U.S. Department of Transportation

COMPLETE TRIP

ITS4US

Atlanta Regional Commission (ARC) Phase 1 Integrated Complete Trip Deployment Plan Webinar

May 10, 2022

Agenda

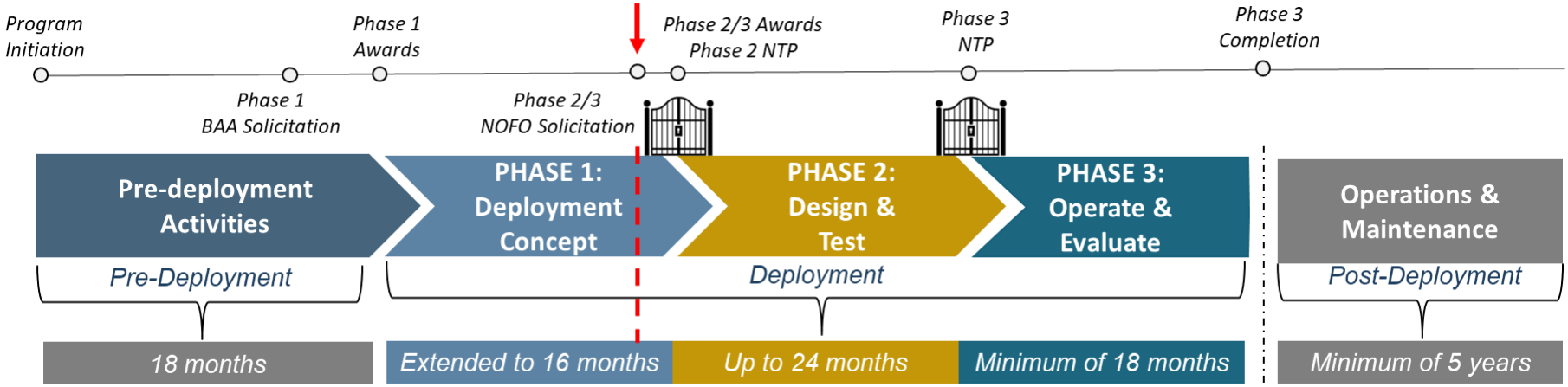
- **Purpose of this Webinar**
  - To share the submitted Integrated Complete Trip Deployment Plan from ARC with the stakeholders of the project and ITS4US community.
- **Webinar Content**
  - Complete Trip – ITS4US Deployment Program Overview (Karen Timpone)
  - Deployment Concept Overview (Kofi Wakhisi)
  - Summary of Phase 2 and 3 Technical Approach (Polly Okunieff and Maria Roell)
  - Summary of Phase 2 and 3 Schedule and Costs (Natalie Smusz-Mengelkoch)
  - Stakeholder Q&A
  - How to Stay Connected (Karen Timpone)
- **Webinar Protocol**
  - You are welcome to ask questions via chatbox
  - The webinar recording and the presentation material will be posted on the ITS4US website

Program Overview

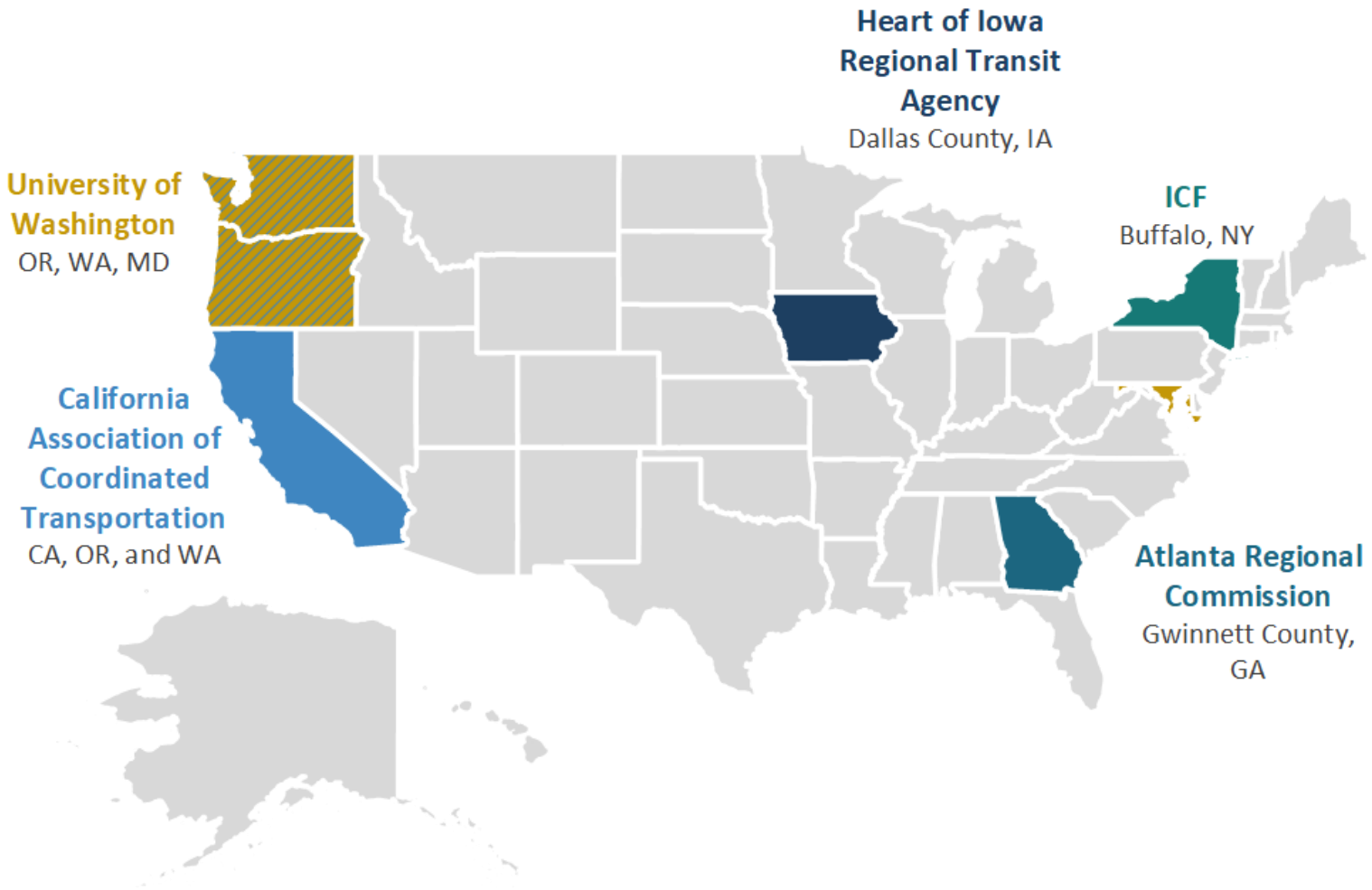
Karen Timpone, FHWA, Office of Safety
Site COR

ITS4US Deployment 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



Complete Trip Phase 1 Awardees



Summary of Phase 1 Deployment Concept

Kofi Wakhisi, Project Manager
Alan Davis, State Traffic Engineer

Underserved Communities of Interest

- People with Disabilities
  - Mobility
  - Vision
  - Cognitive/developmental
  - Hearing
- Older Adults
- Limited English Proficiency (LEP) Communities
- Low-Income Populations

Deployment Concept – Goals

Goal 1: Enhance multimodal complete trip experience with the ST-CTN system functions and features, particularly for underserved communities.

