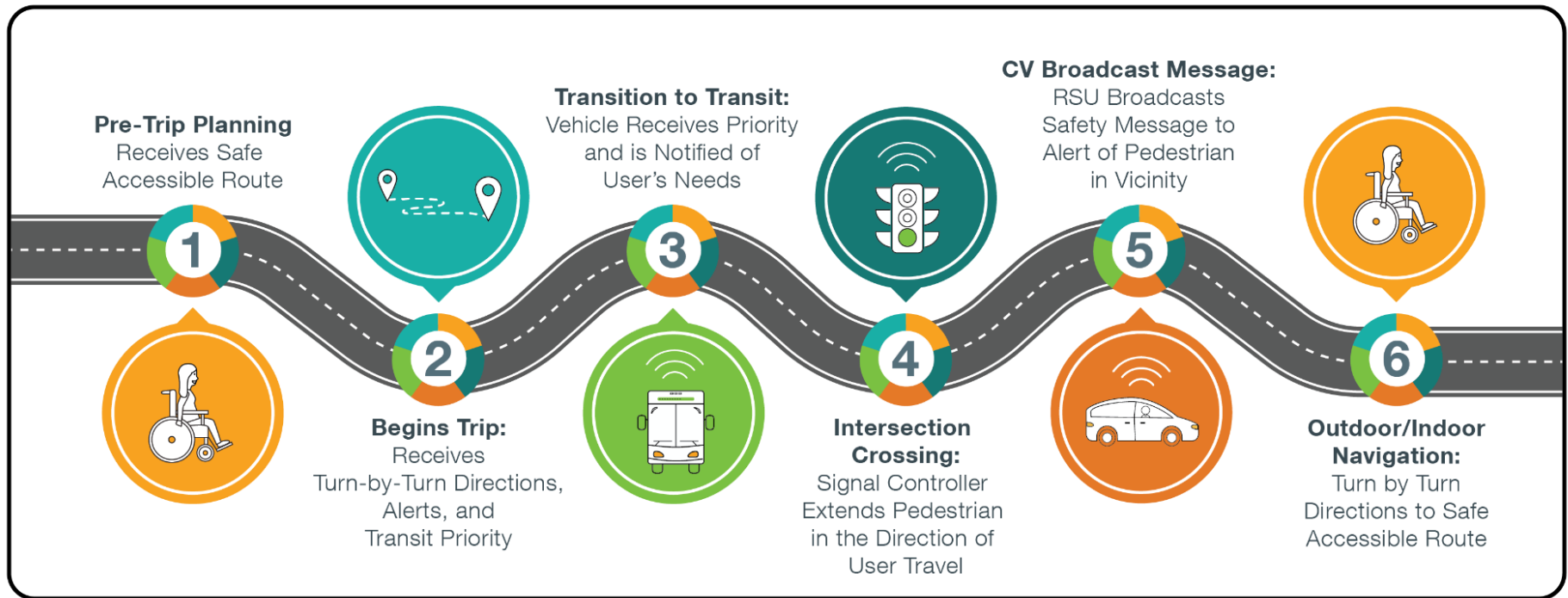- **Regional ITS Architecture Update**

- **Relationships**
  - Built stronger relationships across agencies through plan development
  - Discovered and encouraged champions across agencies
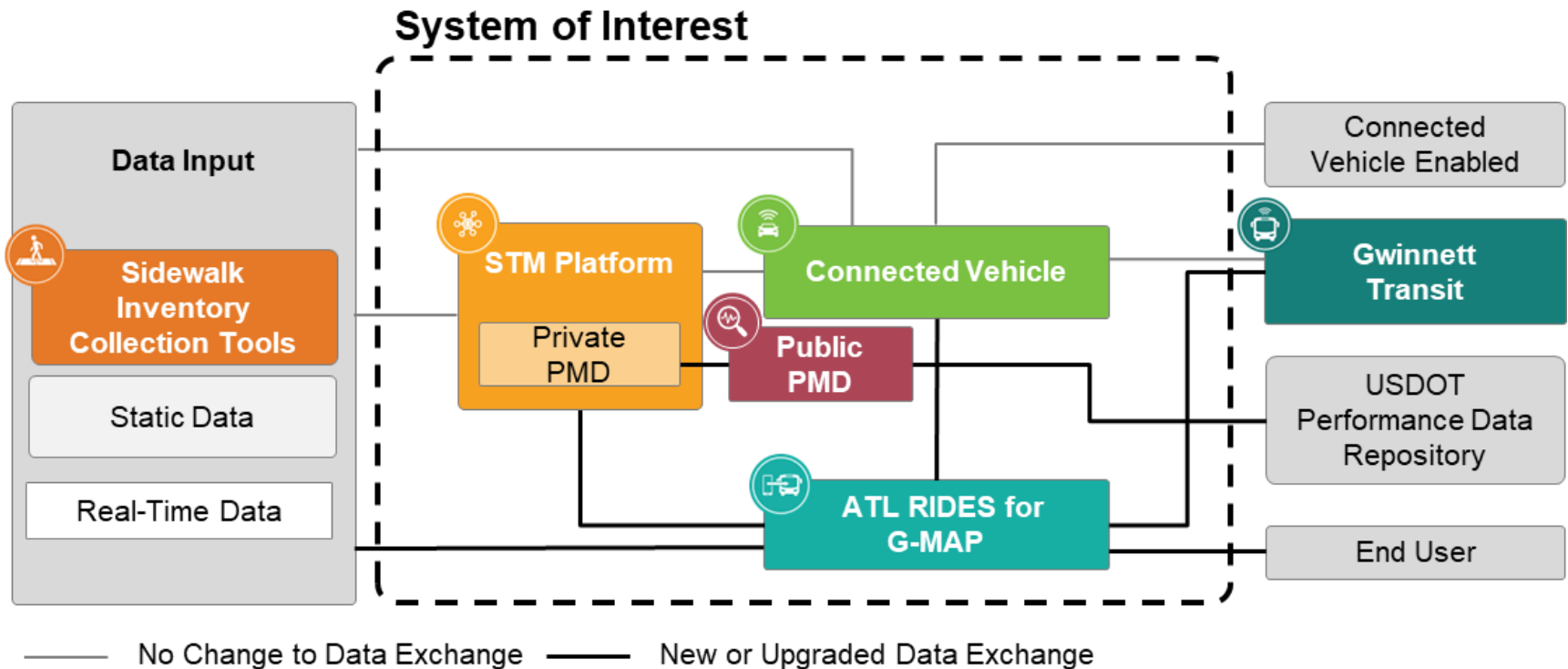
Deployment Concept – Project Overview

Safe Trips in a Connected Transportation Network

Pre-Trip Planning Receives Safe Accessible Route

Begins Trip: Receives Turn-by-Turn Directions, Alerts, and Transit Priority

Transition to Transit: Vehicle Receives Priority and is Notified of User's Needs

Intersection Crossing: Signal Controller Extends Pedestrian in the Direction of User Travel

CV Broadcast Message: RSU Broadcasts Safety Message to Alert of Pedestrian in Vicinity

