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Georgia Department of Transportation

Connected Vehicle Technology in Georgia

GDOT V2X Program

- About GDOT
- CV and program overview
- Applications and pilots
- Roadmap for the future
- Funding

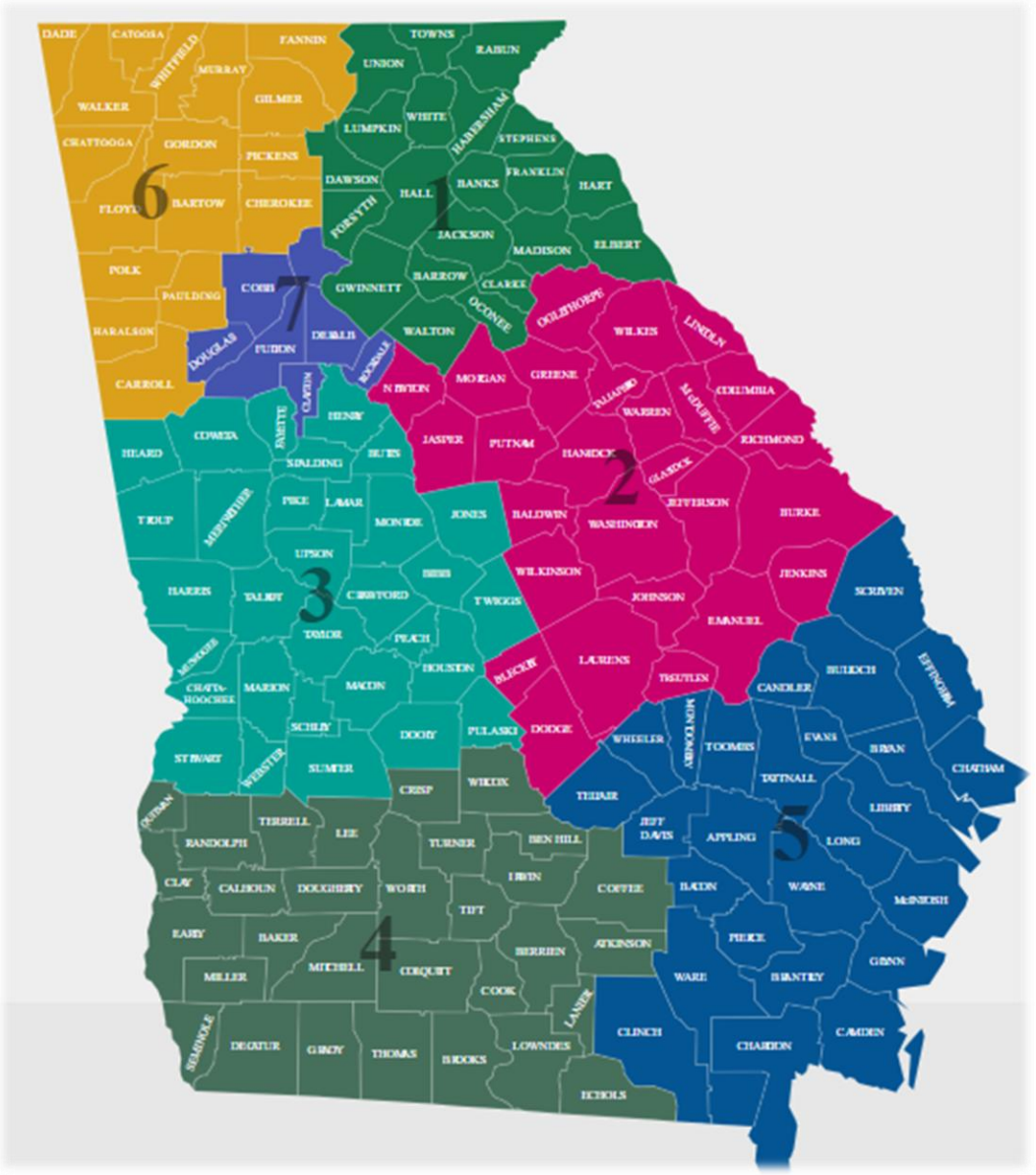
About GDOT

Centralized: HQ in Atlanta

- Offices, and over them Divisions, make up HQ
- 7 Districts

Goals

- Innovation
- Safety
- Sustainability
- Mobility



Office of Traffic Operations

- Interstates, Incident Management, and ITS
- Arterials and Traffic Signals
- Safety, Operational Improvement, and Permitting
- Connected and Autonomous Vehicles
- And a little bit of everything else…

