U.S. Department of Transportation

Georgia Mobility and Accessibility Planner (G-MAP) Hybrid System Development with Stakeholder Support

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

November 14, 2023

Webinar Agenda

▪ Purpose of this Webinar

- ☐ Introduce the system development process and how stakeholders are engaged throughout the process to ensure the system will meet user needs

▪ Webinar Content

- ▪ ITS4US Program Overview (Norah Ocel)
- ▪ Project Background (Bennett Foster)
- ▪ Hybrid Approach (Polly Okunieff)
- ▪ Stakeholder Involvement in System Engineering and Agile Processes (Jordan Hall)
- ▪ Stakeholder Q&A
- ▪ How to Stay Connected (Norah Ocel)

▪ Webinar Protocol

- ☐ You are welcome to ask questions via chatbox
- ☐ The webinar recording and the presentation material will be posted on the ITS4US website
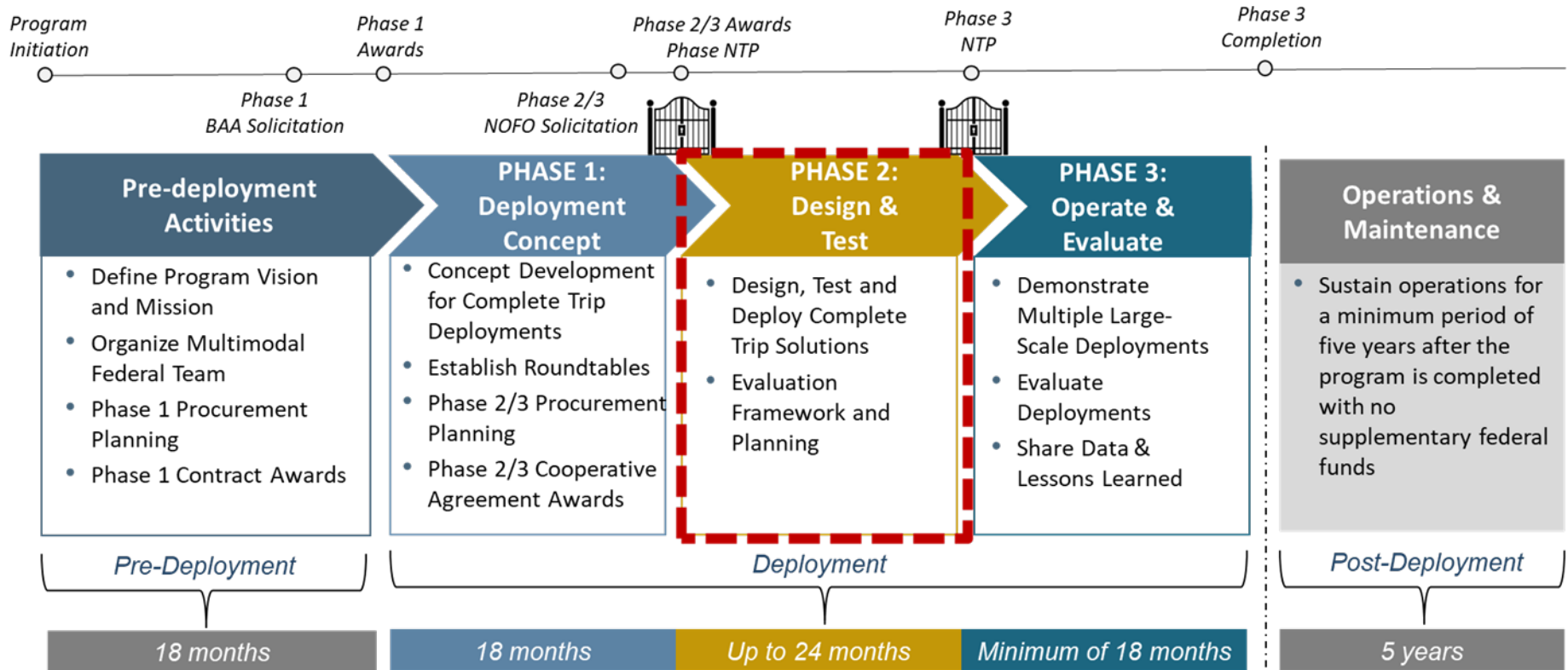
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ITS4US Program Overview

- 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
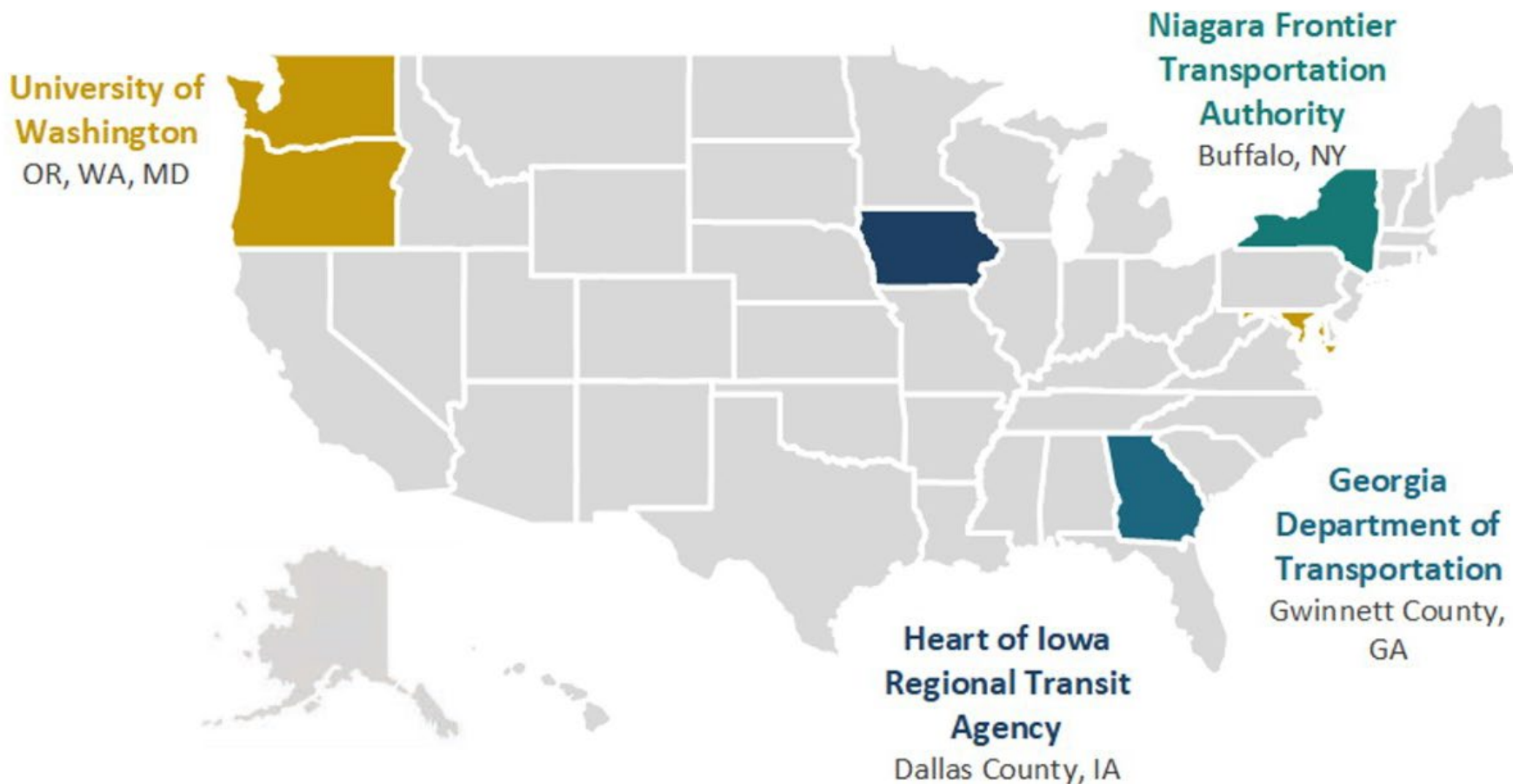