Outdoor/Indoor Navigation: Turn by Turn Directions to Safe Accessible Route

Technical Approach – Context Diagram

System of Interest

Data Input
- Sidewalk Inventory Collection Tools
- Static Data
- Real-Time Data

STM Platform
- Private PMD

Public PMD

Connected Vehicle

ATL RIDES for G-MAP

Connected Vehicle Enabled

Gwinnett Transit

USDOT Performance Data Repository

End User

— No Change to Data Exchange ━ New or Upgraded Data Exchange

Heart of Iowa Regional Transit Agency (HIRTA)
Health Connector for the Most Vulnerable: An Inclusive Mobility Experience
from Beginning to End

Chris Zeilinger, CTAA

Chris Zeilinger

Deployment Lead
Heart of Iowa Regional Transit
Agency

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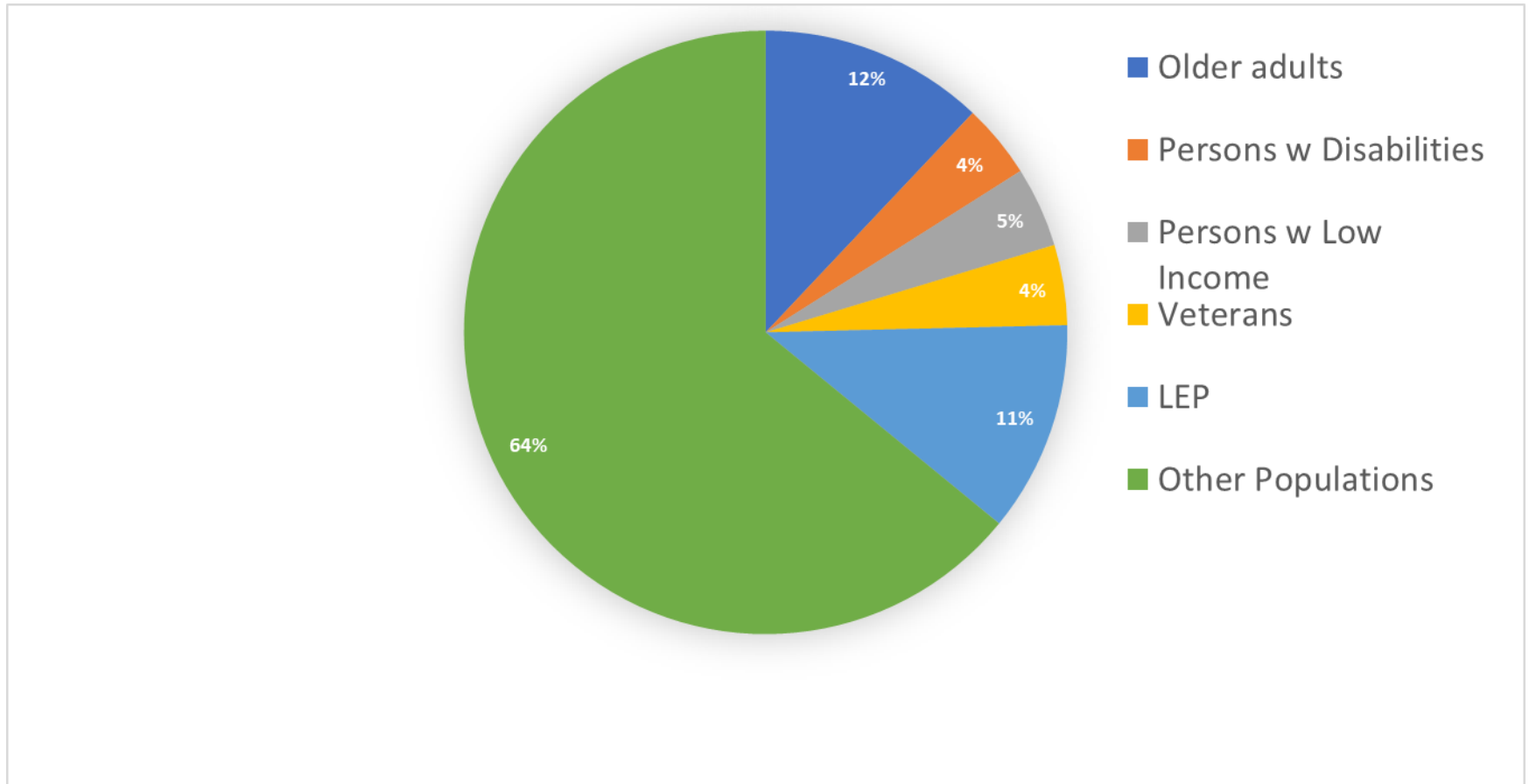# Health Connector for the Most Vulnerable

- Deployment area: Dallas County, Iowa

- Implement a scalable and replicable solution enabling transportation access to healthcare for all underserved populations and their caregivers

  - Use advanced technologies to resolve barriers

- Include information and wayfinding services to guide each step of user's trip

- Provide enhanced access to healthcare options for all travelers in Dallas County, a mostly rural county
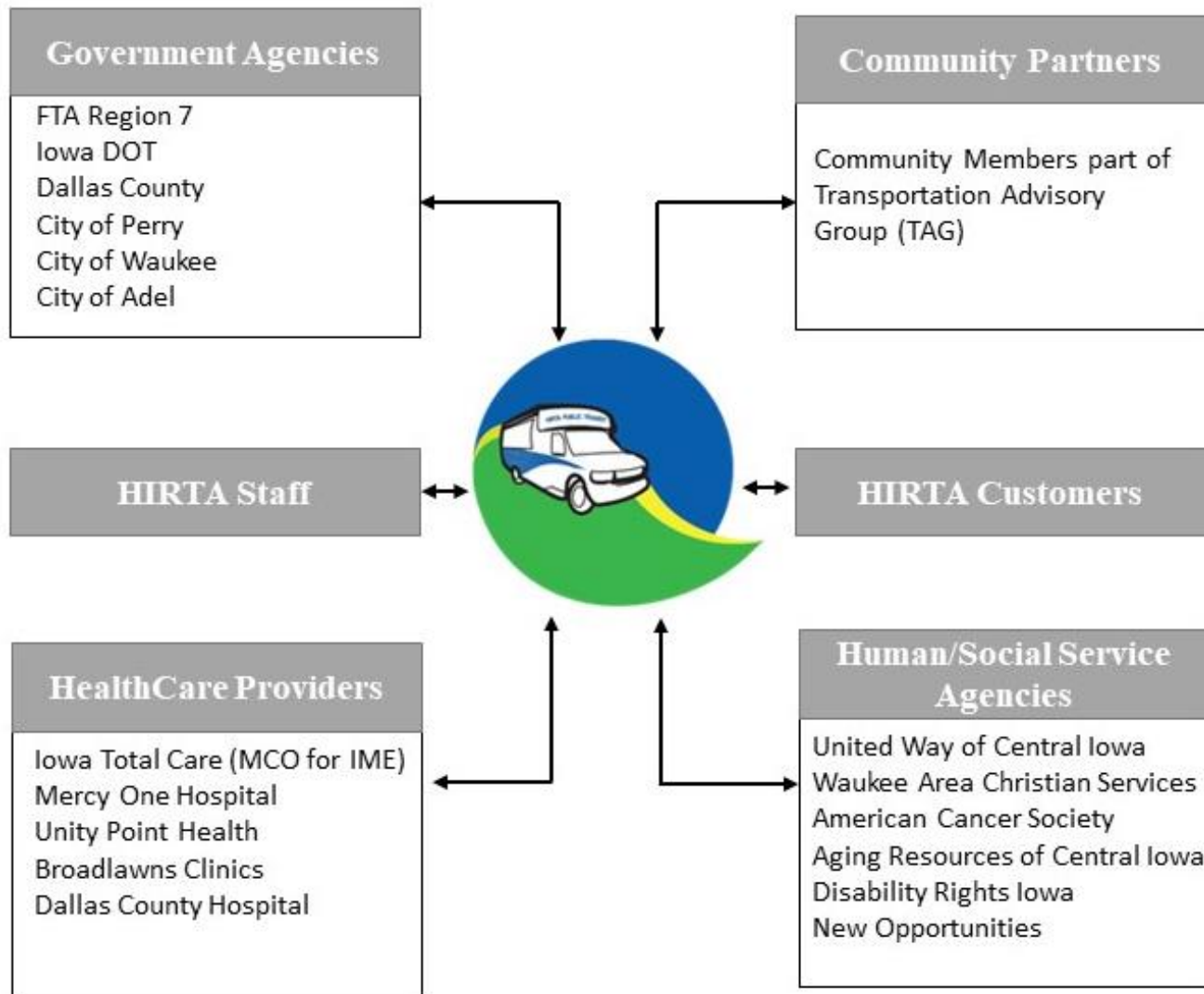
HIRTA and Dallas County Overview