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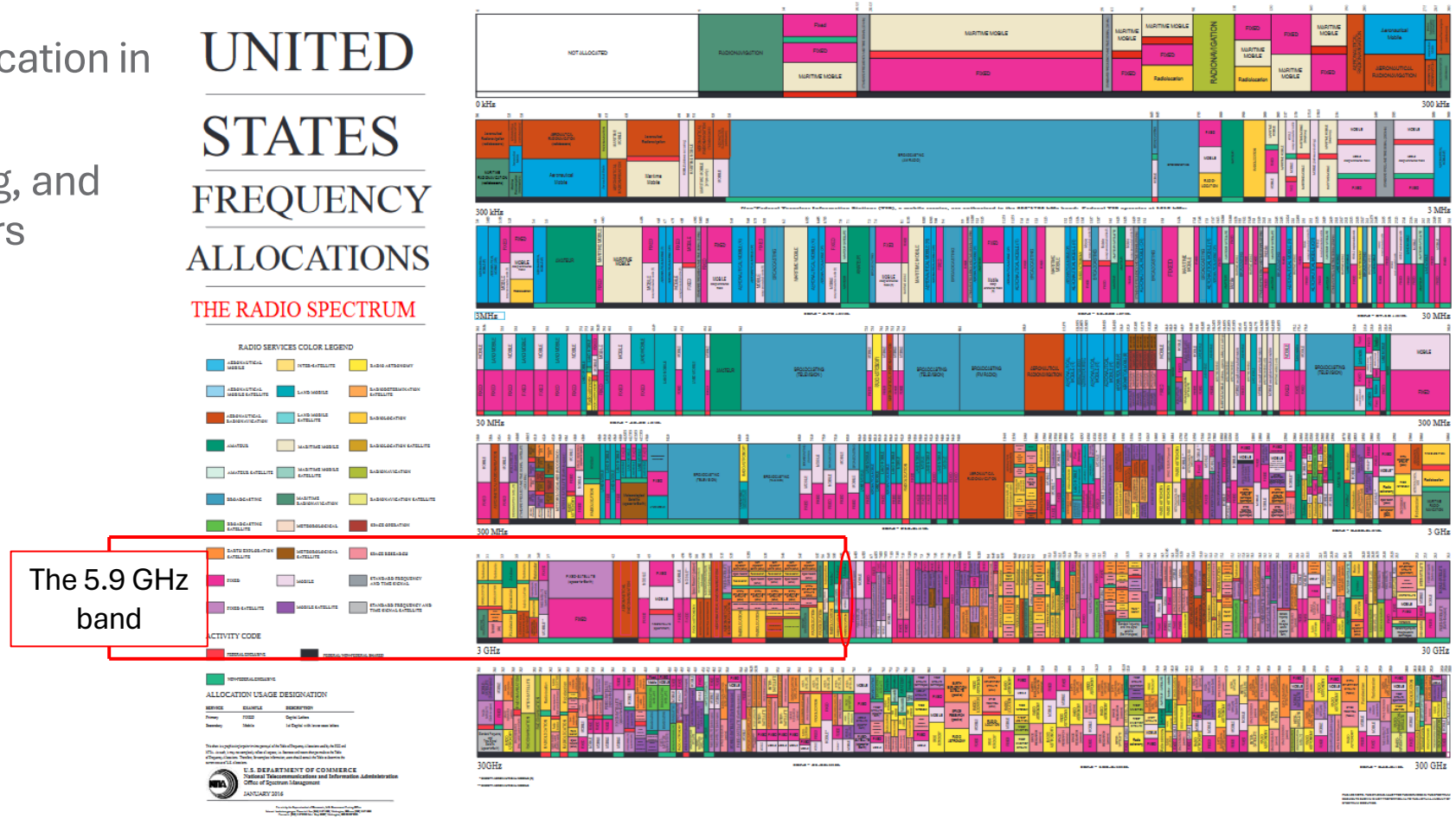
Connected Vehicles (CV) and Program Overview

