U.S. Department of Transportation

ITS4US

IT'S TRANSPORTATION FOR ALL OF US

ITS for Underserved Communities (ITS4US): An Update on ITS JPO's ITS4US Deployment Program and Hot Off the Press Updates on a Newly Launched Related Program

Florida Automated Vehicle Summit 2023

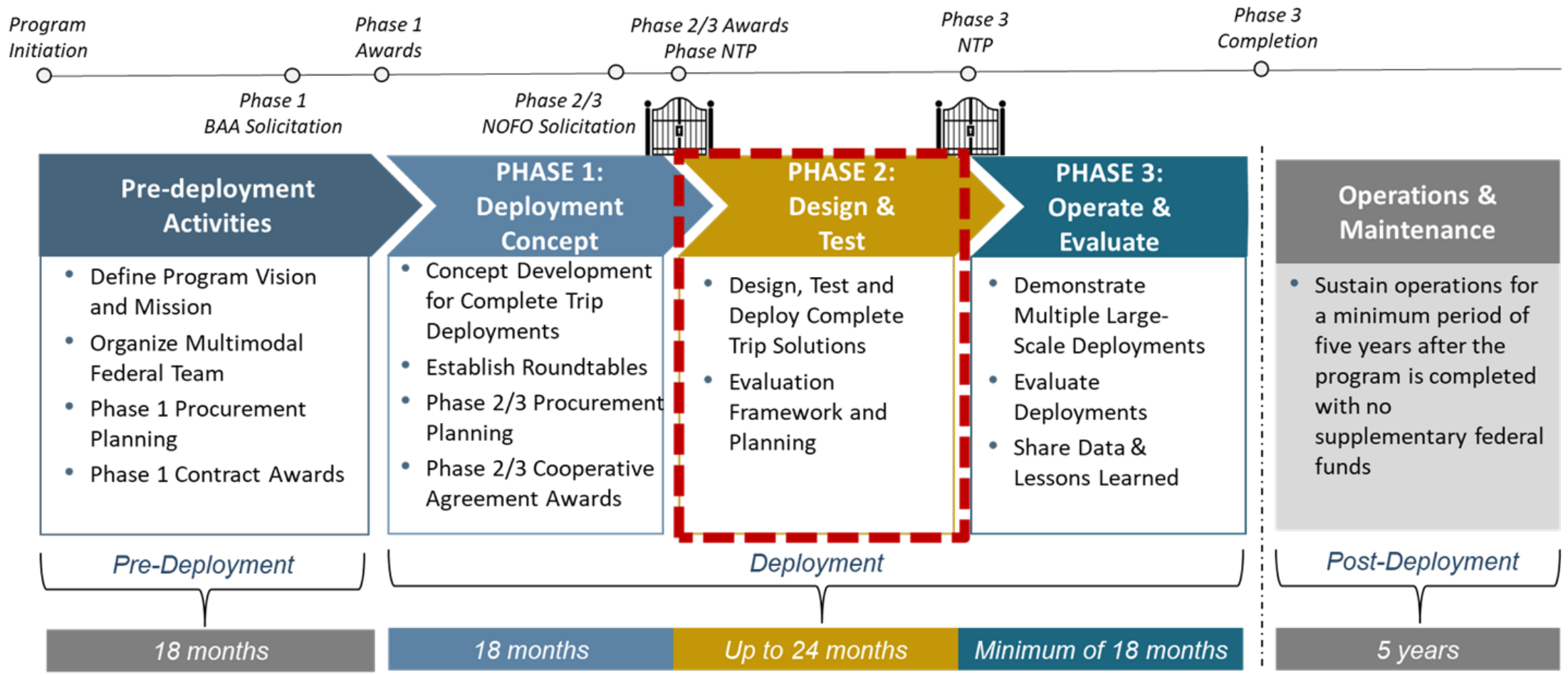