- HIRTA provides demand response services to population in 7 county areas, including Dallas County

- Dallas County grew 36% in the last decade

- Coordination of medical transportation services for underserved a major challenge

Dallas County Underserved Population

Pie chart legend:
- Older adults — 12%
- Persons w Disabilities — 4%
- Persons w Low Income — 5%
- Veterans — 4%
- LEP — 11%
- Other Populations — 64%

Stakeholders

Government Agencies

FTA Region 7
Iowa DOT
Dallas County
City of Perry
City of Waukee
City of Adel

Community Partners

Community Members part of
Transportation Advisory
Group (TAG)

HIRTA Staff

HIRTA Customers

HealthCare Providers

Iowa Total Care (MCO for IME)
Mercy One Hospital
Unity Point Health
Broadlawns Clinics
Dallas County Hospital

Human/Social Service Agencies

United Way of Central Iowa
Waukee Area Christian Services
American Cancer Society
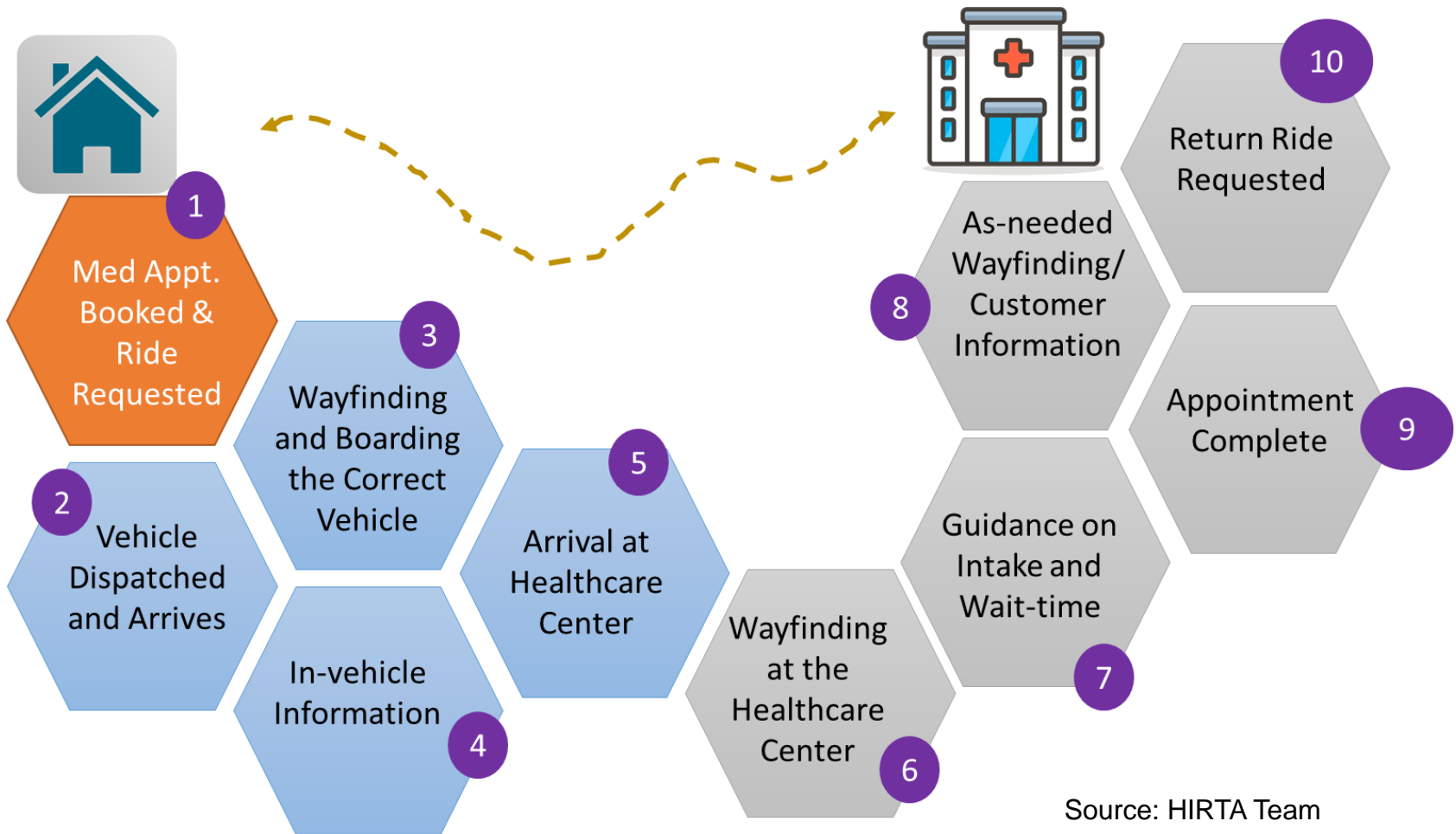Aging Resources of Central Iowa
Disability Rights Iowa
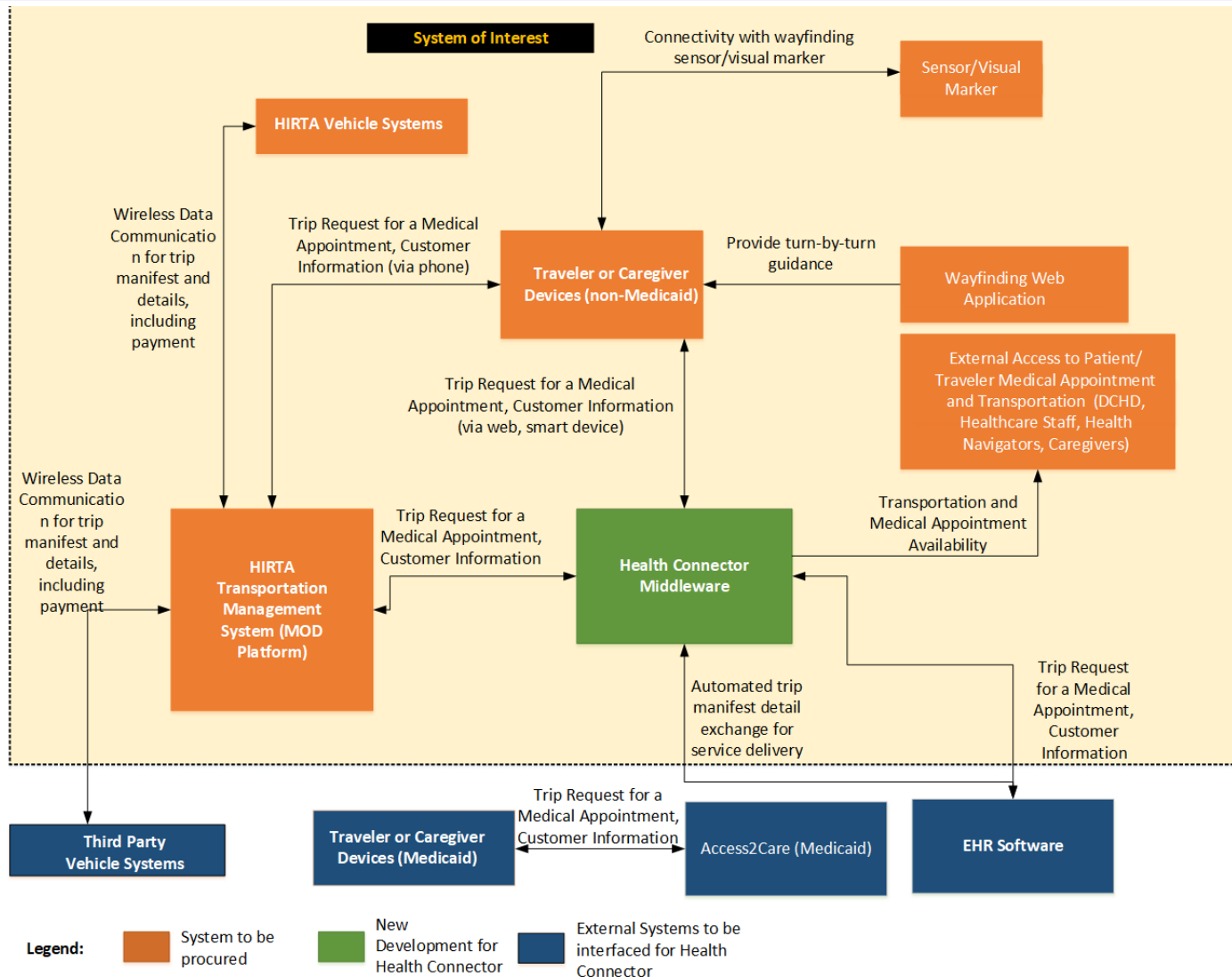New Opportunities