ITS4US — IT'S TRANSPORTATION FOR ALL OF US

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

ITS4US Deployment Sites

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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ITS4US Team Photo Collage

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Georgia Department of Transportation (GDOT) Deployment Project

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Existing Mobility Challenges
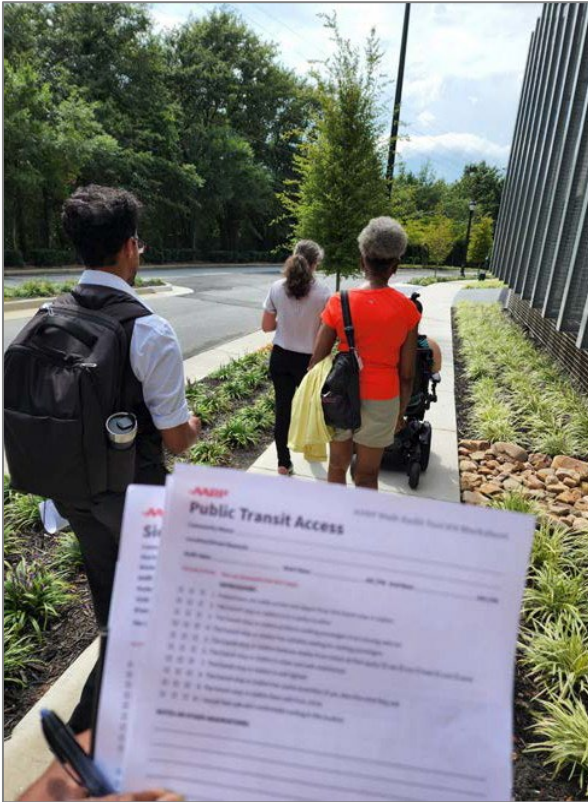
- **Guided by AARP Walk Audit**

- **Uneven, Obstructed Paths**
- **Poor Sidewalk Quality**

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Existing Mobility Challenges (continued 1)

- **Missing curb ramps, not Americans with Disabilities Act (ADA) compliant (ex1)**

- **Missing curb ramps, not ADA compliant (ex2)**

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Underserved Communities of Interest

- People with Disabilities
  - Mobility
  - Vision
  - Hearing
  - Intellectual Developmental
    (supported through a trusted companion who is eligible to provide consent)

- Older Adults

- Limited English Proficiency (LEP) Communities

- Low-Income Populations

Project Site – Gwinnett County, GA

- Richly diverse area

- Major transit hubs
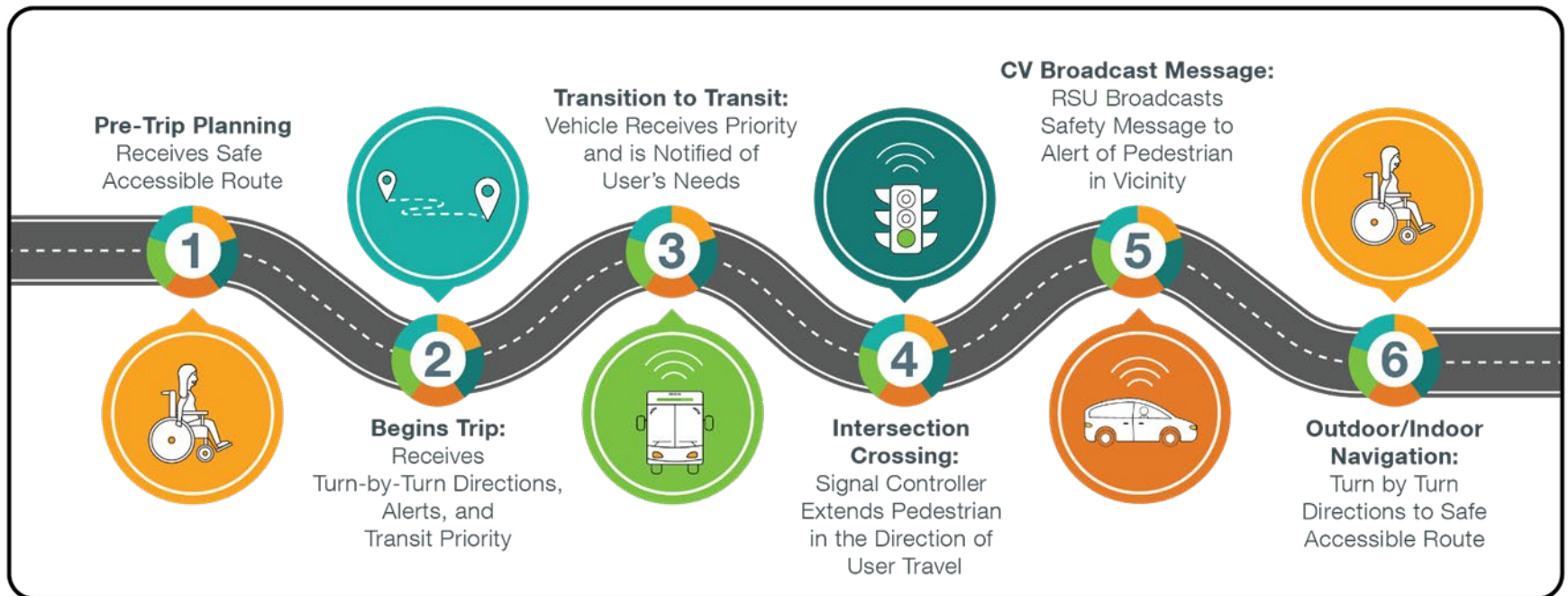
- Suburban land use