September 6-8, 2023

ITS4US Program Overview

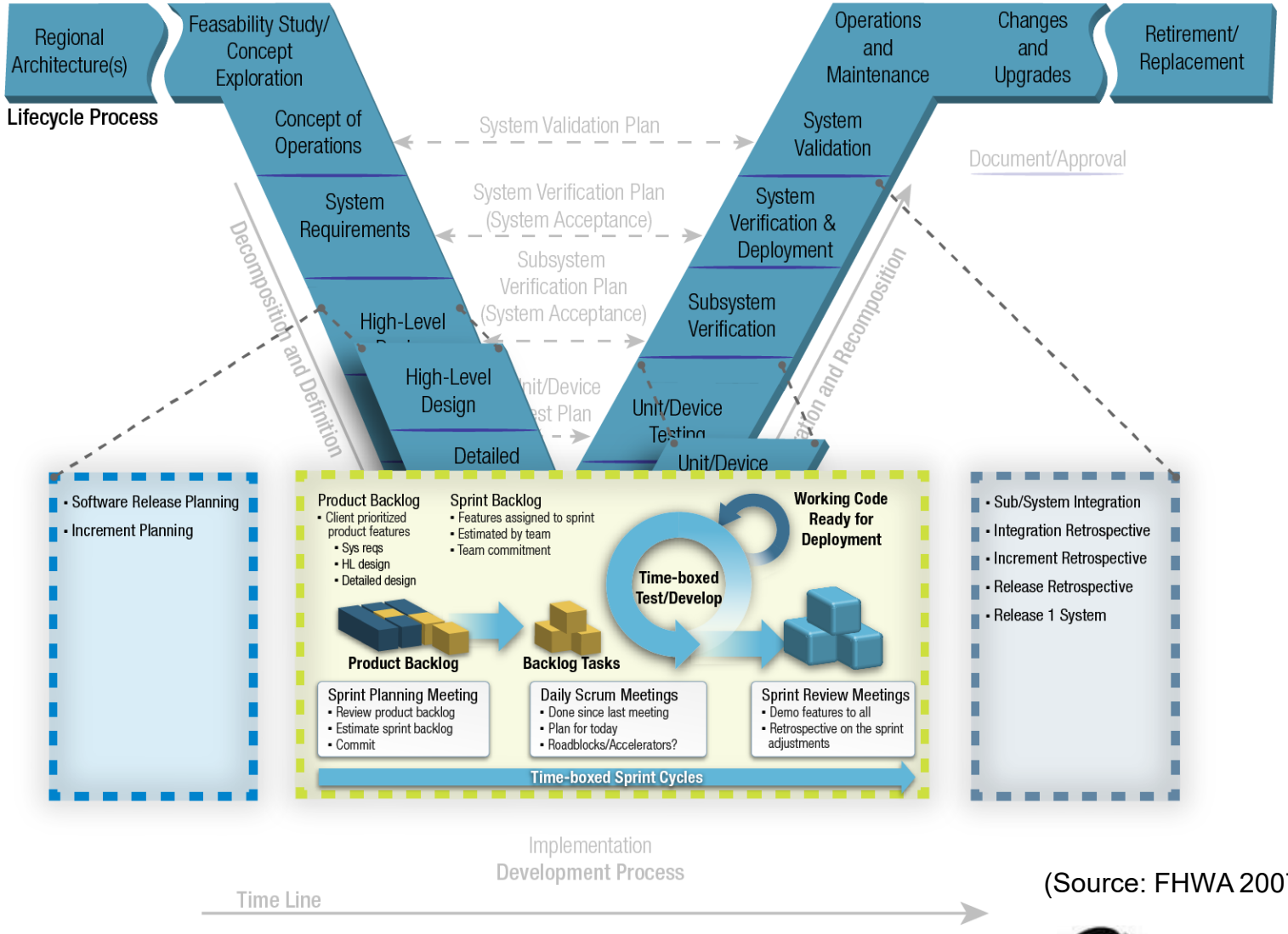
- A USDOT Multimodal Deployment effort, led by ITS JPO and supported by OST, FHWA and FTA
- Supports multiple large-scale replicable deployments to address the challenges of planning and executing all segments of a complete trip