High-Level Findings from Stakeholders

- Lack of awareness on transportation options

- Lack of integrated booking and trip management experience

- Limited capabilities in current modes to meet the needs of underserved

- Limited wayfinding capabilities

- Service management challenges with return trips

- Same day and after hour service issues

- Limited data sharing and reporting to measure the performance of healthcare transportation

Concept Overview

1. Med Appt. Booked & Ride Requested
2. Vehicle Dispatched and Arrives
3. Wayfinding and Boarding the Correct Vehicle
4. In-vehicle Information
5. Arrival at Healthcare Center
6. Wayfinding at the Healthcare Center
7. Guidance on Intake and Wait-time
8. As-needed Wayfinding/ Customer Information
9. Appointment Complete
10. Return Ride Requested

Source: HIRTA Team

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HIRTA System Overview

At-Scale Deployment

Line Item	20% At-Scale Deployment	50% At-Scale Deployment	100% At-Scale Deployment
Service Area	Within 5 miles of City of Perry, Dallas County	Cities of Waukee, Adel and Perry, Dallas County	Entire Dallas County
Number of healthcare facilities	1	2	4
Max number of HIRTA vehicles	2	5	10
Number of contractor vehicles	1	2	5
Max number of trips (HIRTA vehicles)	20	50	100
Max number of trips (contractor vehicles)	5	10	20
Vehicle devices	2	5	10
Number of kiosks	2	2	2
Visual markers for wayfinding			
Vehicles (inside and outside)	4	10	20
Healthcare facility (indoor and outdoor)	20	50	150
Fixed pickup spots	5	15	30

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Phase 3 and Post-Deployment Governance
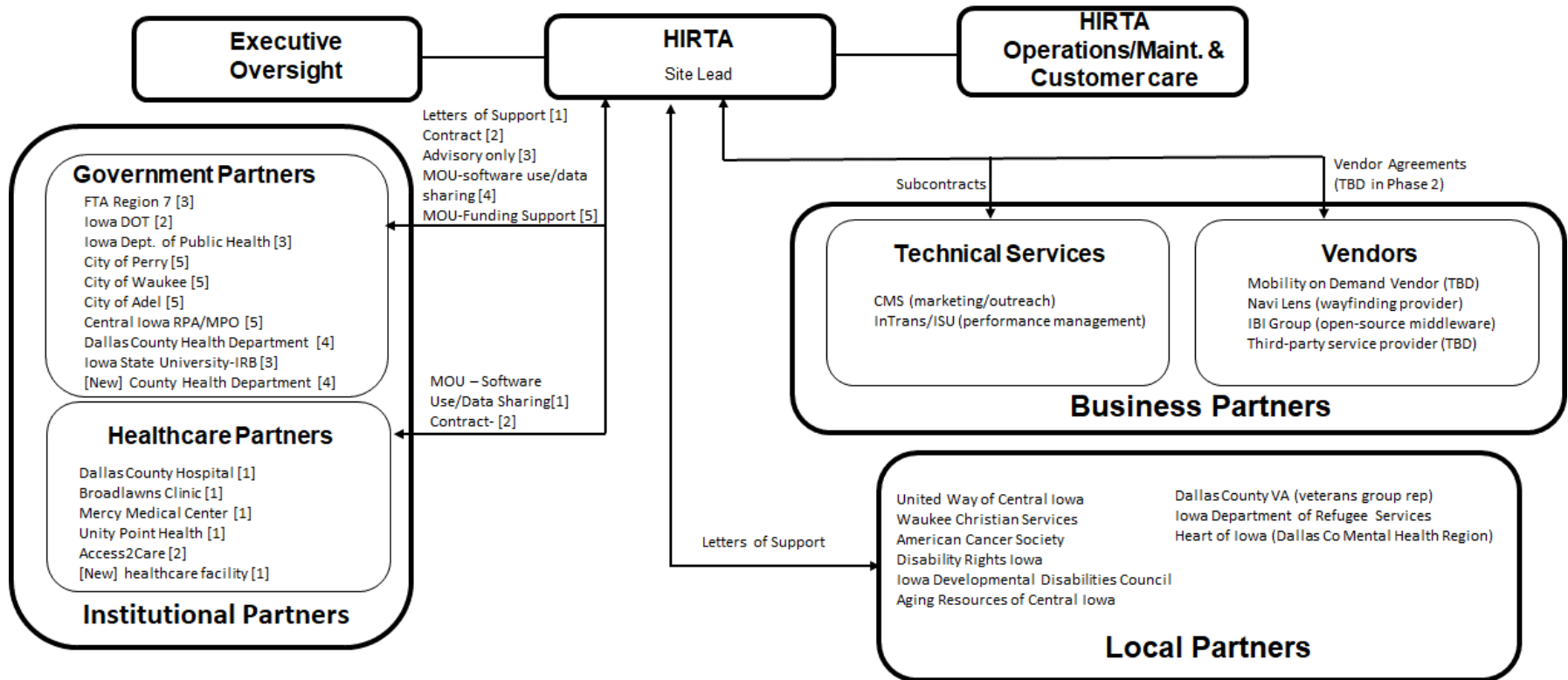
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Niagara Frontier Transportation Authority (NFTA)
Complete Trip Deployment in Buffalo, NY