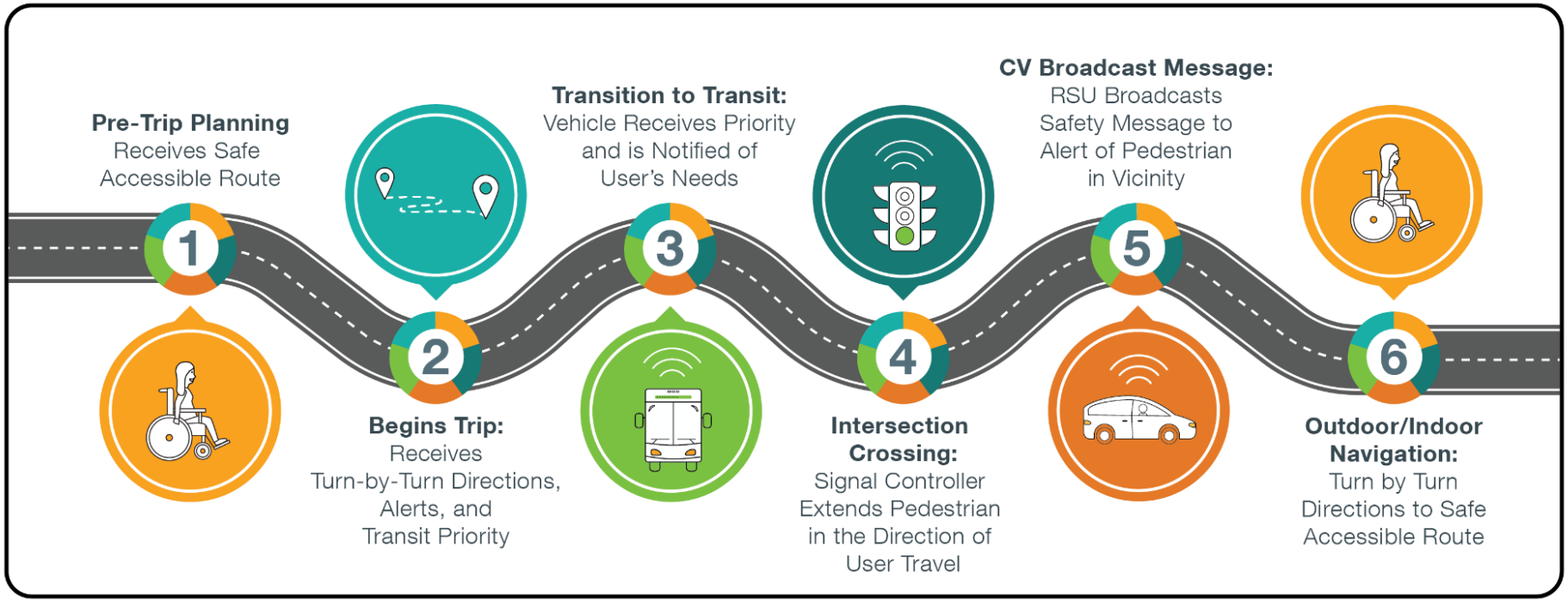
Goal 2: Enhance safety for ST-CTN system users, particularly for underserved communities.

Goal 3: Improve reliability for system users, particularly for underserved communities.

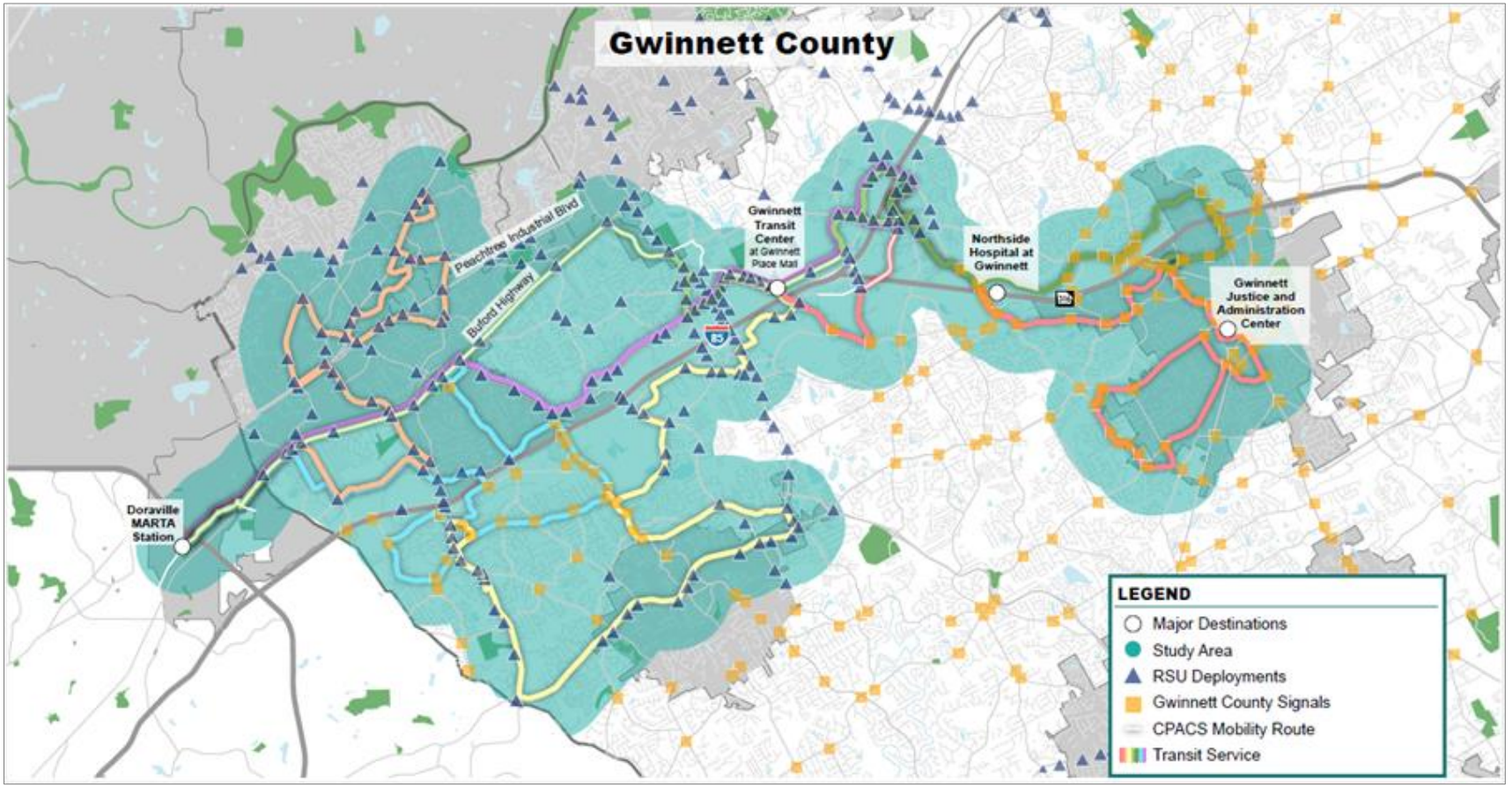
Goal 4: Improve mobility and accessibility for system users, particularly for underserved communities.