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

Deployment Phases

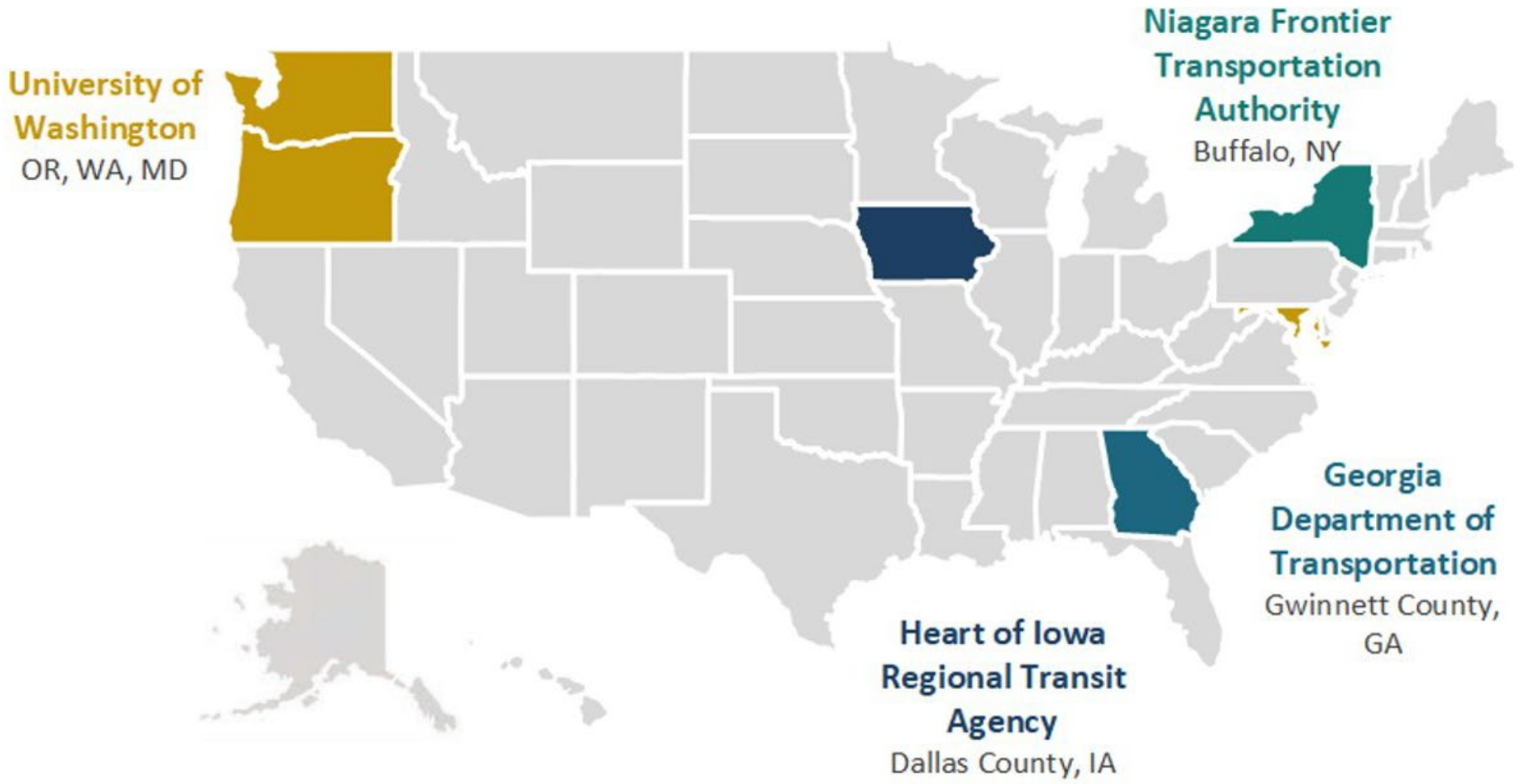


SCRUM In the Vee Diagram



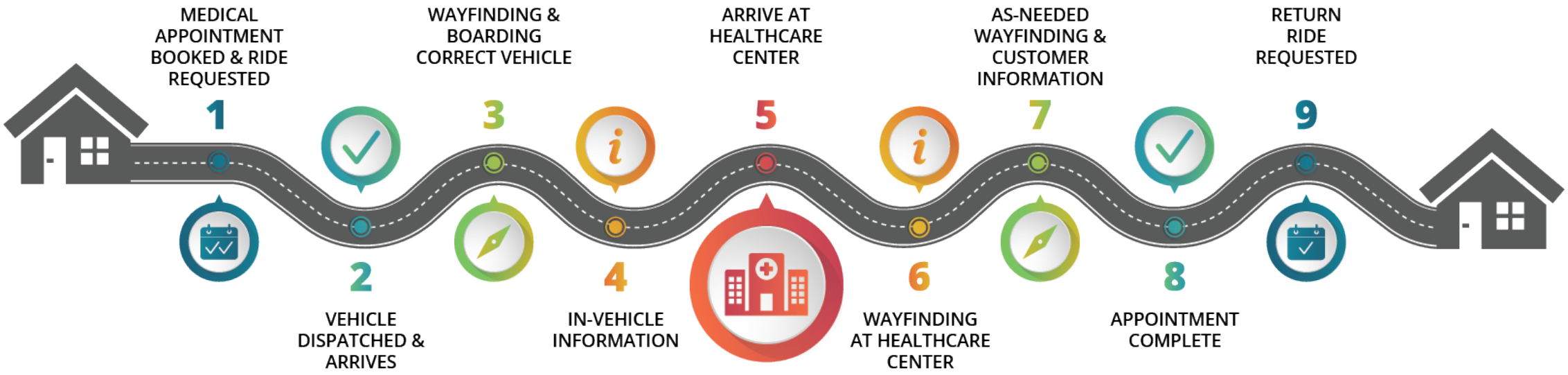
(Source: FHWA 2007 and modified by Noblis 2017)