- Wide and high-speed roadways

- Inconsistent pedestrian infrastructure
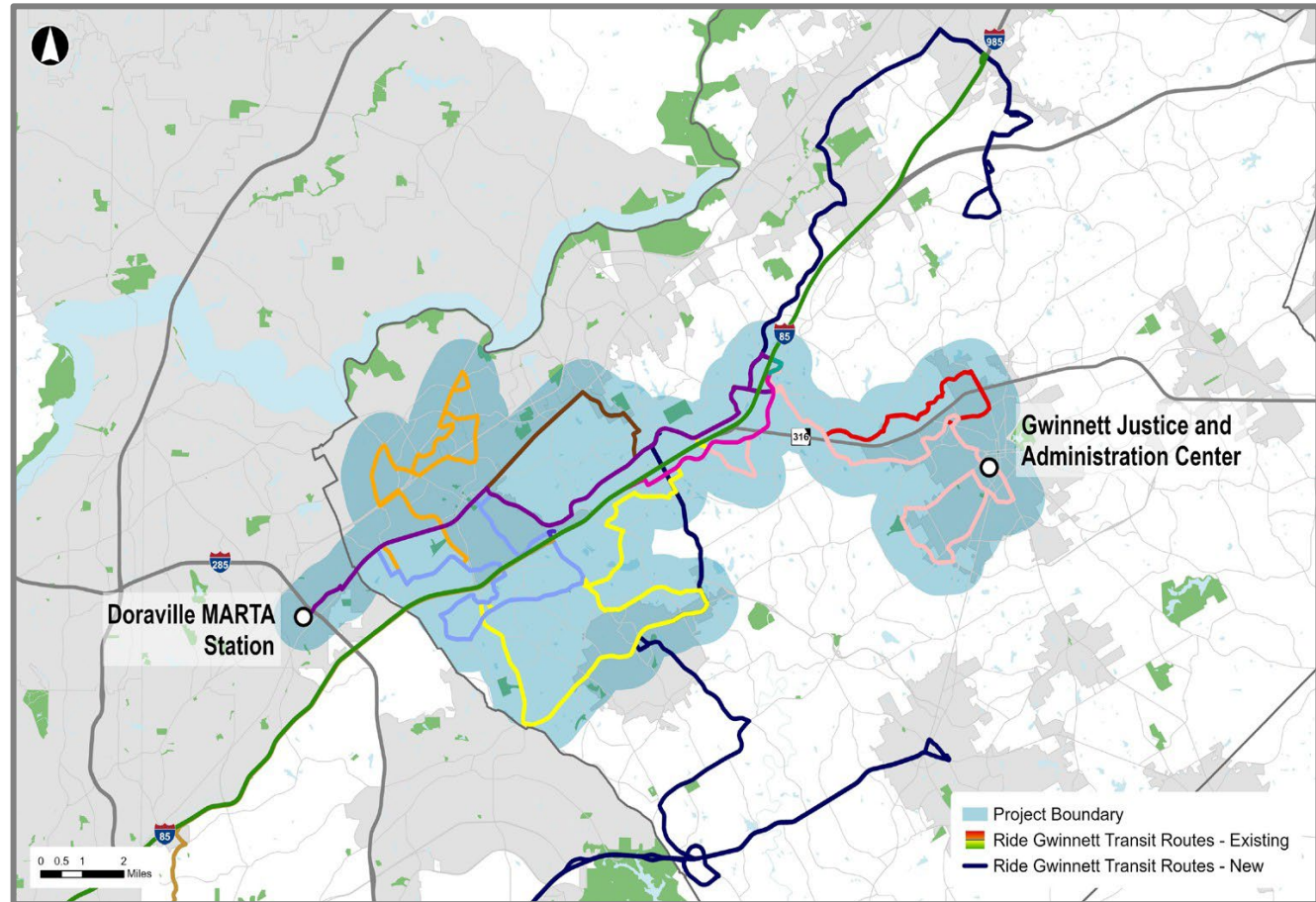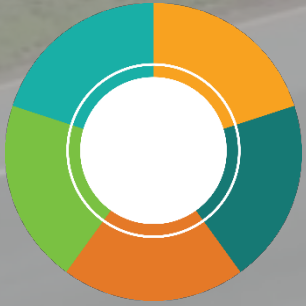
Deployment Project Overview Video

Deployment Concept

Georgia Mobility and Accessibility Planner (G-MAP) Web and Mobile Application

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:
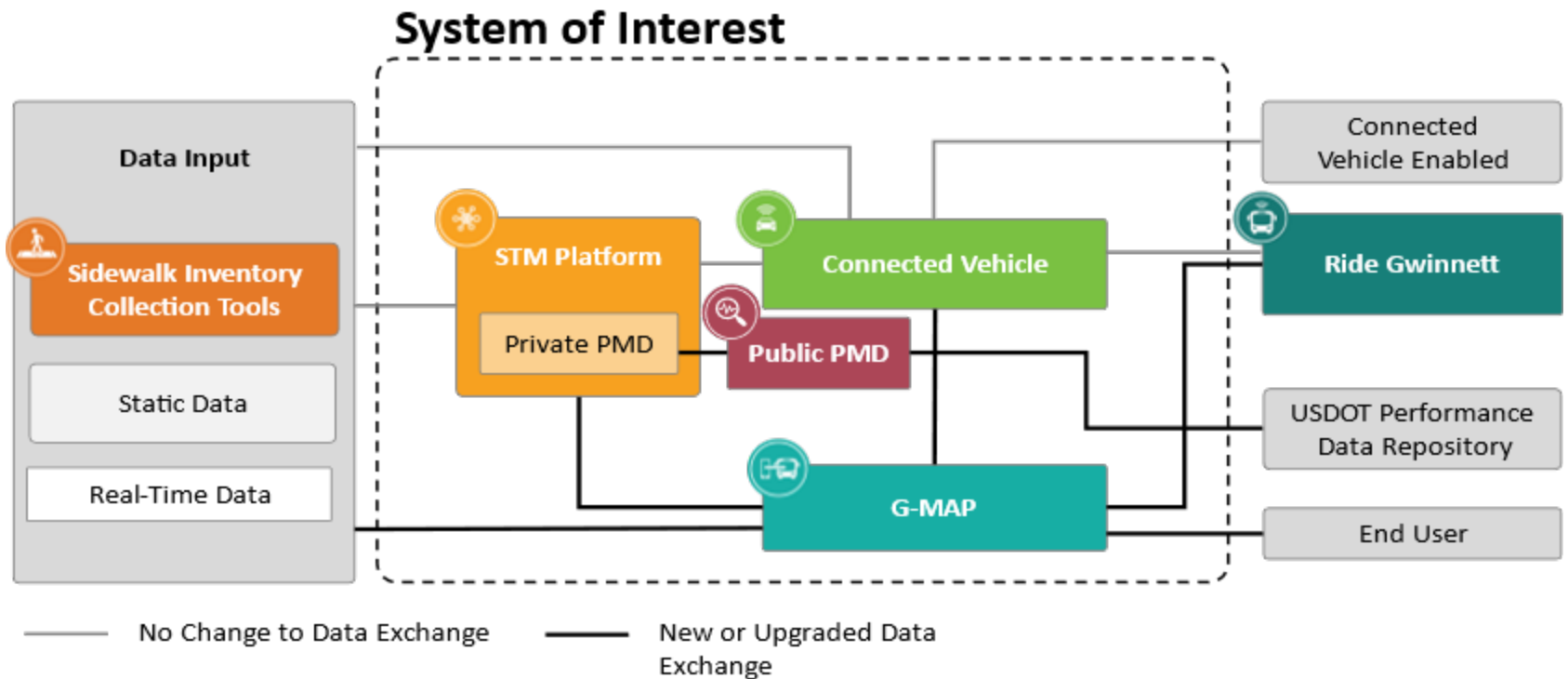Turn by Turn Directions to Safe Accessible Route