Deployment Concept – Project Overview

Safe Trips in a Connected Transportation Network

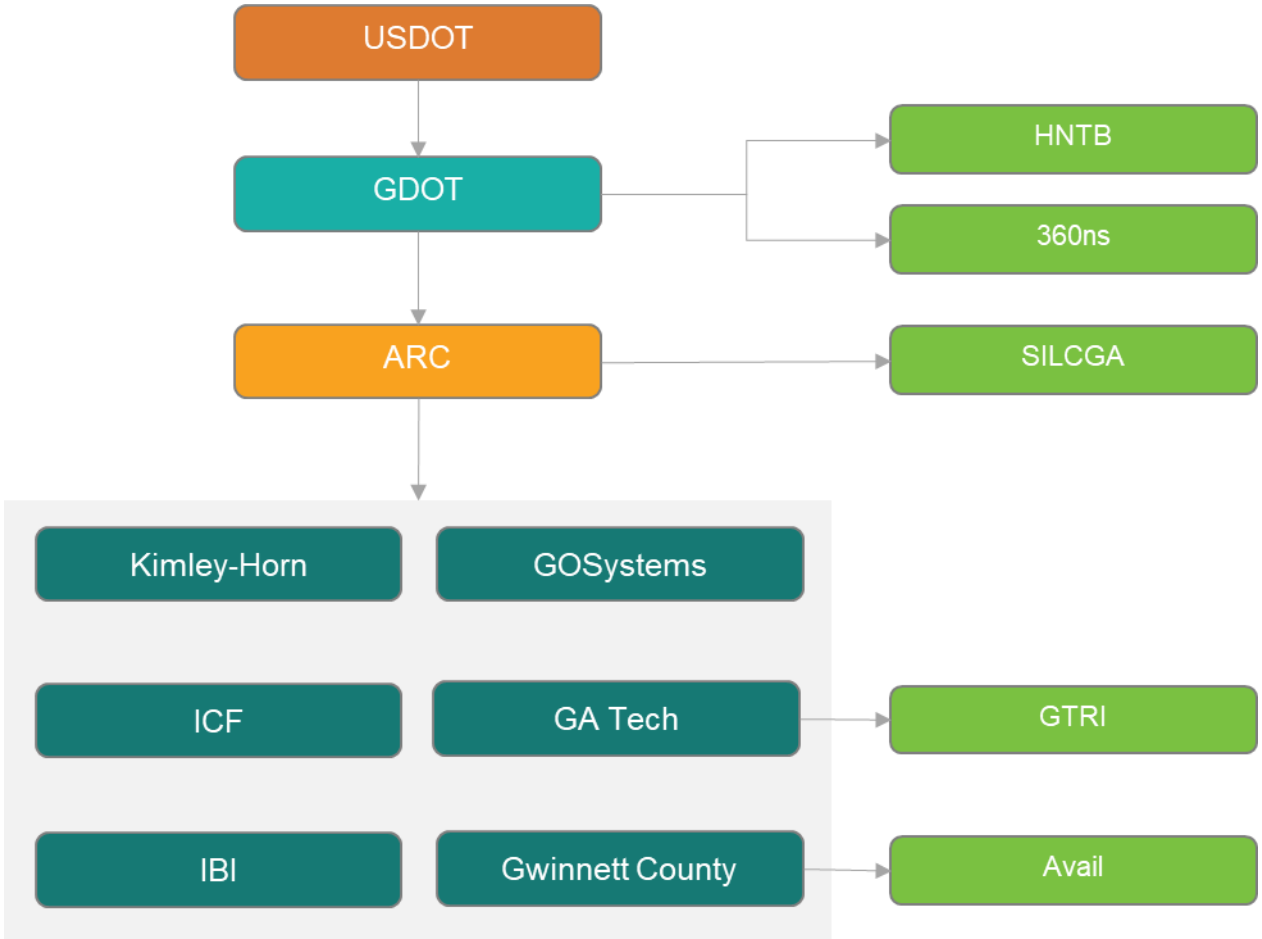


Deployment Concept – Deployment Area



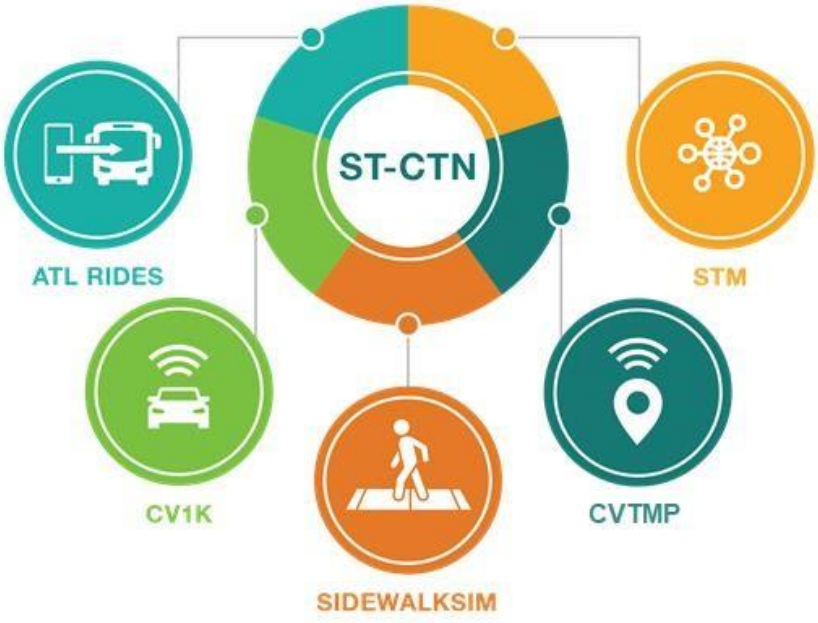
Deployment Concept – Phase 2/3 Project Team