ITS4US Deployment Sites



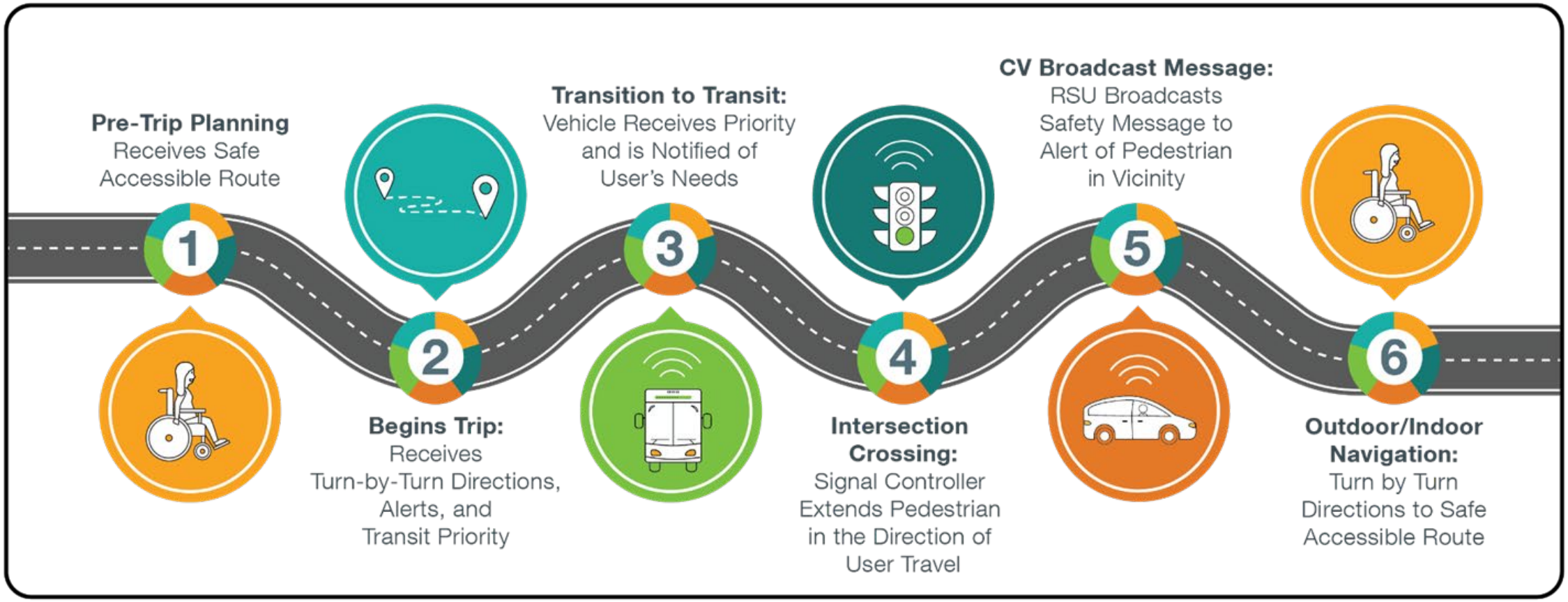
ITS4US Team Photo Collage

Heart of Iowa Regional Transit Agency (HIRTA)