Kelly Dixon, Greater Buffalo Niagara Regional Transportation Council (GBNRTC)

Kelly Dixon, AICP

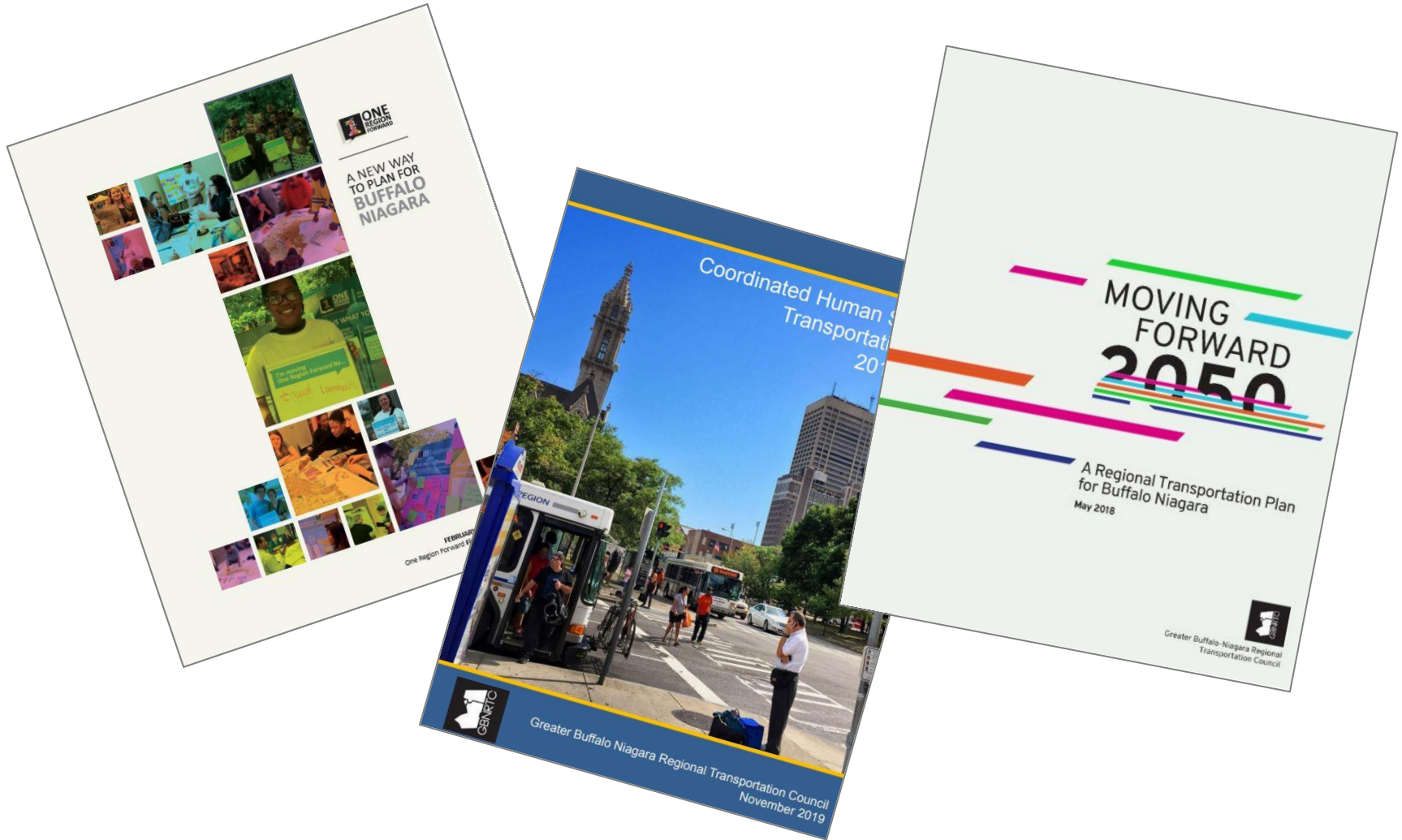Project Management Lead
Principal Planner, GBNRTC

U.S. Department of Transportation
ITS Joint Program Office
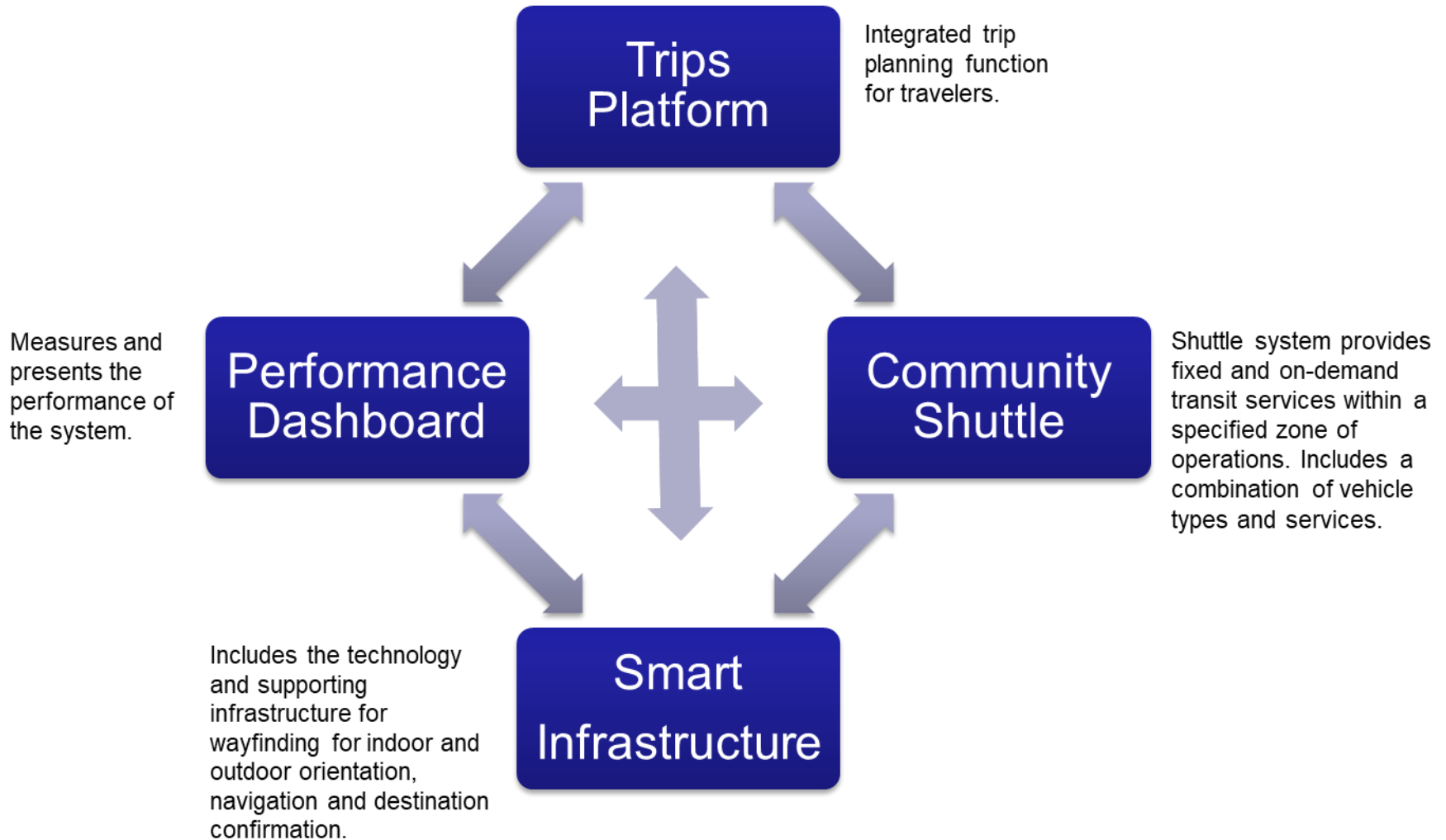
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Complete Trip Deployment in Buffalo, NY