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Leveraging Existing Systems

ATL Rider Information and Data Evaluation System

Connected Vehicle Regional Deployment Program

Sidewalk Inventory Tools

Gwinnett Connected Vehicle Technology Master Plan

Space-Time Memory Platform

ST-CTN

ATL RIDES

CV1K

SIDEWALKSIM

STM

CVTMP
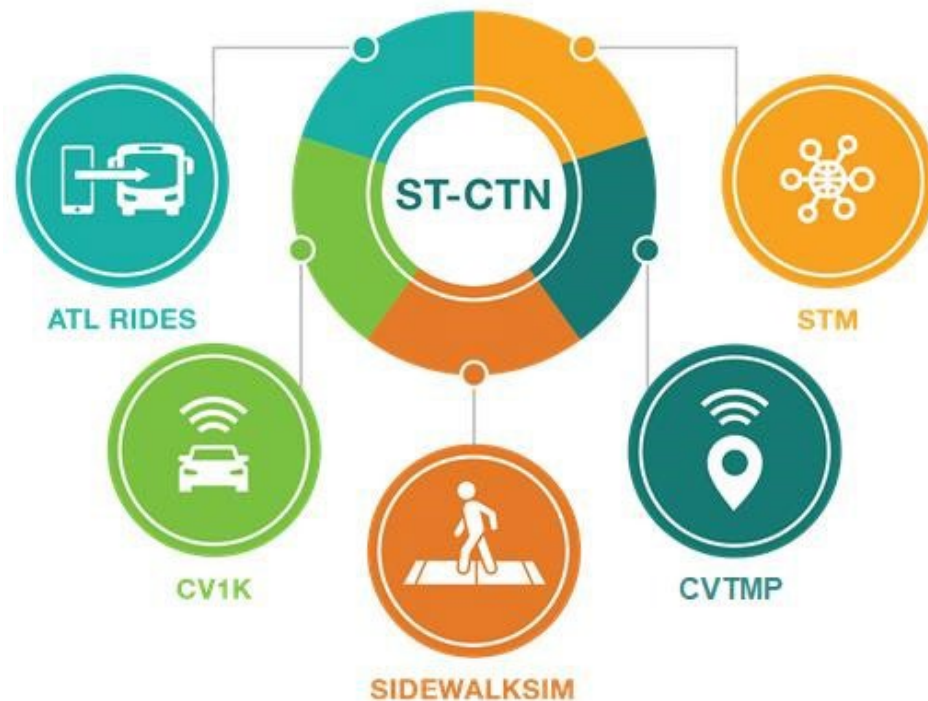
Technical Approach – Context Diagram