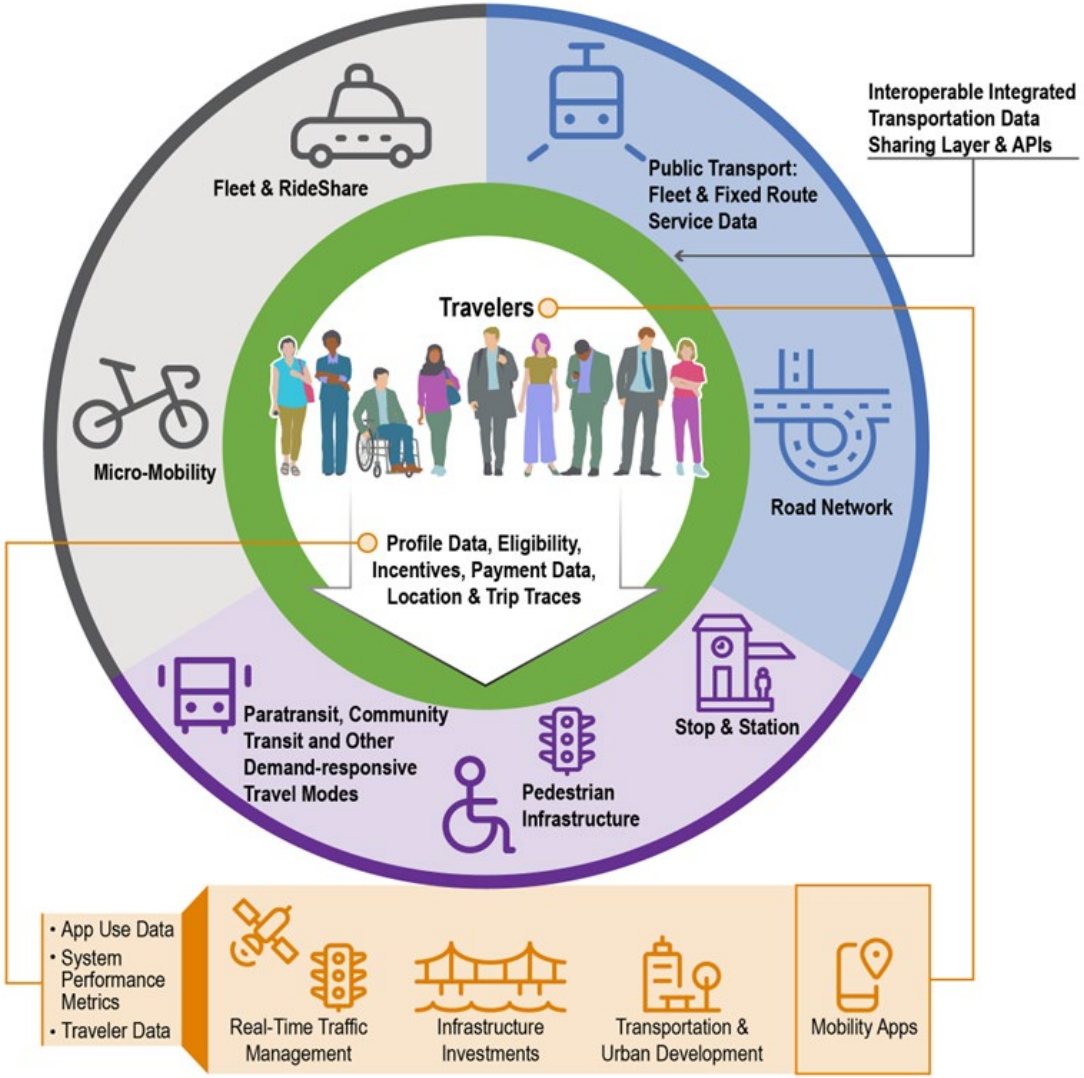


Georgia Department of Transportation (GDOT)

Safe Trips in a Connected Transportation Network



University of Washington



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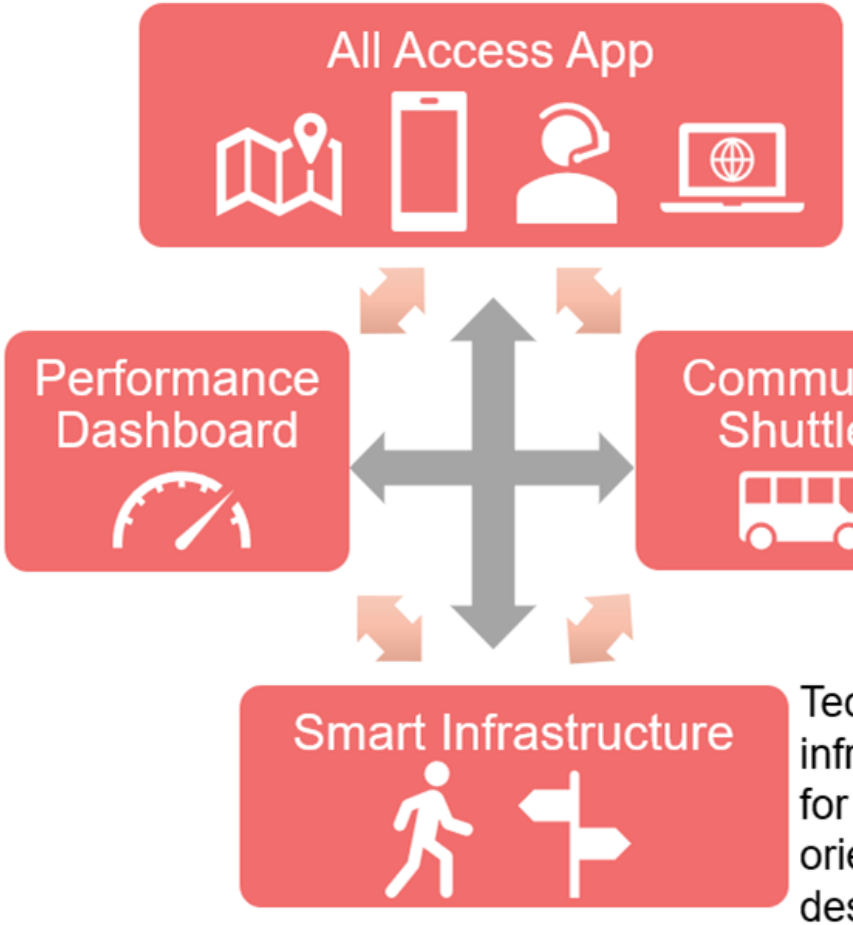
Niagara Frontier Transportation Authority (NFTA)