- Deployment area: Buffalo Niagara Medical Campus
- Deploys new and advanced technologies to address existing mobility and accessibility challenges
- Integrates accessible trip planning too with
  - Current transit services
  - Indoor/outdoor wayfinding
  - On-demand shuttle service
  - Intersection pedestrian safety technologies
- Factors in travelers' preferences and accessibility-related needs for comprehensive trip planning
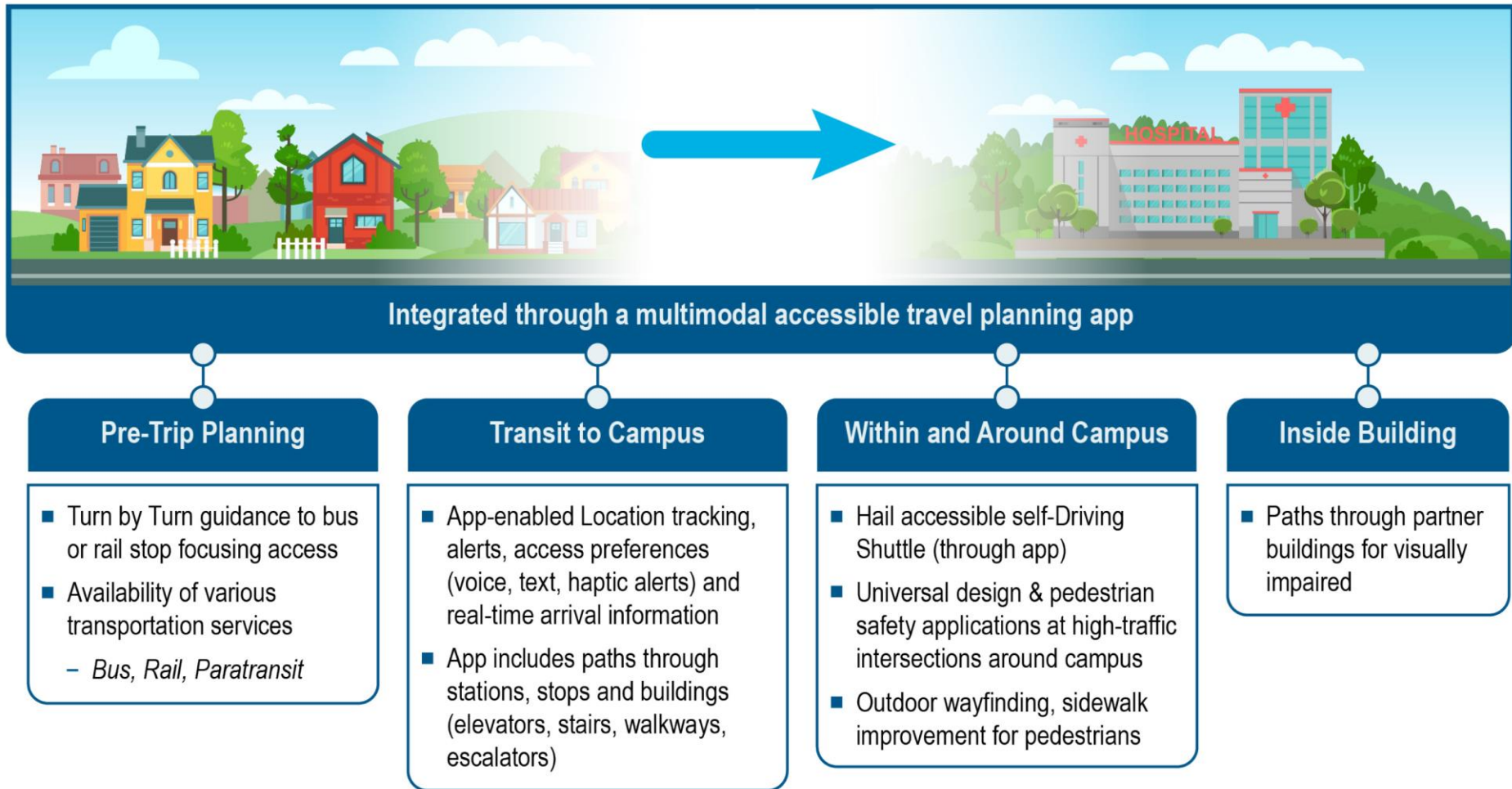
ITS4US Buffalo & Key GBNRTC Plans

U.S. Department of Transportation
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NFTA System Overview

Trips Platform — Integrated trip planning function for travelers.

Performance Dashboard — Measures and presents the performance of the system.

Community Shuttle — Shuttle system provides fixed and on-demand transit services within a specified zone of operations. Includes a combination of vehicle types and services.

Smart Infrastructure — Includes the technology and supporting infrastructure for wayfinding for indoor and outdoor orientation, navigation and destination confirmation.

Summary of Deployment Concept

Integrated through a multimodal accessible travel planning app

Pre-Trip Planning

- Turn by Turn guidance to bus or rail stop focusing access
- Availability of various transportation services
  - *Bus, Rail, Paratransit*

Transit to Campus

- App-enabled Location tracking, alerts, access preferences (voice, text, haptic alerts) and real-time arrival information
- App includes paths through stations, stops and buildings (elevators, stairs, walkways, escalators)

Within and Around Campus

- Hail accessible self-Driving Shuttle (through app)
- Universal design & pedestrian safety applications at high-traffic intersections around campus
- Outdoor wayfinding, sidewalk improvement for pedestrians