System of Interest

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

STM Platform
- Private PMD
- Public PMD

Connected Vehicle

G-MAP

Connected Vehicle Enabled

Ride Gwinnett

USDOT Performance Data Repository

End User

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

System Development: Hybrid Systems Engineering (SE) and Agile Process

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System Development Process: Systems Engineering (SE) 'Vee Diagram'
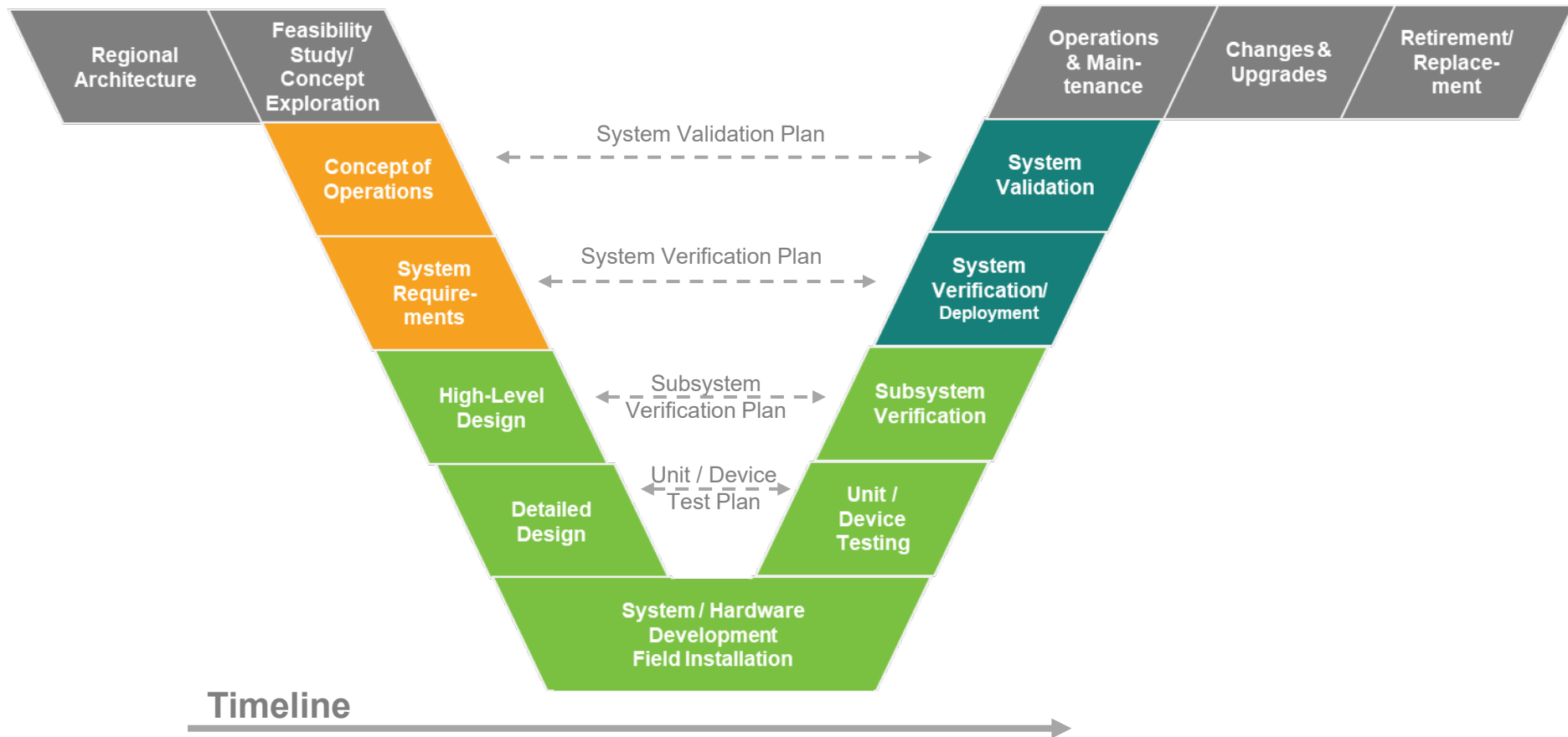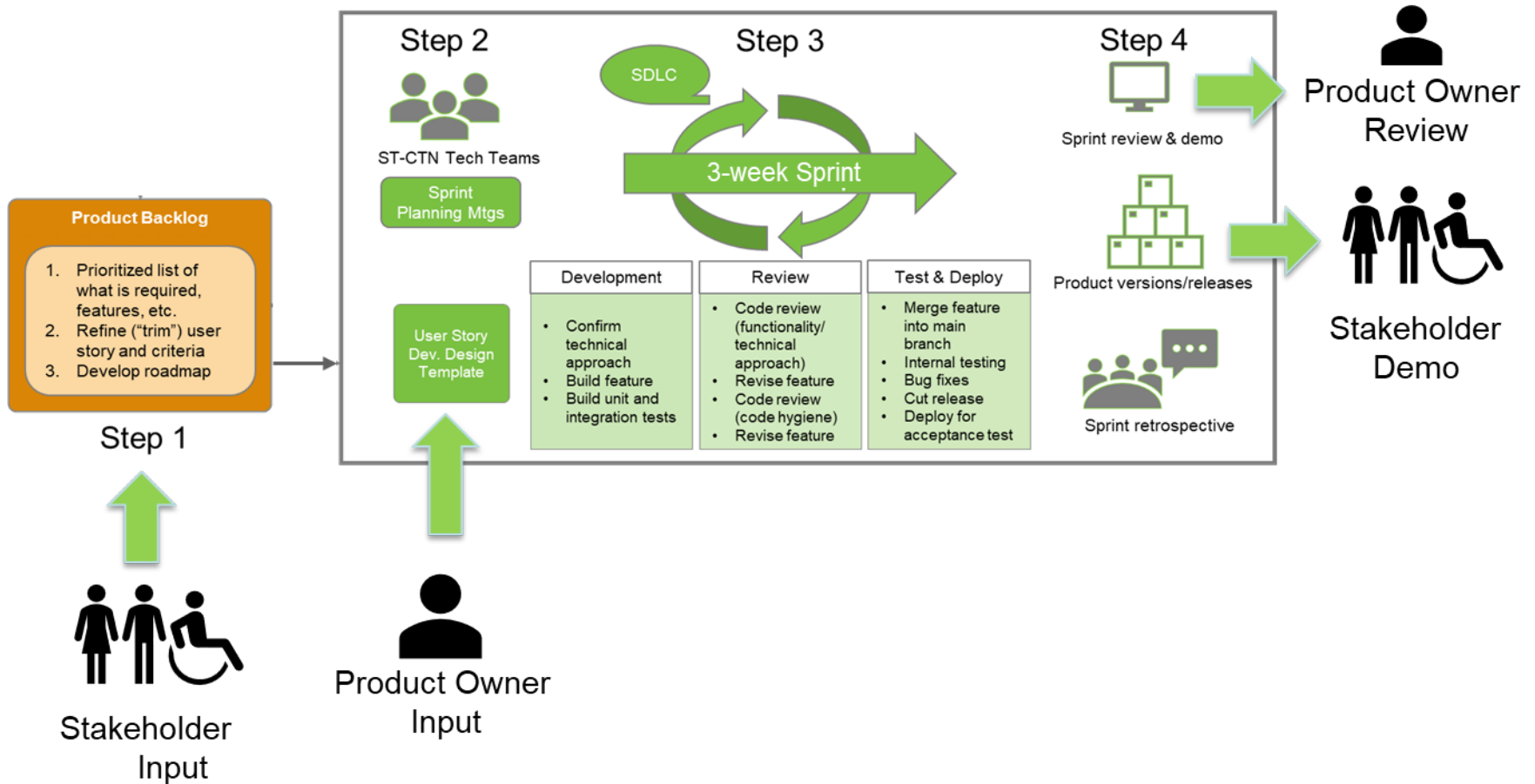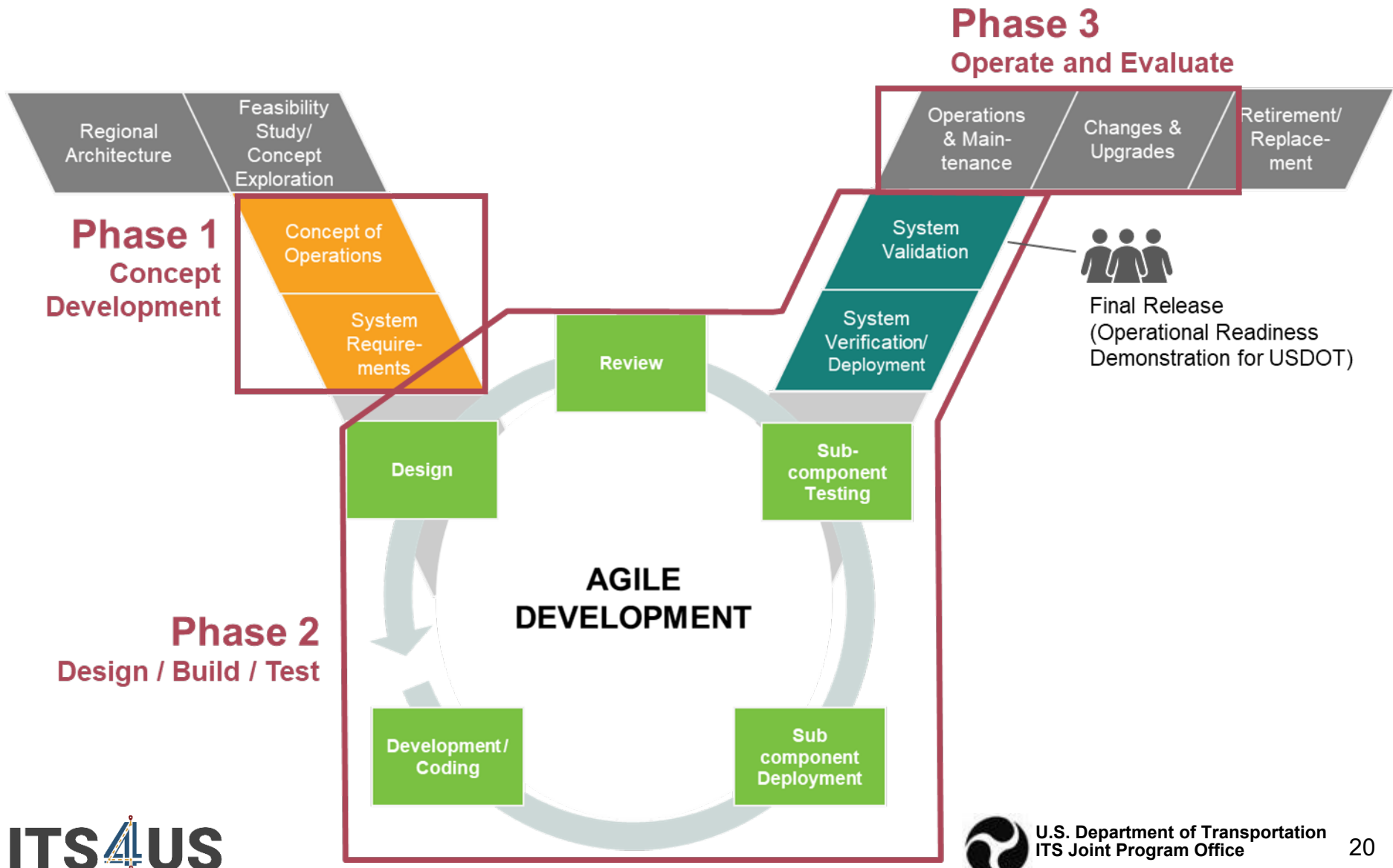
System Development Process: Agile Methodology

- Iterative Development

- Emphasizes
  - Incremental Delivery
  - Collaboration
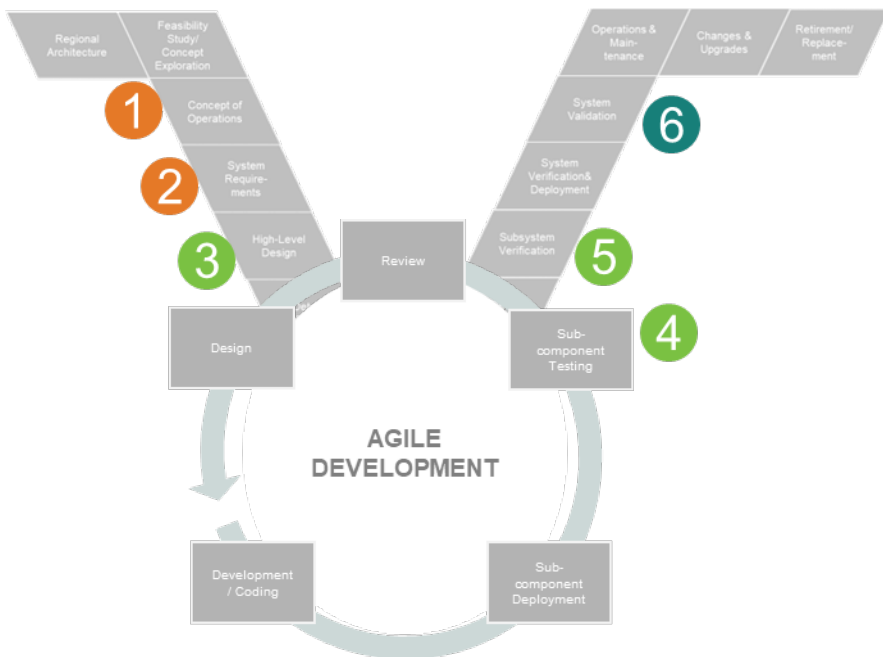 - Continual Planning
  - Continual Learning