BuffALLo All Access

About Buffalo All Access

- Deployment area: Buffalo Niagara Medical Campus (BNMC) and adjacent neighborhoods
- Deploys new and advanced technologies to address existing mobility and accessibility challenges
- Integrates accessible trip planning tool 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

System Overview



Mobile app, website, and call center for travelers to plan and take trips.

Measures and presents the performance of the system.

Shuttle system providing scheduled and on-demand connections to Metro Rail, BNMC, and surrounding neighborhoods.

Technology and supporting infrastructure for wayfinding for indoor and outdoor orientation, navigation and destination confirmation.

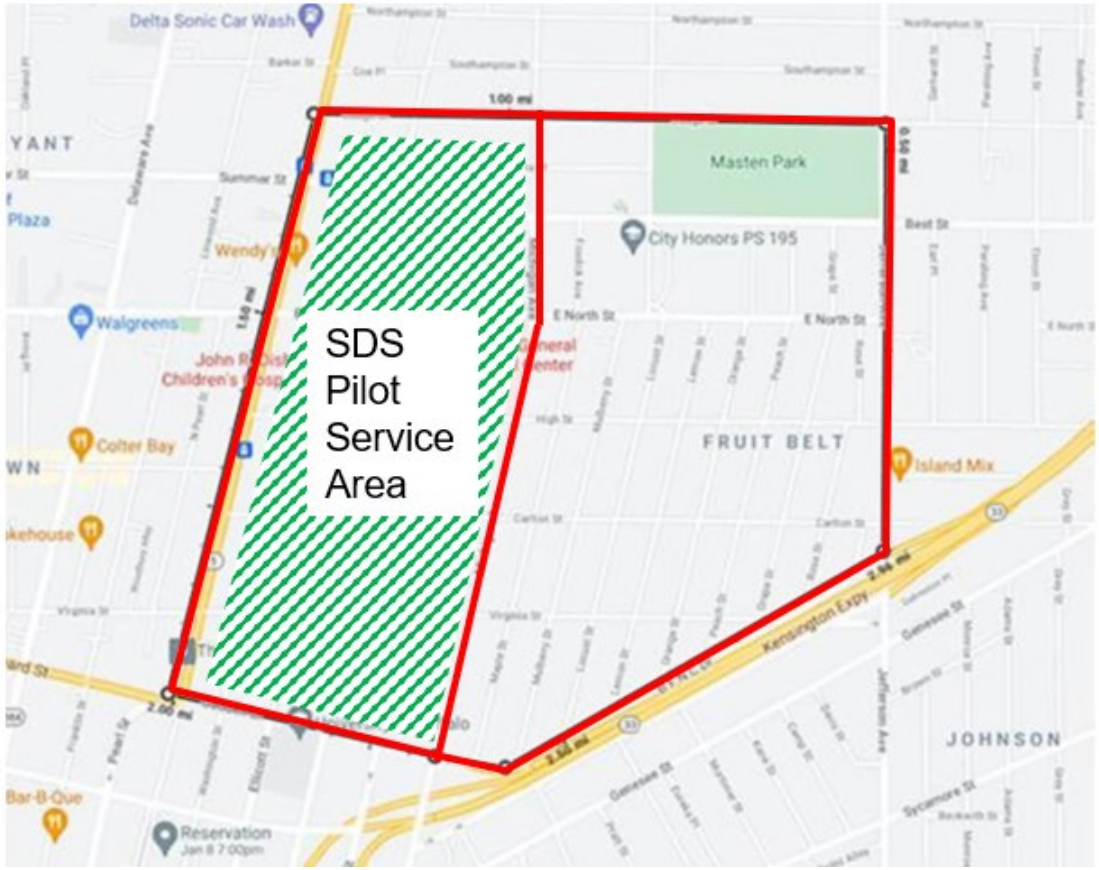
Community Shuttle ConOps

- Operate as a demand-responsive micro-transit fleet connecting the Medical Campus and surrounding neighborhoods

- Consists of:
  - Human-driven Shuttles (HDS)
  - ***Self-Driving Shuttles (SDS)***
  - Shuttle Operations Center (SOC)

- SDS will be demand-responsive, but operations will be constrained to a pre-defined route of pre-selected streets that satisfy the SDS ODD, and at pre-defined pick-up and drop-off locations

CS Service Area



Source : Gopalakrishna, D. et al. (2021). Phase 1 Concept of Operations (ConOps) – Buffalo NY ITS4US Deployment Project, Report No: FHWA-JPO-21-860

Why Self-Driving Shuttle?