Inside Building

- Paths through partner buildings for visually impaired
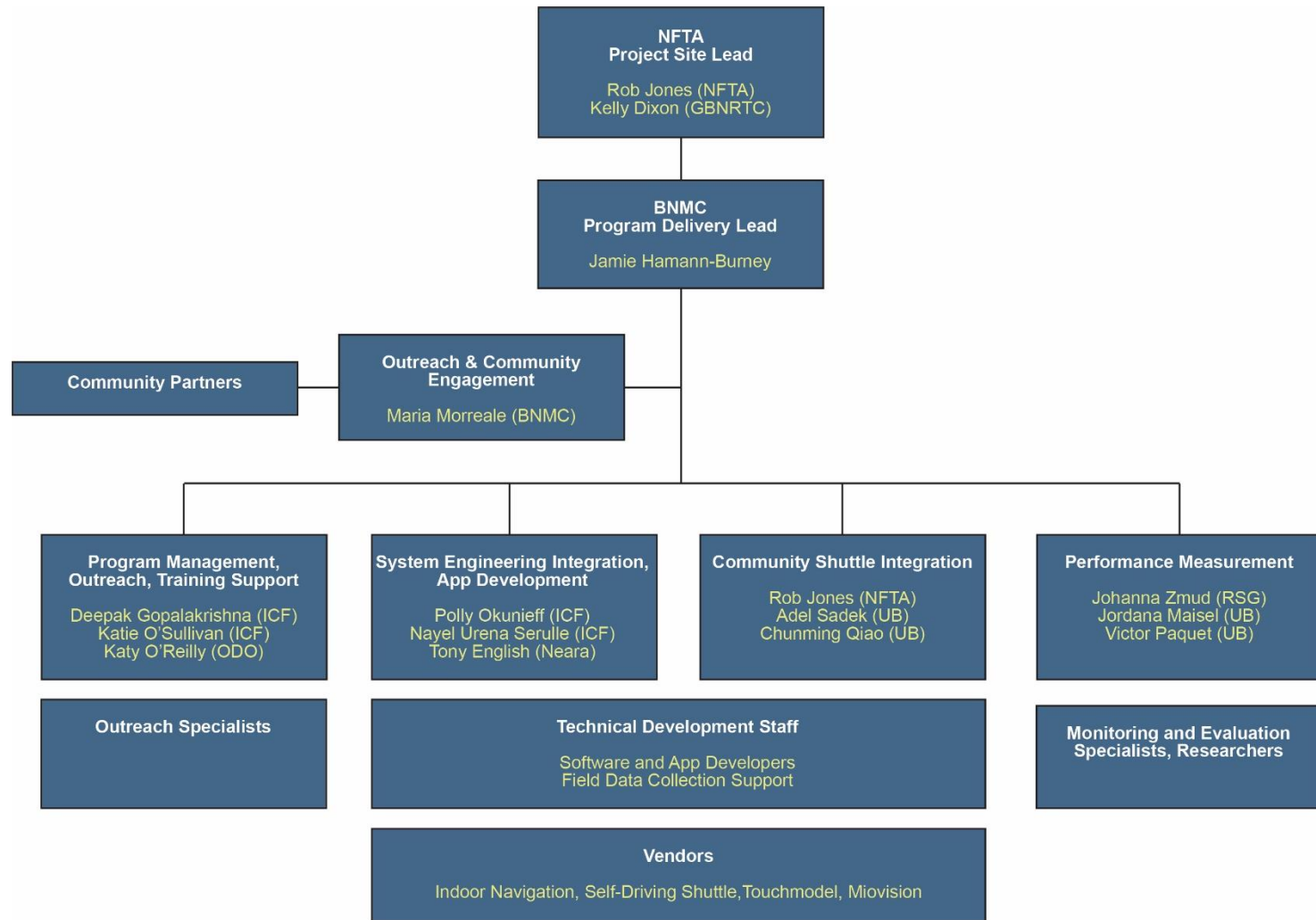
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Deployment Objectives

Consistent, continuous trips to, from, and within the BNMC area.

Online and offline ways to receive real time information on services, and infrastructure usability and accessibility.

Trip paths that are **safe, accessible, and compatible** with user-defined preferences and capabilities.

Integrated, flexible, demand-responsive, end-to-end transit options for the community.

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Team Organization

NFTA
Project Site Lead

Rob Jones (NFTA)
Kelly Dixon (GBNRTC)

BNMC
Program Delivery Lead

Jamie Hamann-Burney

Community Partners

Outreach & Community Engagement

Maria Morreale (BNMC)

Program Management, Outreach, Training Support

Deepak Gopalakrishna (ICF)
Katie O'Sullivan (ICF)
Katy O'Reilly (ODO)

System Engineering Integration, App Development

Polly Okunieff (ICF)
Nayel Urena Serulle (ICF)
Tony English (Neara)

Community Shuttle Integration

Rob Jones (NFTA)
Adel Sadek (UB)
Chunming Qiao (UB)

Performance Measurement

Johanna Zmud (RSG)
Jordana Maisel (UB)
Victor Paquet (UB)

Outreach Specialists

Technical Development Staff

Software and App Developers
Field Data Collection Support

Monitoring and Evaluation Specialists, Researchers

Vendors

Indoor Navigation, Self-Driving Shuttle,Touchmodel, Miovision

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At-Scale Deployment Summary

Deployment Element	Estimated Number
Participants	100 participants during Phase 2 to support development and testing of the system and its components. 300-500 participants total in Phase 3 (including Phase 2 participants). Final number will be dependent on the number of people interested in participating. Outreach and recruitment efforts will focus on obtaining the highest and most diverse number of participants possible.
Beacons/Smart Signs	Under 100 devices. The final number is unknown at the time and will be determined once the facilities are measured.
Touch Models	1 model as part of this pilot (location to be determined in Phase 2). Note that pilot will leverage the efforts of an external study that is placing another model at the Innovation Center on the BNMC.
TIH	2 hubs, with location to be determined in Phase 2.
PED-X Intersections	2 intersections, Main St. & Best St. and Ellicott St. & High St. 2 National Transportation Communications for Intelligent Transportation System Protocol (NTCIP) Supported MioVision platform to serve as a communications broker / gateway (one per intersection, total number: 2).
Vehicles	A maximum of 4 shuttles , a combination of SDS and HDS. Phase 2 will start with 2 shuttles for testing and integration efforts, and 2 additional shuttles will be added in Phase 3. SDS Vehicles: 1-2 (note: the number will depend on the procurement) HDS Vehicles: 2-3 depending on the service plan and demand.
Online/Offline Platforms	1 CTP website and mobile application. 1 Performance Dashboard.

Performance Measures and Outcomes

The performance measures listed below were developed based on 10 use cases and the data that will be available. Note that **each measure has a set of metrics and targets** that allows the research team to assess each measure.

- Improved ability of the CTP users to make satisfactory trips in the study area or help others to do so in the case of caregivers.

- Usefulness of the CTP Registration and Trip Preferences Processes.

- Usefulness of the CTP Trip Planning and Booking Processes.

- Improved ability to find destinations efficiently using the CTP wayfinding functionality.

- Improved ability to cross specific intersections safely using CTP smart signal functionality.

- Provision of an efficient, reliable, and safe new on-demand transit shuttle system.