- Flexible

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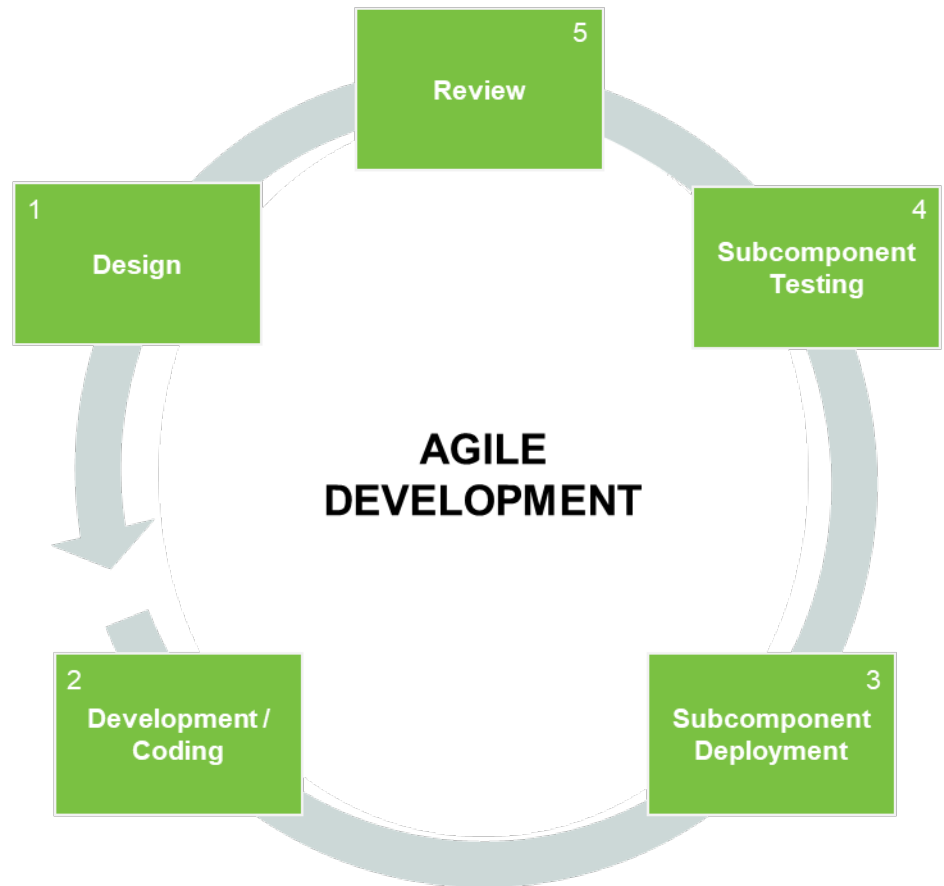
System Development Process: Agile Methodology (continued)

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System Development Process:
Hybrid Systems Engineering / Agile

Phase 3
Operate and Evaluate

Phase 1
Concept Development

Phase 2
Design / Build / Test

Regional Architecture

Feasibility Study/ Concept Exploration

Concept of Operations

System Requirements

Review

Design

Sub-component Testing

AGILE DEVELOPMENT

Development / Coding

Sub component Deployment

System Validation

System Verification/ Deployment

Operations & Maintenance

Changes & Upgrades

Retirement/ Replacement

Final Release (Operational Readiness Demonstration for USDOT)

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System Development Process: Needs and Requirements Traceability

1 **Concept of Operations**
- System needs traced to end user and IOO needs

2 **System Requirements**
- System requirements traced to system needs

3 **High Level Design / Design**
- System design components traced to requirements

4 **Software / Hardware Unit and Subsystem Testing**
- Test scripts / procedures traced to design and Sprint acceptance criteria

5 **System Verification**
- Field test procedures traced to requirements

6 **System Validation**
- Is this what stakeholders expected?

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System Development Process:
Hybrid Stakeholder Engagement Milestones

SYSTEMS ENGINEERING

- Focus Groups Identify Needs
- ConOps Walkthrough
- Requirements Walkthrough
- Deployment Plan Walkthrough
- System Architecture Walkthrough
- System Design Walkthrough
- Change Control Process
- Operational Readiness Demonstration

AGILE

- Stakeholder Meetings
- Demos
- Final Release
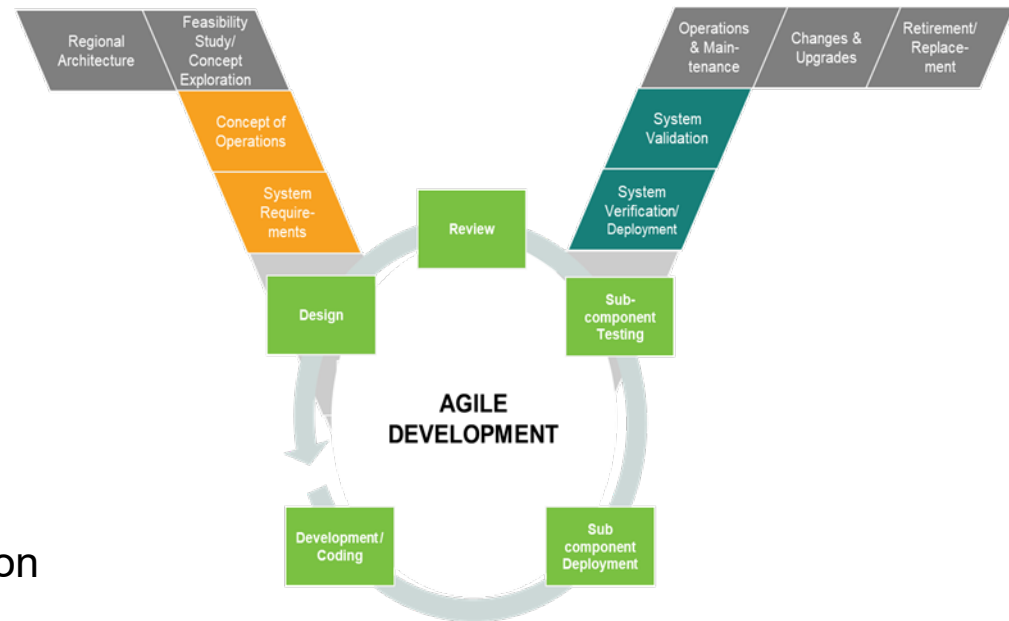
End User Stakeholder Engagement

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List of Stakeholders (End Users)