- Improved Level of Service
- Improved Safety
- Enhanced Reliability
- Potential for significant cost reductions – especially for off-peak periods and at night
- An educational opportunity for community to learn about AVs

Used with permission from ADASTEC

Why a Mixed SDS and HDS Fleet?

- HDS provides an alternate mode when conditions go beyond SDS ODD and for travelers who cannot get to SDS pick-up & drop-off locations
- Contrast the pros and cons of AVs vis-à-vis human-driven vehicles
- Insight into the business case for using AVs
- Lower the risk of this subcomponent of our project

SDS-Related Functional Requirements

- Both manual & autonomous
- Electric motor(s) or an Internal Combustion Engine
- HVAC system
- A lift or an automated ramp
- Automated or semi-automated wheelchair securement

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RFP Development Process

- Worked with University at Buffalo Purchasing Department to develop the RFP
- RFP Released on December 28, 2022, after several rounds of revision
- Early engagement with SDS Vendors
- Gauge interest, capabilities, and likely cost
- SDS vendors researched were contacted when the RFP was released

Factors in Selection

- Committee preferred a vehicle that:
  - Satisfies the Buy-America requirement
  - Satisfying FMVSS and State Regulations
  - Looked like a bus, with enough capacity
  - Was electric (environmental consideration)
  - A vehicle with the desired accessibility features (side ramp, space for wheelchair, passenger information…)
  - Lower long-term operational cost

ADASTEC, Corp

- ADASTEC is a US-based company headquartered in Ann Arbor, MI., with subsidiaries in Turkey, the Netherlands, and Sweden

- Adapted Open-source ADS, Autoware for their use

- Prior Deployments
  - Michigan State University
  - Norway
  - Romania
  - Istanbul, Turkey