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



Deployment Concept – Leveraging Existing Programs

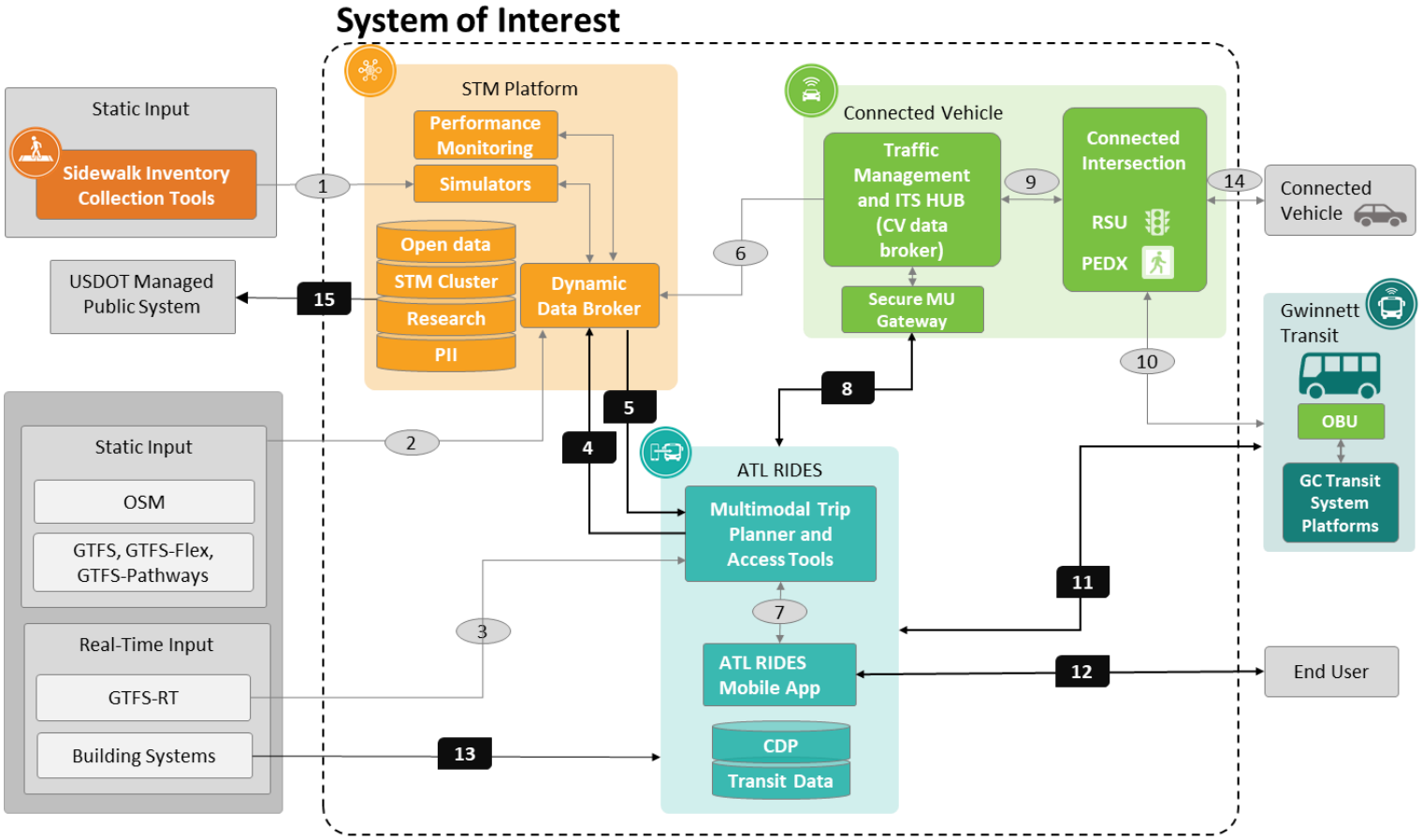
- ATL Rider Information and Data Evaluation System
- Connected Vehicle Regional Deployment Program
- Sidewalk Inventory Tools
- Gwinnett Connected Vehicle Techn Master Plan
- Space-Time Memory Platform



Summary of Phase 2 and 3 Technical Approach

Polly Okunieff, System Development Lead
Maria Roell, Concept Development Lead

Technical Approach – Context Diagram



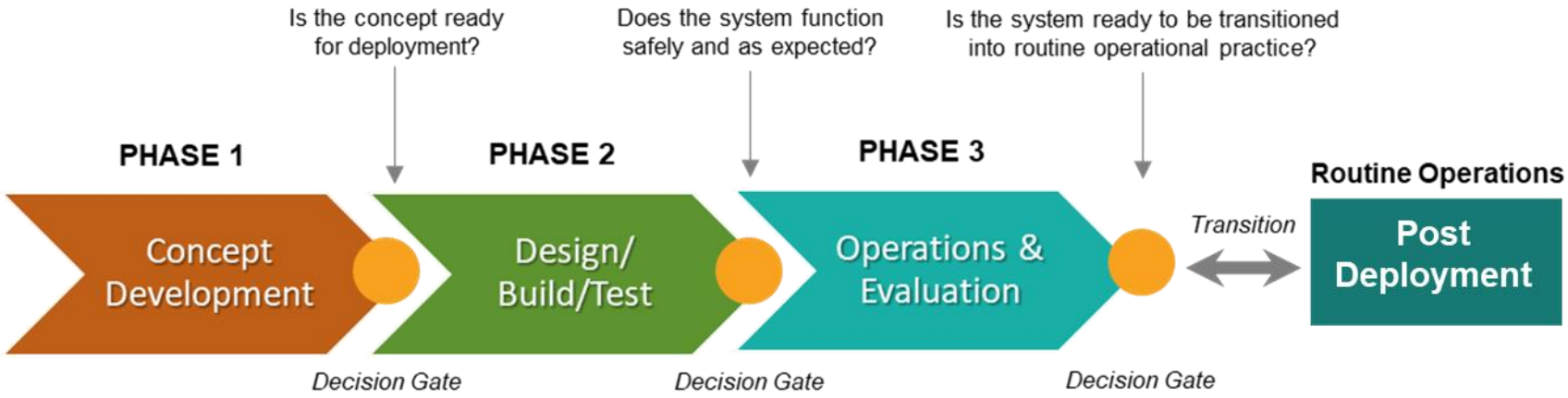
No Change to Data Exchange

New or Upgraded Data Exchange

MU = mobile unit
OBU =onboard unit
RSU = roadside unit

CDP = connected data tools
PEDX = pedestrian signal crossing
PII = personally identifiable data