Connected Vehicles

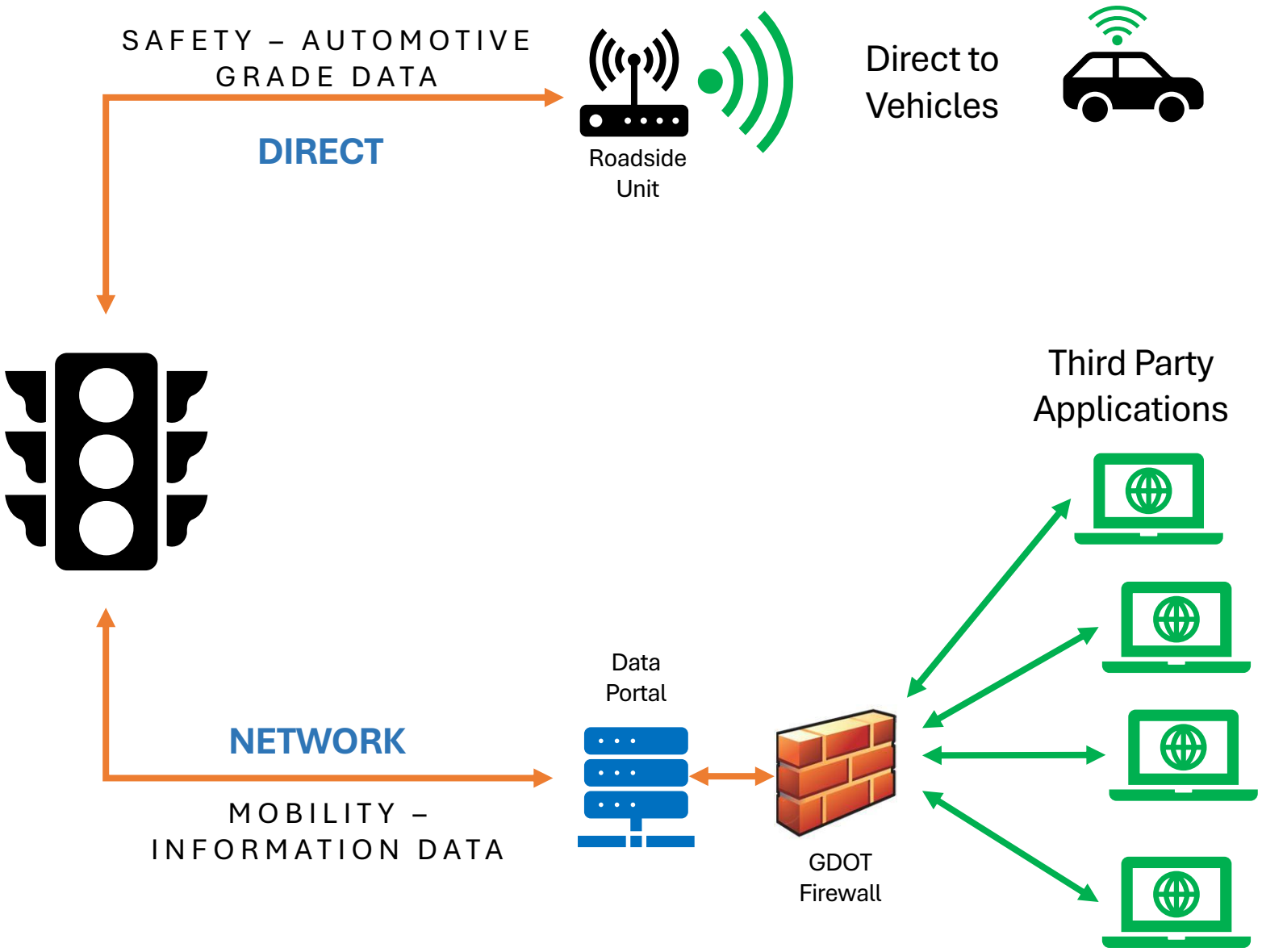
What are we talking about?

- Congressionally directed allocation in 1999
- Testing, validation, rulemaking, and lobbying over the past 20 years
- Where are we today?