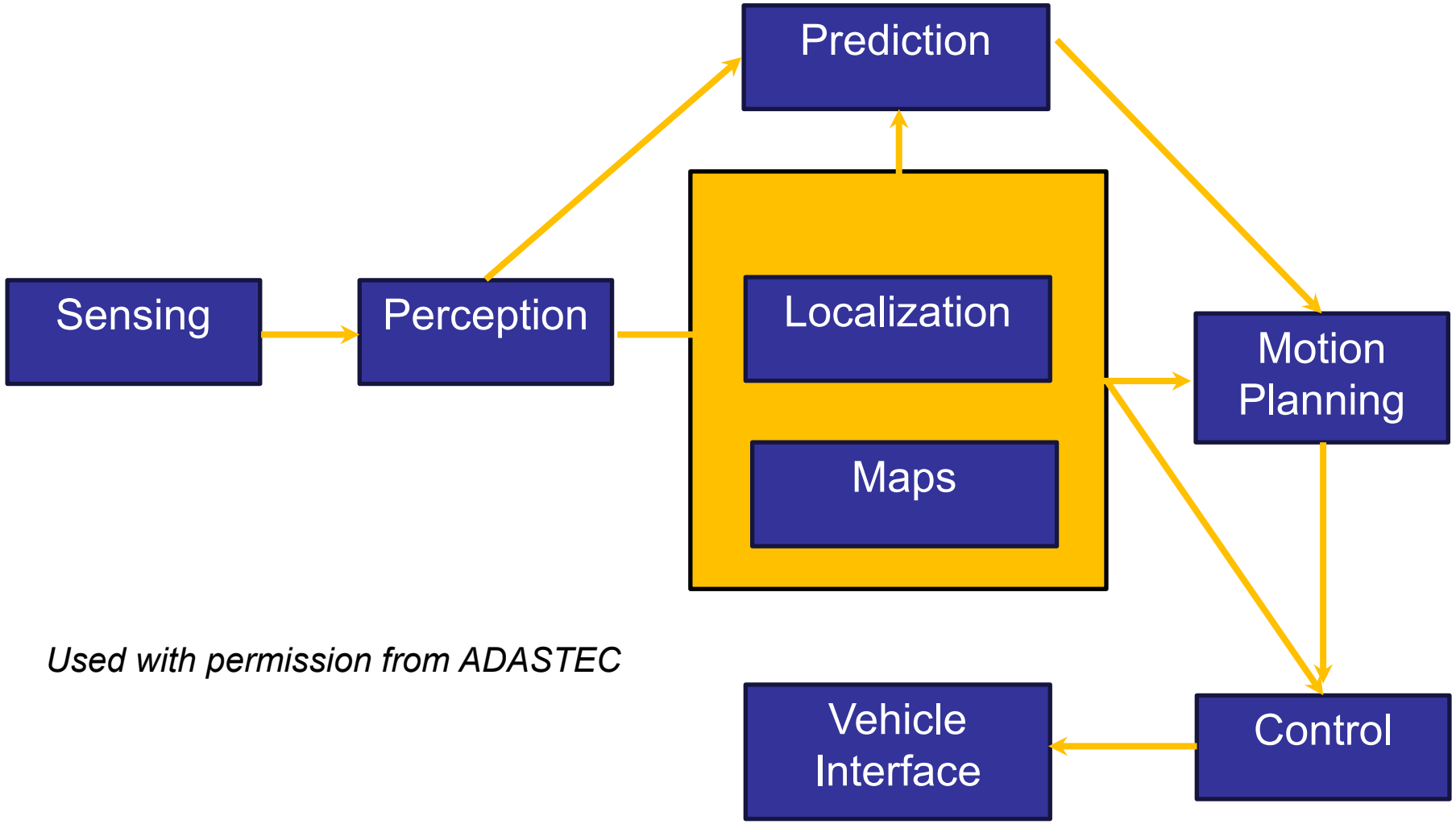
Used with permission from ADASTEC

Selected Solution – The Vehicle

- VMC Lighting by Vicinity Motor (Bus) USA Corp (VMC)
  - Ground-up, factory-fitted Automated Bus
  - 22 seated passenger capacity
  - Low-floor
  - Easy entry/exit configuration
  - Battery electric (252 kWh battery & 180 miles range)

Used with permission from ADASTEC and Vicinity Motors

Flowride.ai Stack



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Examples of Prior Deployments

- Michigan State University
  - Operation during inclement weather
  - 27 ft, 22-seat Autonomous e-ATAK bus
  - Fixed-route, fixed schedule
- Stavanger, Norway
  - Demand-responsive
  - Revenue-operation for over a year

Used with permission from ADASTEC

Use Cases Video

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Visit the ITS4US Deployment Program Website:

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

ITS4US Deployment Program Video

https://youtu.be/pztl1lRyXAc

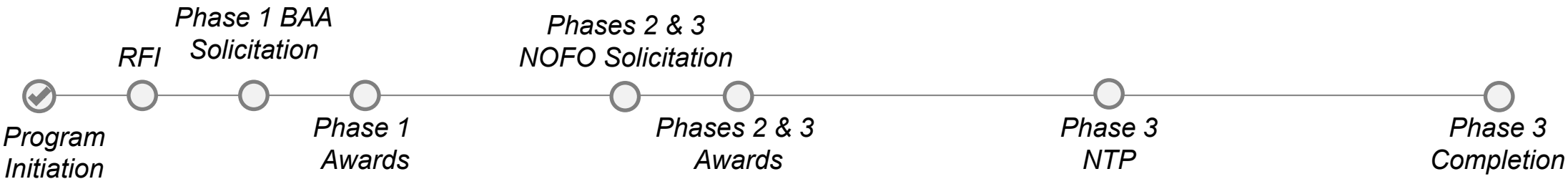
Scalable Technology for Actionable Transportation Solutions (STATS) Program

- **STATS** Deployment Program is a new USDOT Multimodal, Multi-year Deployment Program:
  - Up to $40 million Program (FY23-FY27)
  - ITS JPO-led, with support from OST, FHWA, FTA, FMCSA, and NHTSA
- Explores ITS and emerging technology deployments that support a transportation system where all people in the community can travel with safety, security and confidence.

Vision: A reliable multimodal transportation system that connects people to services and opportunities through integrated ITS solutions where all users can travel with safety, security and confidence.

Mission: Empower communities to improve travelers' safety, security, and confidence by funding and supporting replicable integrated deployments of ITS and advanced technology scaled to the community's needs.

Multi-Phase and Multi-Award Program Structure



Procurement Pre-Release Activities

- Organize Federal Team
- Define Program Vision, Mission, and Goals
- Procurement Planning & Development
- Procurement Outreach
- Release RFI & BAA

Deployment Concept Phase

- Concept Development
- System Needs and Requirements
- Establish Cohort Roundtables

Design, Acquisition & Testing Phase

- Design, Test and Deploy Integrated Solutions
- Evaluation Framework and Planning
- Equip. Acquisition

Operation & Evaluation Phase

- Demonstrate Deployments
- Evaluate Deployments
- Share Data & Lessons Learned

Post-Deployment: Ops. & Maint.

- 5 years of operations after the end of STATS Program funding

Questions & Answers