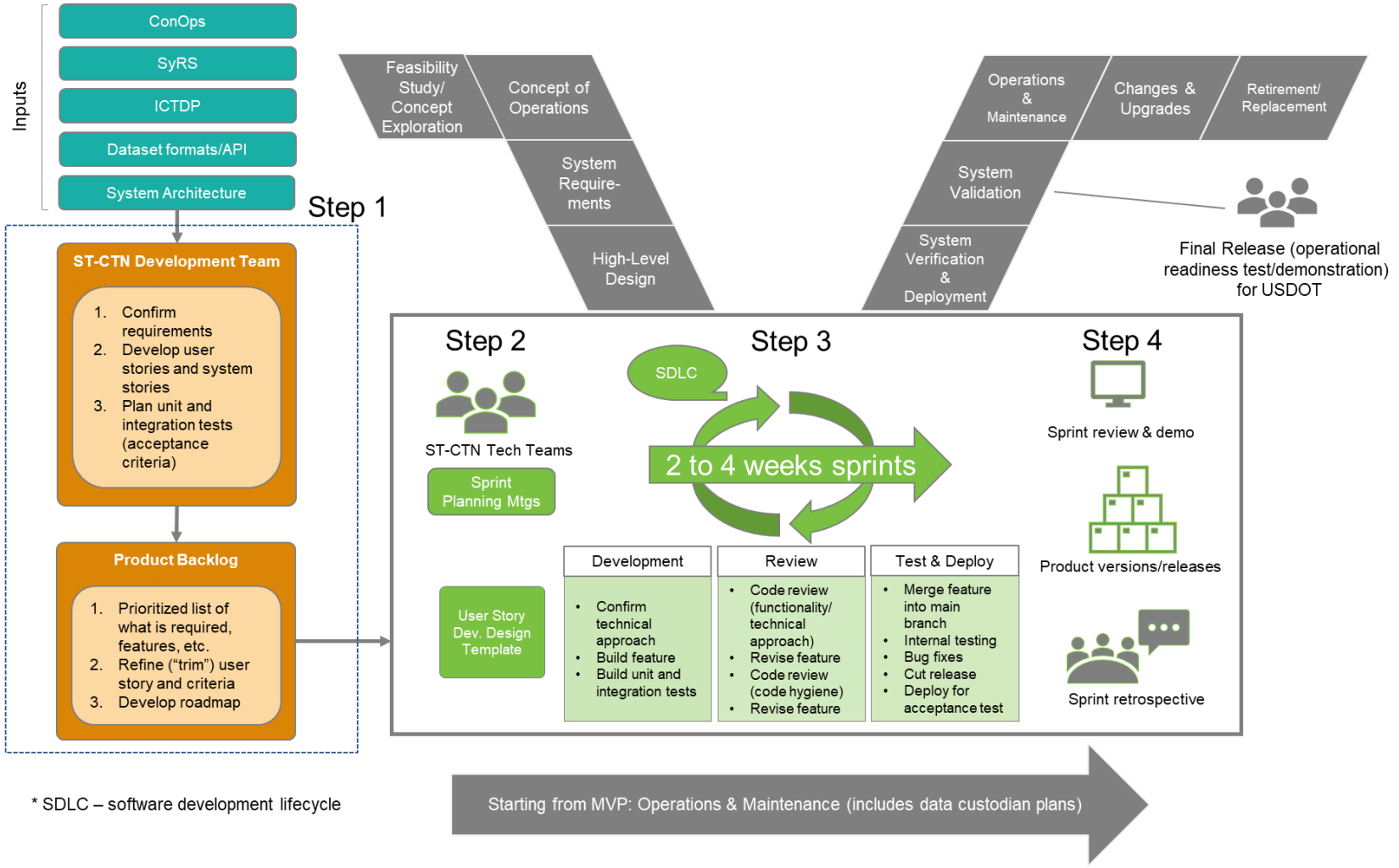
Technical Approach – Decision Gates



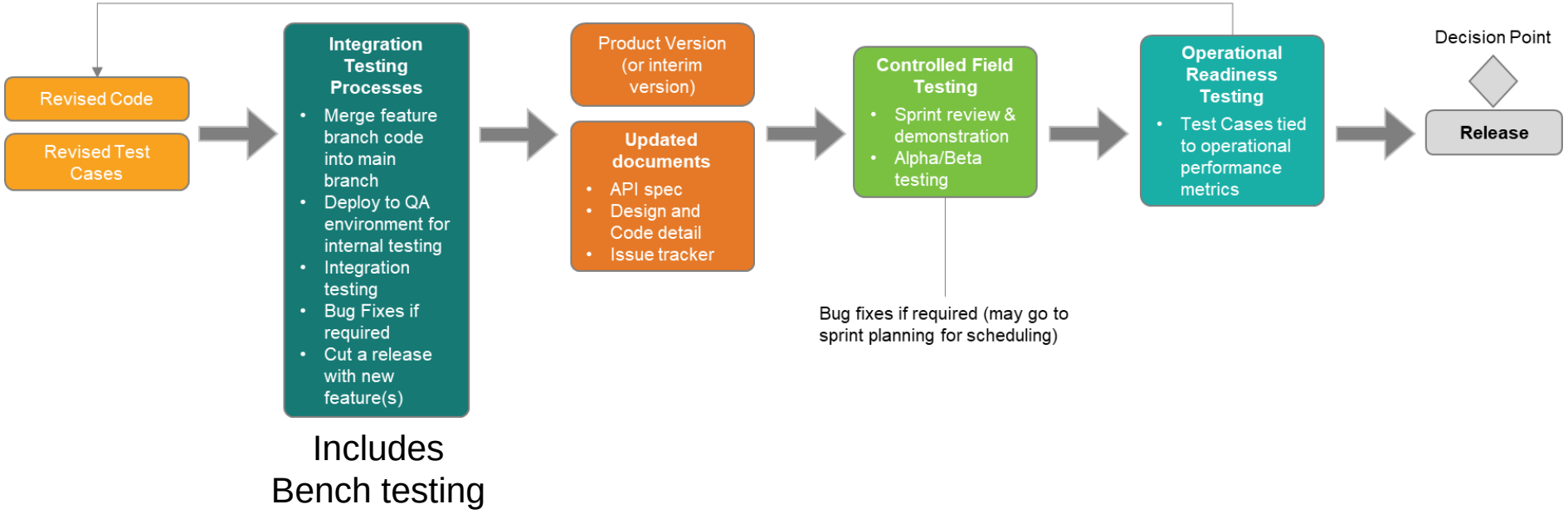
Technical Approach – Deployment Elements

Deployment Elements	Quantity
Signalized Intersections	Centrally controlled signalized intersections: 356 RSU equipped signalized intersections: 215 Signalized intersections along transit routes: 209 RSU equipped signalized intersections along transit routes: 132
GCT Vehicles / Routes	Fixed Routes: 7 routes Fixed Route Transit Vehicles: 38 Vehicles equipped with On-board Units (OBUs) for TSP: 38 Vehicles supporting Connection Protection: 38
Facilities with Indoor Navigation Support (Beacons)	Number of facilities: 2 (MARTA Doraville Station and Gwinnett Justice Administration Center)
Inventory of Sidewalk	approximately 2,000 linear miles
Project Study Area	90 sq miles

Technical Approach – Hybrid SE and Agile



Technical Approach – Testing



Includes Bench testing

Technical Approach – Data

Collection

- Use existing data resources and tools (e.g. GDOT/ARC Data Sharing Program)
- Establish technical channels to collect data from system