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University of Washington
ITS4US Deployment Project: Transportation Data Equity Initiative

Kristin Tufte, UW

Kristin Tufte

Data Management Architect and Lead
University of Washington

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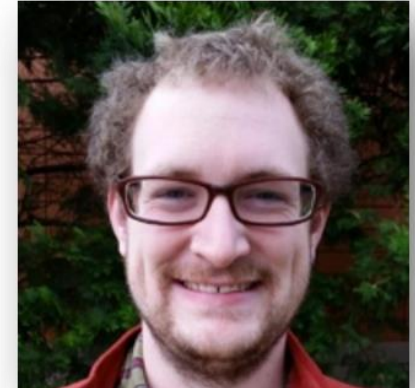
University of Washington (UW) ITS4US Team

Anat Caspi, PhD
UW, PI, DDL

Mark Hallenbeck
UW, PBL

Kristin Tufte
UW, DMAL

Nick Bolten
UW, TAL
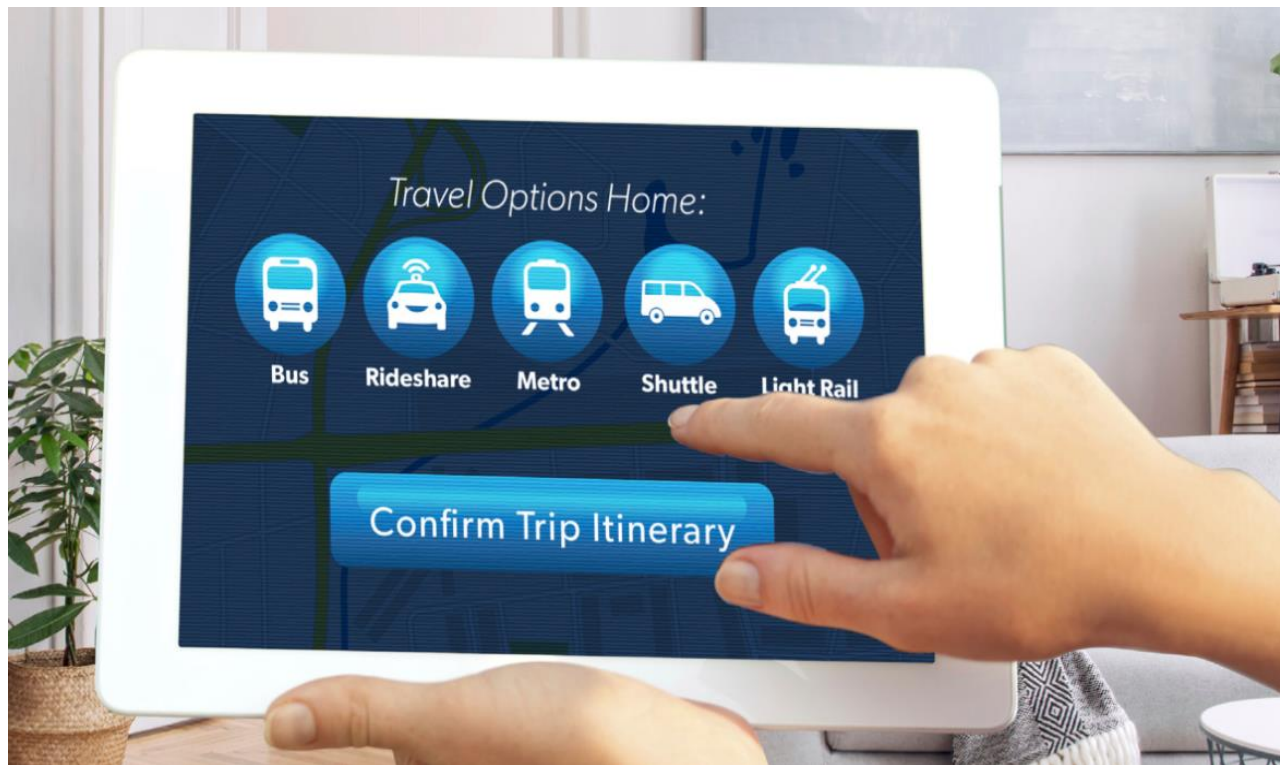
Adam Danczyk
Cambridge
Systematics

Alice Marecek
Cambridge
Systematics

Suresh
Devalapalli,
GS

Transportation Data Equity Initiative (TDEI)

Tools for data sharing and interoperability to provide equitable navigation options for all travelers irrespective of location, income, or disability
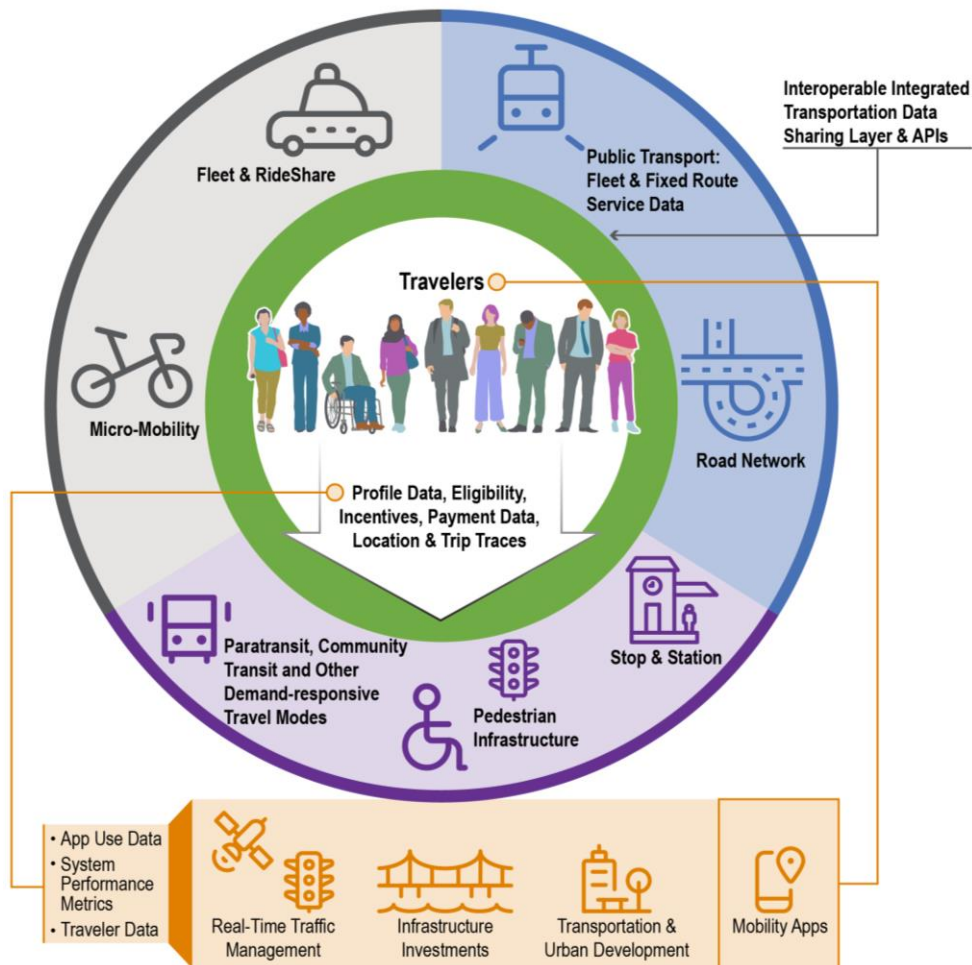
Traveler Quote

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.*

"

All travelers need useful travel data they can trust

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Provide More Equitable Mobility Benefits

Create, modify and improve data standards

- OpenSidewalks
- GTFS-Pathways (transit stations)
- GTFS-Flex (on-demand transit)

Tools to collect, store and share the data

- Data Collection
- Data Vetting
- Data Provisioning Services

Demonstrate the value of the data

- Multimodal AccessMap
- Soundscape
- Audium

Transportation Data Equity
an initiative by TCAT & UW TRAC

TCAT The Taskar Center for Accessible Technology

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Deployment Sites

ITS4US Site Contact Information

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HIRTA

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ITS4US Contact Information

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Visit the ITS4US Deployment Program Website:

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

ITS4US Deployment Program Video

https://youtu.be/cLJx0MOjY2o

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Questions & Answers

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