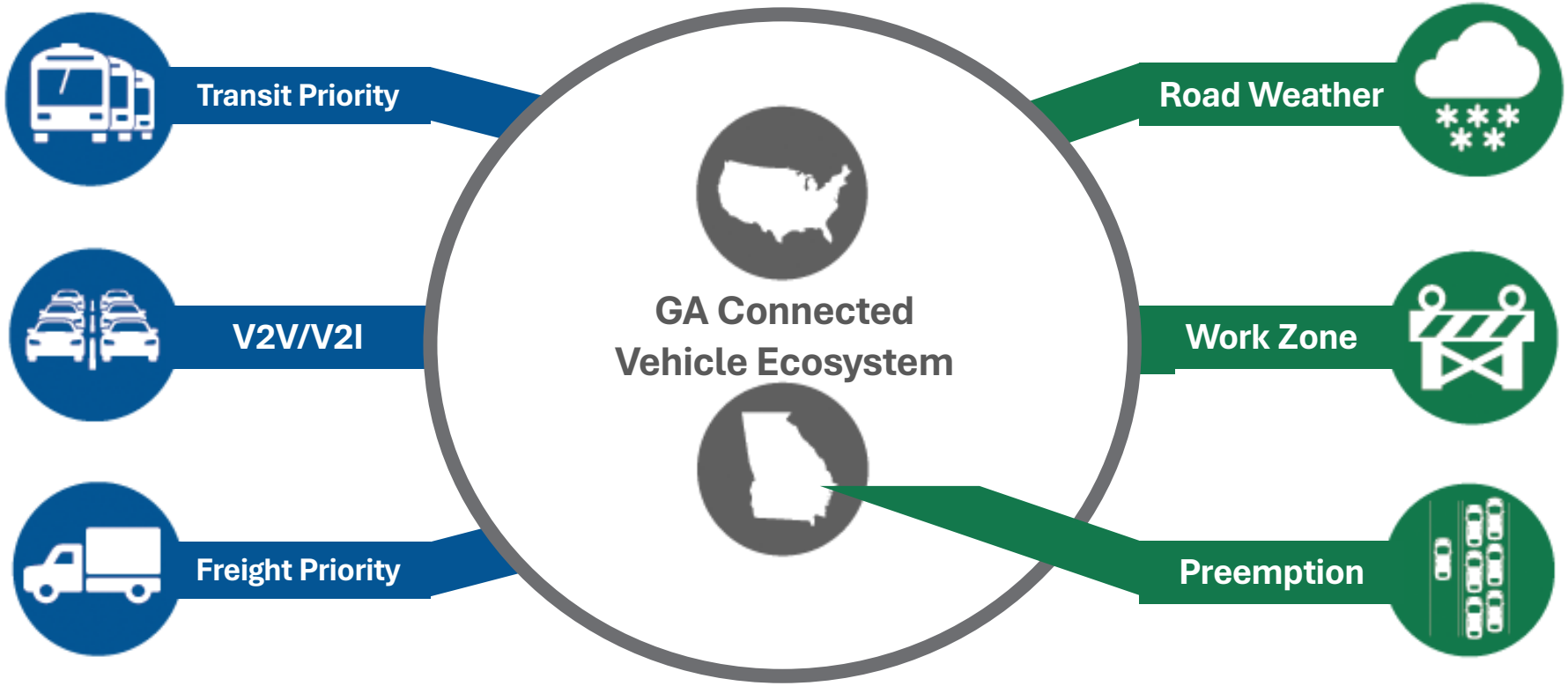
GDOT V2X Framework

- Safety and mobility applications
  - Achieved through multiple means
  - Application drives the method the data arrives to a user
- Close attention needed:
  - Data quality
  - Security, and
  - Accuracy
- Especially for data used for safety applications



Georgia Connected Vehicle Ecosystem

- Enabling infrastructure for broad applications
- Designed around interoperability
- GDOT funded and supported
- Conformity to national standards
- Open access through 5.9 GHz Safety Spectrum