Operations and Maintenance

- Use existing operations, monitoring and maintenance resources (e.g. GCT call center, GCDOT CV data management portal)
- Leverage data curation plans for each data set to support Evaluation and disseminate open data to USDOT Open Data Portal

Evaluation

- Monitor Performance Management Dashboard
- Evaluating system performance

Technical Approach – Engagement

Stakeholders

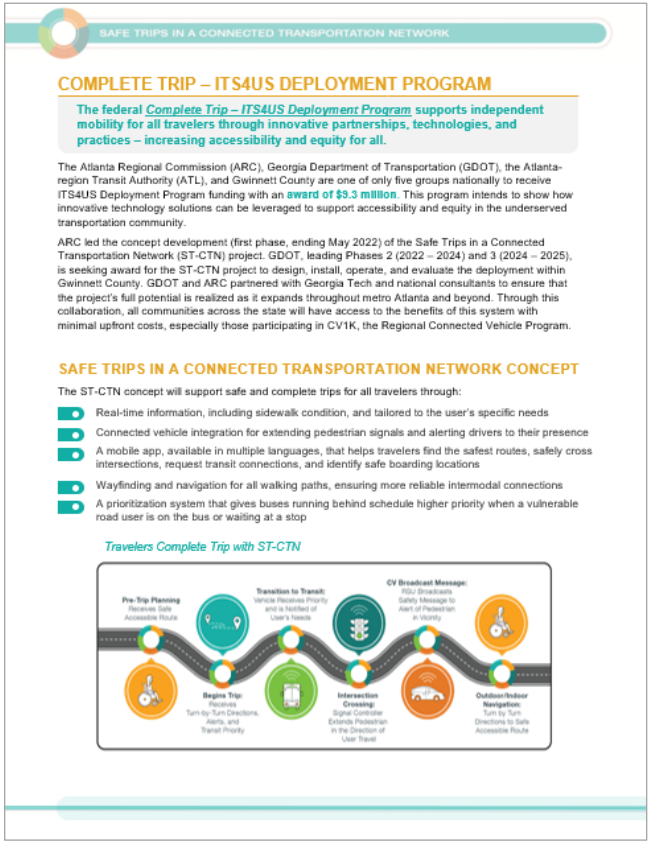
- ARC Aging & Independence Services
- Georgia Tech Office of Disability Services
- Gwinnett Place CID
- GA Department of Education
- MARTA Accessibility Council Board
- Southeastrans
- Vocational Rehab Gwinnett County Schools
- Bobby Dodd Institute
- The Exceptional Foundation of Atlanta
- Spectrum Autism 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
- Center for Pan Asian Community Services

Technical Approach – Outreach

- Deployment Website
- Social Media
- On-Site Events
- Public Meetings
- Local Community Outreach
- Conferences
- Webinars
- Industry Journals



SAFE TRIPS IN A CONNECTED TRANSPORTATION NETWORK

COMPLETE TRIP – ITS4US DEPLOYMENT PROGRAM

The federal *Complete Trip – ITS4US Deployment Program* supports independent mobility for all travelers through innovative partnerships, technologies, and practices – increasing accessibility and equity for all.

The Atlanta Regional Commission (ARC), Georgia Department of Transportation (GDOT), the Atlanta-region Transit Authority (ATL), and Gwinnett County are one of only five groups nationally to receive ITS4US Deployment Program funding with an **award of $9.3 million**. This program intends to show how innovative technology solutions can be leveraged to support accessibility and equity in the underserved transportation community.

ARC led the concept development (first phase, ending May 2022) of the Safe Trips in a Connected Transportation Network (ST-CTN) project. GDOT, leading Phases 2 (2022 – 2024) and 3 (2024 – 2025), is seeking award for the ST-CTN project to design, install, operate, and evaluate the deployment within Gwinnett County. GDOT and ARC partnered with Georgia Tech and national consultants to ensure that the project's full potential is realized as it expands throughout metro Atlanta and beyond. Through this collaboration, all communities across the state will have access to the benefits of this system with minimal upfront costs, especially those participating in CV1K, the Regional Connected Vehicle Program.

SAFE TRIPS IN A CONNECTED TRANSPORTATION NETWORK CONCEPT

The ST-CTN concept will support safe and complete trips for all travelers through:

- Real-time information, including sidewalk condition, and tailored to the user's specific needs
- Connected vehicle integration for extending pedestrian signals and alerting drivers to their presence
- A mobile app, available in multiple languages, that helps travelers find the safest routes, safely cross intersections, request transit connections, and identify safe boarding locations
- Wayfinding and navigation for all walking paths, ensuring more reliable intermodal connections
- A prioritization system that gives buses running behind schedule higher priority when a vulnerable road user is on the bus or waiting at a stop

Travelers Complete Trip with ST-CTN

Example ST-CTN 'One-Pager'

Performance Measures – Complete Trip

CT-PM-1: Enhance Traveler Experience

- Users' ability to program and complete trips using the ST-CTN
- Users' perception of ST-CTN performance for route and system accessibility; system functions and features; complete trip experience
- Improvement in travel time and number of accessible destinations
- Adoption rate of the ST-CTN system

CT-PM-2: Improve Accessibility with ST-CTN

- Users' ability to access employment and other types of trips
- Users' perception of quality-of-life improvement

CT-PM-3: Enhance Complete Trip Pedestrian Safety

- ST-CTN system impact to user perception of safety

CT-PM-4: Enhance Fixed-Route Transit

- Changes in fixed route ridership due to the ST-CTN system

Performance Measures – Connected Vehicles

CV-PM-1: Enhance Safety and Awareness with Connected Vehicles

- ST-CTN system impact to user perception of safety
- Number of completed crossings within walk time
- Enabled connected vehicle speeds during PSM broadcast messages