Stakeholders

- Georgia Tech Office of Disability Services
- Gwinnett Place CID
- GA Department of Education
- MARTA Accessibility Council Board
- Verida (formerly Southeastrans)
- Vocational Rehab Gwinnett County Schools
- Bobby Dodd Institute

- The Exceptional Foundation of Atlanta
- Spectrum Autism Support Group
- GA Council on Developmental Disabilities
- Bennett's Place
- The Arc Georgia
- Creative Enterprises
- GA Department of Behavioral Health and Developmental Disabilities

Training Partners

- Tools for Life
- disABILITY Link

- GA Vocational Rehab
- GA Department of Health

Stakeholder Engagement Overview

Phase 1
Concept Development

- Need Interviews

- ConOps Walkthrough

- Requirements Walkthrough

- Deployment Plan Walkthrough

Phase 2
Design / Build / Test

- System Architecture Walkthrough

- System Design Walkthrough

- Agile Process
  - Stakeholder Meetings
  - Demos

- Change Control Process

- Soft Launch

- Operational Readiness Demonstration

Phase 3
Operate and Evaluate

- GO LIVE

- Continued Outreach and Training

- Feedback

Phase 1 Stakeholder Engagement

Phase 1 – Concept Development

- Need Interviews

  - Series of 5 End User Needs Interviews

  - Held in Spring of 2021

  - Followed up with Needs Priority Survey

  - Guides requirements, design, and development

Needs Priorities Survey
Needs Priorities Survey
Thank you again for your participation in the Safe Trips in a Connected Transportation Network (ST-CTN) User Need Interviews. Based on your interviews, we are developing a needs assessment to determine how to make planning and taking trips as easy as possible. In the survey below you'll find the needs that have been identified. Please provide feedback regarding whether the needs are accurately depicted based on the description in the survey and prioritize them based on your experience (essential, high, medium, and low priority). You will also see a question marked other. If there is a need you feel that was not addressed, please describe it in the space provided.

Phase 1 Stakeholder Engagement (continued)

Phase 1 – Concept Development

- ConOps Walkthrough – June 2021
  - End user, IOO, and system needs
  - Proposed system
  - Stakeholder roles and responsibilities
  - Use cases

- Requirements Walkthrough – October 2021
  - Reviewed system requirements

- Deployment Plan Walkthrough – Spring 2022
  - Reviewed plan for Phase 2 – Design, Build, Test

Phase 2 Stakeholder Engagement

Phase 2 – Design / Build / Test

- **Systems Architecture Design (SAD) Walkthrough** – October 2022
  - Need and System Requirements Changes
  - Architecture Review

- **Systems Design Document (SDD) Walkthrough** – October 2023
  - Need and System Requirements Changes
  - Design Review

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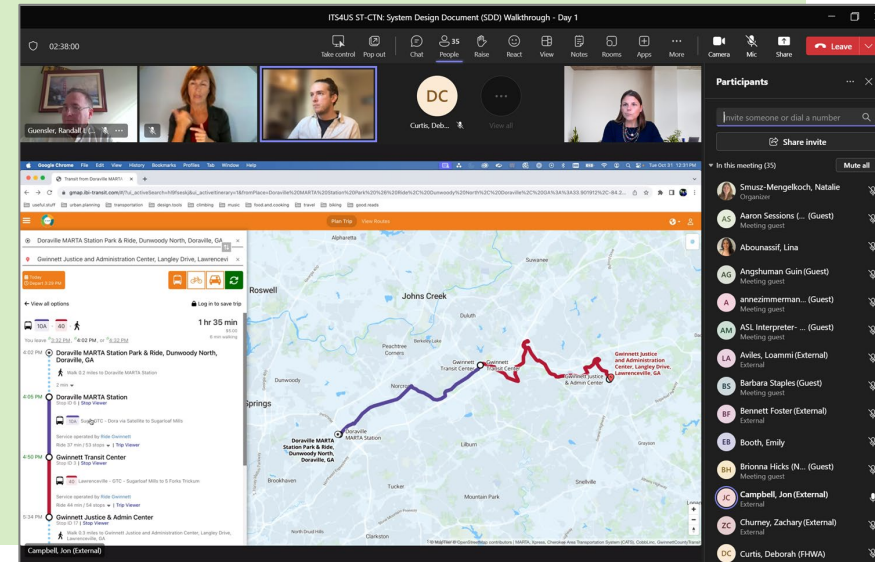
Phase 2 Stakeholder Engagement (continued 1)

Phase 2 – Design / Build / Test

Stakeholder Design Meetings:

- Mobility Profile Meeting Series – June 2021
  - Review of mobility profile questions
  - Review of system needs change control process
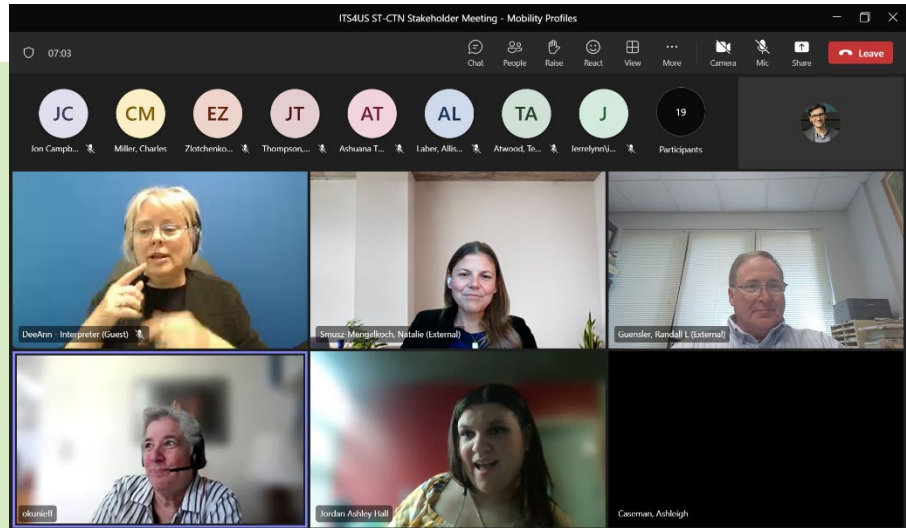
Phase 2 Stakeholder Engagement – Agile Process

Phase 2 – Design / Build / Test

Agile Process:

- Release 1 – Mobility Profiles and Live Tracking

- Release 2 – Enhanced Routing and Notifications

- Release 3 – Indoor Navigation and Group Travel

- Release 4 – Soft Launch

- Release 5 – Refinement
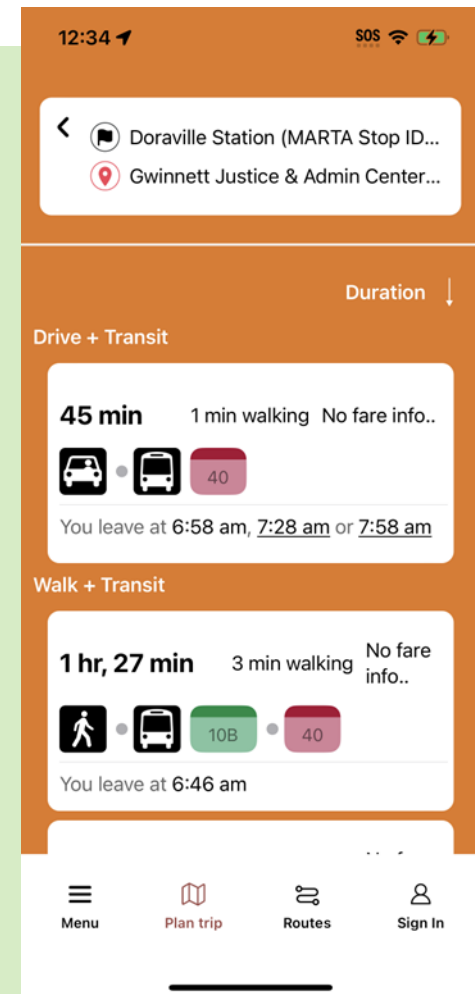
Phase 2 Stakeholder Engagement – Demonstration