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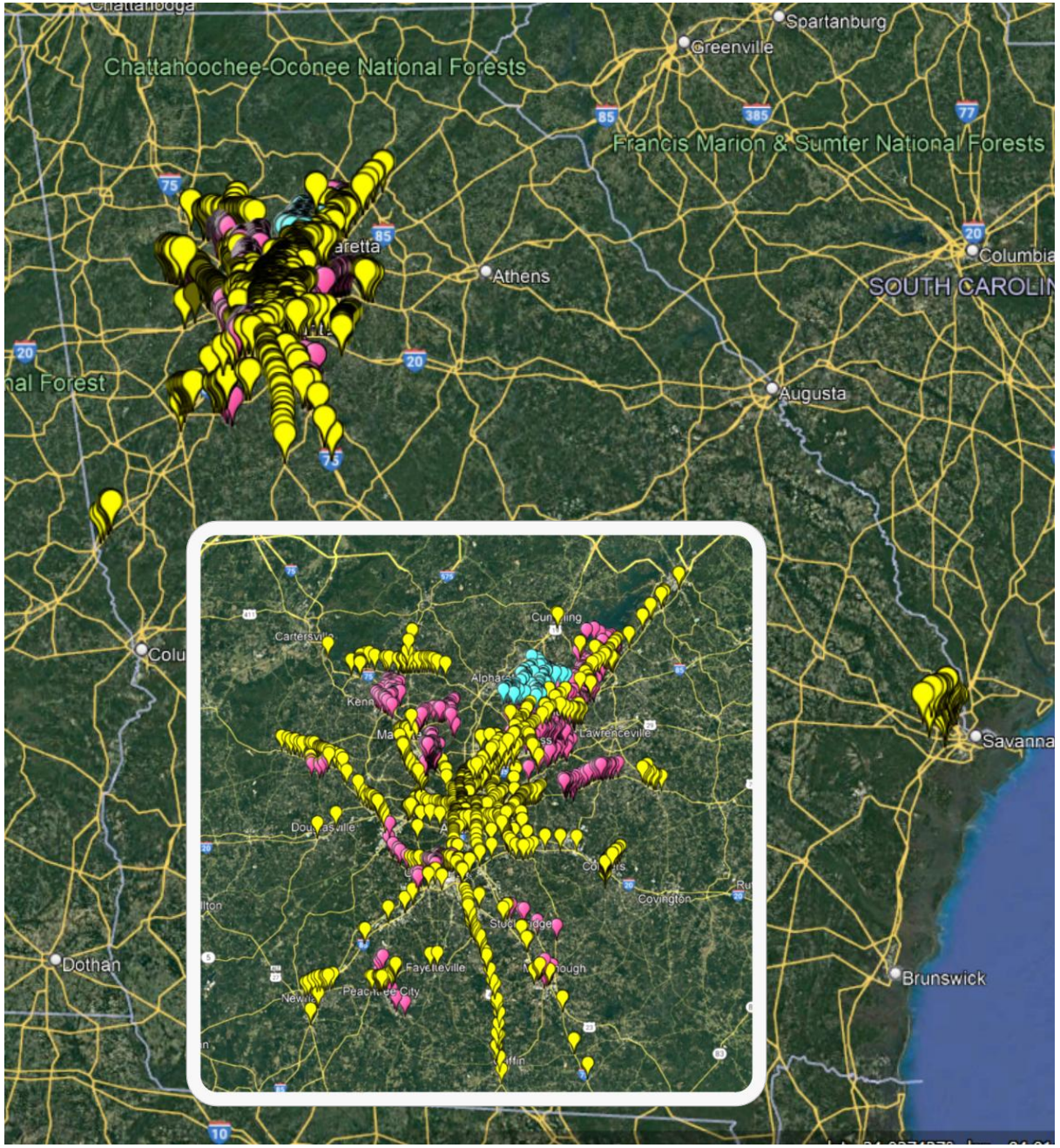
Applications and Pilot Deployments