CV-PM-2: Improve Transit Reliability

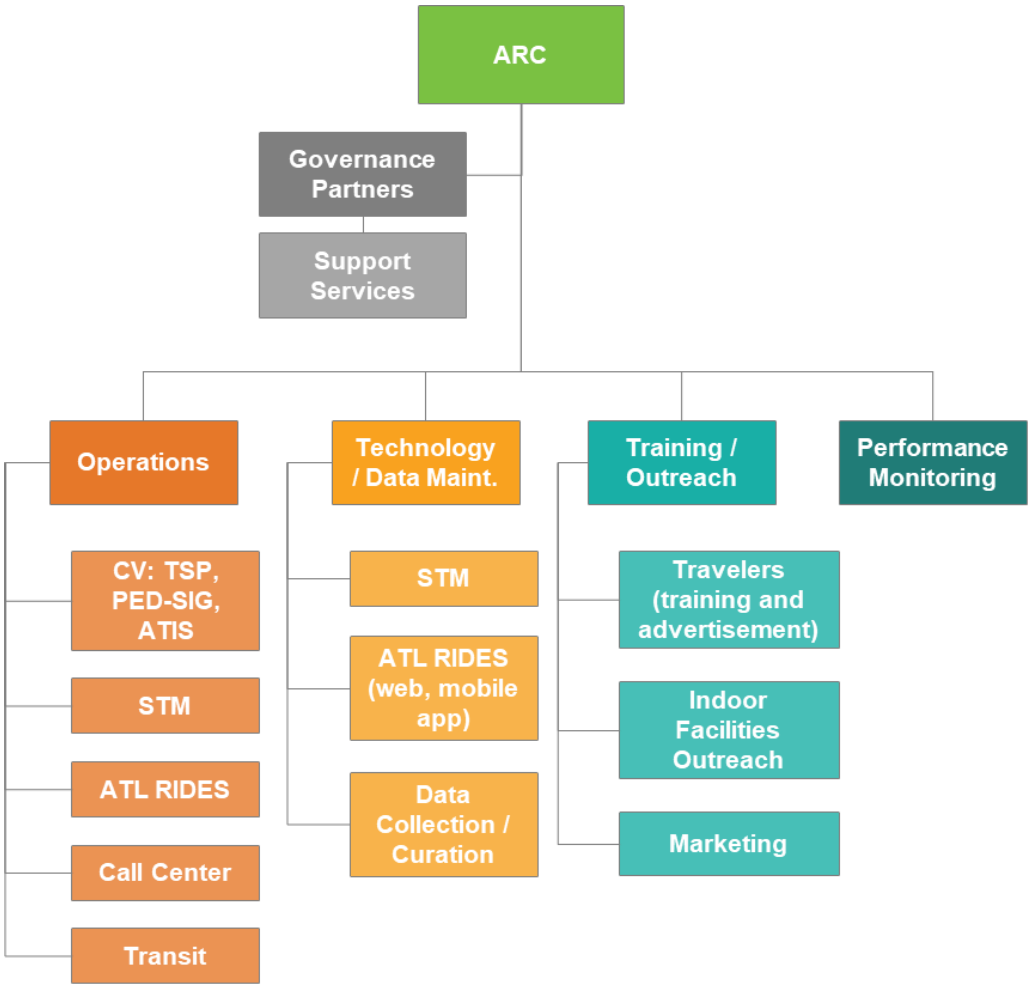
- Transit schedule adherence
- User wait times
- Missed connections

Participant Eligibility and Recruitment

- Ability for the participant to provide legal consent and for the individual to have taken the end user trainings
- Leverage existing programs by working with organizations that serve communities of interest

Subgroup	Participant Minimum Target
3A – End User Trainers	40
3B – End Users with Mobility, Vision, and/or Hearing Disability	100
3C – End Users with Cognitive/Developmental Disability	50
3D – Older Adults	100
3E – End Users with Limited English Proficiency	100
3F – End Users with Low Income	100
3G – General End Users	100

Technical Approach – Post Deployment



- Governance Partners
  - GDOT
  - ATL
  - Gwinnett County
- ARC will procure support services to maintain and operate navigation application
- All owner operators will maintain their respective subsystems
  - ARC can provide financial aid through the Transportation Improvement Program (TIP), if necessary.