Phase 2 – Design / Build / Test

Operational Readiness Demonstration:

- Demonstration of the application, including the indoor navigation system

- June 2024

- Invitees include:
  - Advocacy Organizations
  - Board of Commissioners
  - USDOT Secretary Office
  - Federal Highway Administration (FHWA), Federal Transit Administration (FTA)
  - US Congressmember
  - Georgia State Legislators
  - Other key community stakeholders
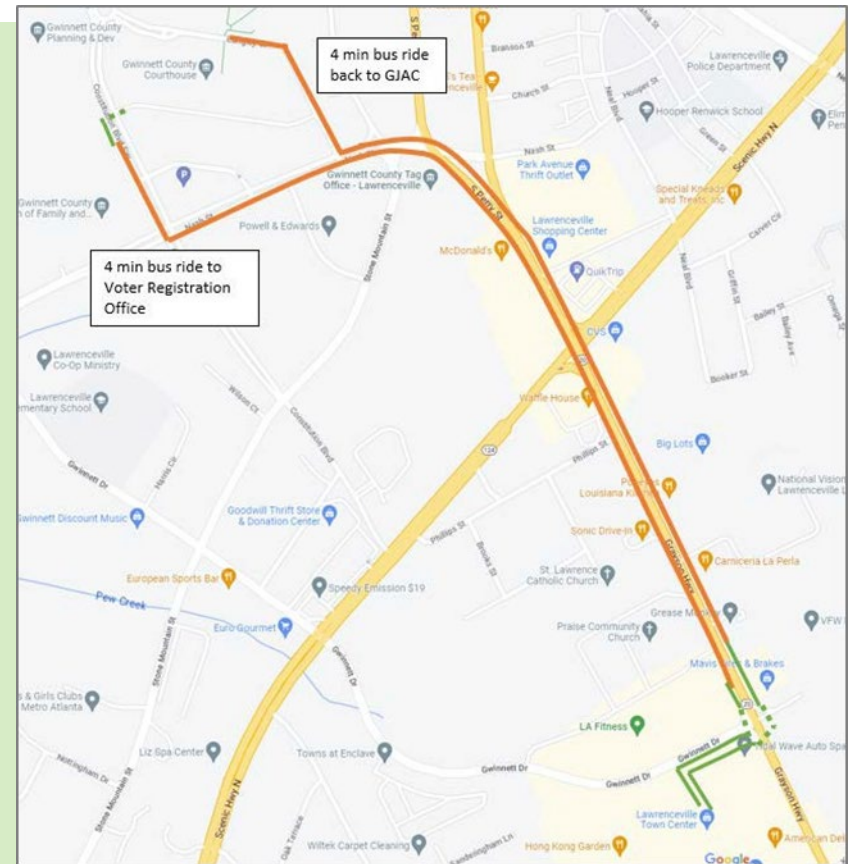
Potential Demonstration Corridor

Source: Googlemaps

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Phase 3 Stakeholder Engagement – GO LIVE

Phase 3 – Operate and Evaluate

GO LIVE!

- Application is available for all travelers

- Training is provided through existing travel training programs

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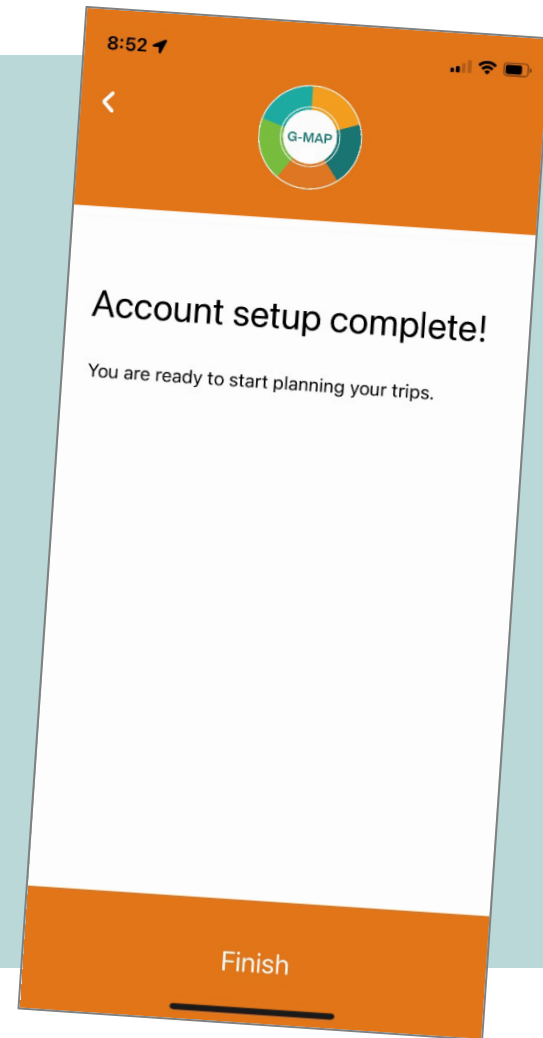
Phase 3 Stakeholder Engagement – Outreach

Continued Outreach:

- Website

- Social Media

- On-Site Events

- Public Meetings

- Local Community Outreach

- Conferences

- Webinars

- Industry Journals

Example G-MAP Brochure

Deployment Website
georgia-map.com

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Phase 3 Stakeholder Engagement – Feedback

Phase 3 – Operate and Evaluate

Continued Feedback:

- Traveler surveys through G-MAP

- Feedback from users through G-MAP

- Additional stakeholder interviews

Next Steps

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Stakeholder Engagement Next Steps

Agile Development Demos

- December 2023

- February / March 2024

Beta Testing

- Spring 2023

Operational Readiness Demonstration (on site)

- June 2024

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Stay Connected

For more information:

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

Norah M. Ocel, Office of Safety
Site AOR
norah.ocel@dot.gov

Alan Davis
Co-Project Management Lead
aladavis@dot.ga.gov

Kofi Wakhisi
Co-Project Management Lead
kwakhisi@atlantaregional.org

Visit the ITS4US Deployment
Program Website:
https://its.dot.gov/its4us/

ITS4US Deployment Program Video
https://youtu.be/pztl1lRyXAc

Visit the Georgia-MAP
https://georgia-map.com/

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Stay Connected (presenters)

For more information:

Norah M. Ocel, Office of Safety
Site AOR
norah.ocel@dot.gov

Bennett Foster, Atlanta Regional Commission
Site Co-Deployment Lead
bfoster@atlantaregional.org

Polly Okunieff, Go Systems and Solutions
Site Systems Engineering Lead
okunieff@gmail.com

Jordan Hall, Statewide Independent Living Council of Georgia
Site Community Coordinator Lead
jhall@silcga.org

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Questions and Answers

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