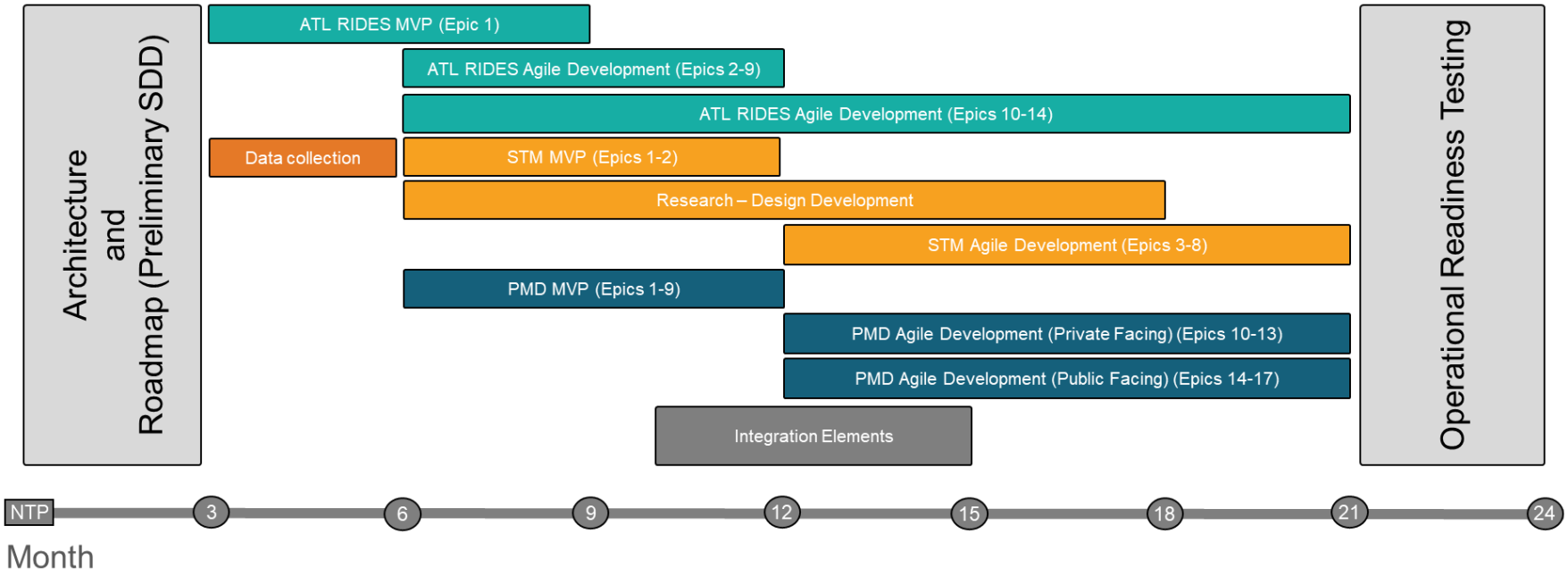
Phase 2 and Phase 3 Deployment Schedule

Natalie Smusz-Mengelkoch, Deputy Project Manager

Phase 2 Schedule Overview

ACTIVITY	P2 Y1 Q1	P2 Y1 Q2	P2 Y1 Q3	P2 Y1 Q4	P2 Y2 Q1	P2 Y2 Q2	P2 Y2 Q3	P2 Y2 Q4
TASK A - PROJECT MANAGEMENT								
Kickoff, Monthly Reporting, Financial Administration, Project Coordination								
TASK B - SYSTEMS ARCHITECTURE AND DESIGN								
SAD Walkthrough								
Systems Architecture Document (SAD) (Final)								
Systems Design Document (SDD) (Preliminary)								
SDD Walkthrough								
Systems Design Document (SDD) (Draft)								
Systems Design Document (SDD) (Final)								
TASK C - DATA MANAGEMENT PLANNING								
Data Privacy Plan, Phase 2 Data Management Plan (DMP)								
TASK D - ACQUISITION AND INSTALLATION PLANNING								
Comprehensive Acquisition Plan (CAP), Comprehensive Installation Plan (CIP)								
TASK E - SOFTWARE DEVELOPMENT AND INTEGRATION								
See Roadmap Summary								
TASK F - PARTICIPANT AND STAFF TRAINING								
Initial Training Implementation Schedule (TIS), Training Materials, HUA Confirmation								
TASK G - SYSTEM TEST PLANNING								
System Test Plan, Operational Readiness Plan (ORP)								
TASK H - INSTALLATION AND OPERATIONAL READINESS TESTING								
Initial Installation and Operational Readiness Schedule (IORS), Operational Readiness Demonstrations								
TASK I - MAINTENANCE AND OPERATIONS PLANNING								
Comprehensive Maintenance and Operations Plan (CMOP)								
TASK J - STAKEHOLDER OUTREACH								
Phase 2 Outreach Plan, Outreach Implementation Schedule (OIS), Outreach Materials								
TASK K - PERFORMANCE MEASUREMENT AND INDEPENDENT EVALUATION SUPPORT								
Initial Performance Measurement and Evaluation Support Schedule (PMESS), Phase 2 PMESP, Performance Measurement Materials per PMESP and PMESS								
TASK L - PARTICIPATION IN STANDARDS DEVELOPMENT								
SDO Meetings/Activities, SDO-Specific Technical Memoranda								

Phase 2 Schedule – Roadmap



Phase 3 Schedule Overview

ACTIVITY	P3 Y1 Q1	P3 Y1 Q2	P3 Y1 Q3	P3 Y1 Q4	P3 Y2 Q1	P3 Y2 Q2
TASK A - PROJECT MANAGEMENT						
Monthly Reporting, Financial Administration, Project Coordination						
TASK B - SYSTEMS OPERATIONS AND MAINTENANCE						
Initial System Operations and Maintenance Schedule (SOMS), Monthly SOMS Update						
TASK C - STAKEHOLDER OUTREACH						
Initial Outreach Implementation Schedule (OIS), Outreach Materials, Operational Capability Showcase Plan and Summary						
TASK D - PERFORMANCE MEASUREMENT AND INDEPENDENT EVALUATION SUPPORT						
Updated PMESS with Progress/Risk Summary, Site Performance Measurement Dashboard, Updated PMESP, Updated DMP, Public-Facing Data						
TASK E - POST-DEPLOYMENT TRANSITION PLANNING						
Comprehensive Transition Plan (CTP)						
TASK F - PARTICIPATION IN STANDARDS DEVELOPMENT						
SDO Meetings/Activities, SDO-Specific Technical Memoranda						

Phase 3 At-Scale Milestones

MILESTONE	% COMPLETE
MILESTONE #1 – PHASE 3 NTP (GO LIVE)	
Begin 18-month deployment.	GO LIVE
ATL RIDES subsystem functionality supporting customer account management.	100%
Customer accounts (250 users recruited prior to Phase 3).	25%
STM impedance values for trip routing and execution.	100%
Functionality and equipment installed in GCT vehicles to support TSP and connection protection.	100%
Sidewalk data collected in the project boundaries.	100%
Facilities outfitted with sensors for indoor navigation.	80%
Operations and maintenance processes (including software updates).	100%
PMD data ingestion, curation, and analytical processes. (except full verification of operational data collection and analysis processes)	80%
MILESTONE #2 – PHASE 3 NTP+60 DAYS	
Facilities outfitted with sensors for indoor navigation.	100%
PMD with verification of operational data collection and analysis processes.	100%
Customer accounts (500 users).	50%
MILESTONE #3 – PHASE 3 NTP+180 DAYS	
Customer accounts (1,000 users).	100%

Phase 2 and Phase 3 Cost Estimate

Natalie Smusz-Mengelkoch, Deputy Project Manager
Kofi Wakhisi, Project Manager

Cost Overview

- **Collaborative.** Costs were developed collaboratively by the ST-CTN project team through a series of technical team worksessions and focused component meetings.
- **Comprehensive.** Reflects all necessary labor and expenses to successfully deliver of Phases 2 and 3.
- **Cost Analysis Performed.** All project team member costs and assumptions were reviewed and approved by the team to ensure costs are calculated accurately, fair, reasonable, and complete.
- **Consensus.** All ST-CTN team members reviewed and supported costs prior to submittal.

Cost Overview

ST-CTN Milestone	Total Budget	Cost Share	Federal Share
Phase 2 - Design, Build, and Test			
2A - Program Management	$ 609,916		
2B - System Architecture and Design	$ 547,432		
2C - Data Management Planning	$ 196,212		
2D - Acquisition and Installation Planning	$ 770,982		
2E - Software Development and Integration	$ 4,112,787		
2F - Participant and Staff Training	$ 188,853		
2G - System Test Planning	$ 315,320		
2H - Installation and Operational Readiness Testing	$ 234,283		
2I - Maintenance and Operations Planning	$ 66,825		
2J - Stakeholder Outreach	$ 406,642		
2K - Performance Measurement and Independent Evaluation Support	$ 118,439		
2L - Participation in Standards Development	$ 65,513		
Phase 2 Budget	**$ 7,633,202**	**$ 1,526,640**	**$ 6,106,562**
Phase 3 - Operate, Maintain, and Evaluate			
3A - Program Management	$ 489,338		
3B - System Operations and Maintenance	$ 131,034		
3C - Stakeholder Outreach	$ 738,945		
3D - Performance Measurement and Independent Evaluation Support	$ 253,051		
3E - Post-Deployment Transition Planning	$ 751,219		
3F - Participation in Standards Development	$ 67,212		
Phase 3 Budget	**$ 2,430,798**	**$ 486,160**	**$ 1,944,639**
Phase 2 and 3 Budget Summary	**$ 10,064,000**	**$ 2,012,800**	**$ 8,051,200**

ST-CTN – Maximum Potential

Demonstrated Commitment and Competency through Phase 1

- Committed Project Team and Stakeholders
- Strong relationships with advocacy groups
- Concept development allowed us to define the best solution

Technical Expertise and Experience

- Technical experts engaged throughout concept development
- Separated the research and development so research enhances product
- Post-deployment transition anticipated to be smooth (total lower cost of ownership) due to leveraging existing initiatives and governance structures

Exceeding Expectations

- ST-CTN project aligns perfectly with Complete Trip – ITS4US Deployment vision
- Lead transition to GDOT will facilitate replication and scalability
- Significant interest in expansion from other communities

Stakeholder Q&A

- Please keep your phone muted
- Please use chat box 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

Karen Timpone, FHWA Office of Safety
Site COR
Karen.Timpone@dot.gov

Kofi Wakhisi, ARC
Phase 1 Project Manager
Kwakhisi@atlantaregional.org

Visit the Complete Trip - ITS4US Deployment Program Website and FAQs:
https://its.dot.gov/its4us/
https://www.its.dot.gov/its4us/its4us_faq.htm