GDOT RSU Deployments

Where we are today

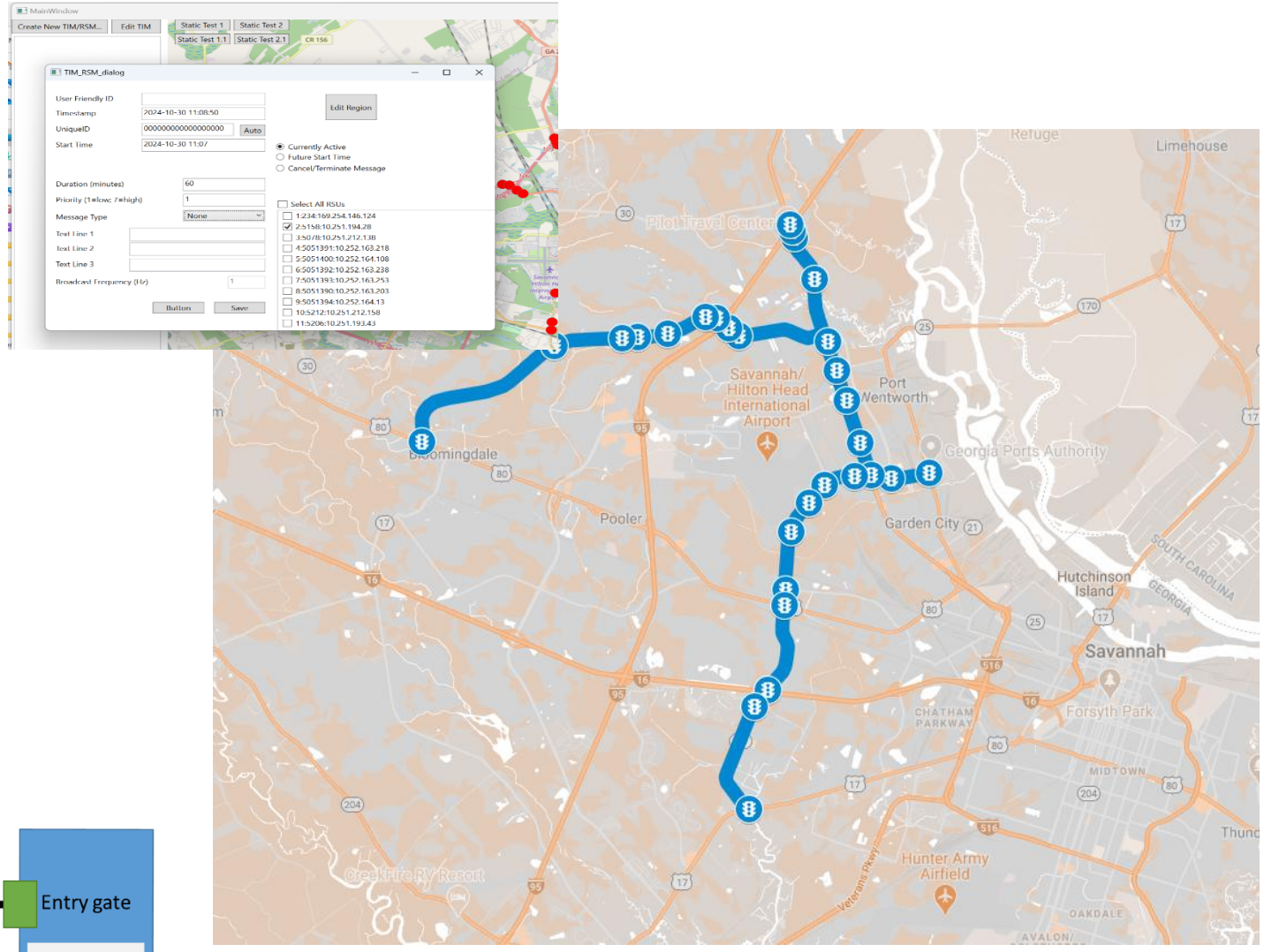
- Over 2,200 RSUs deployed
- Focusing on public sector fleets and intersection-based applications:
  - Freight Signal Priority
  - Transit Signal Priority
  - Emergency Vehicle Preemption
- Development of safety applications for equipped vehicles.

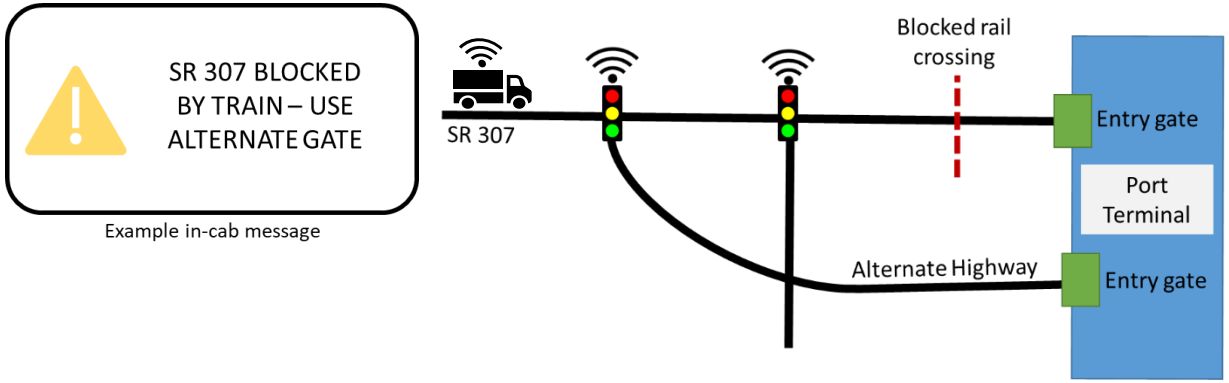


GDOT V2X Pilots:

GPA Freight Signal Priority

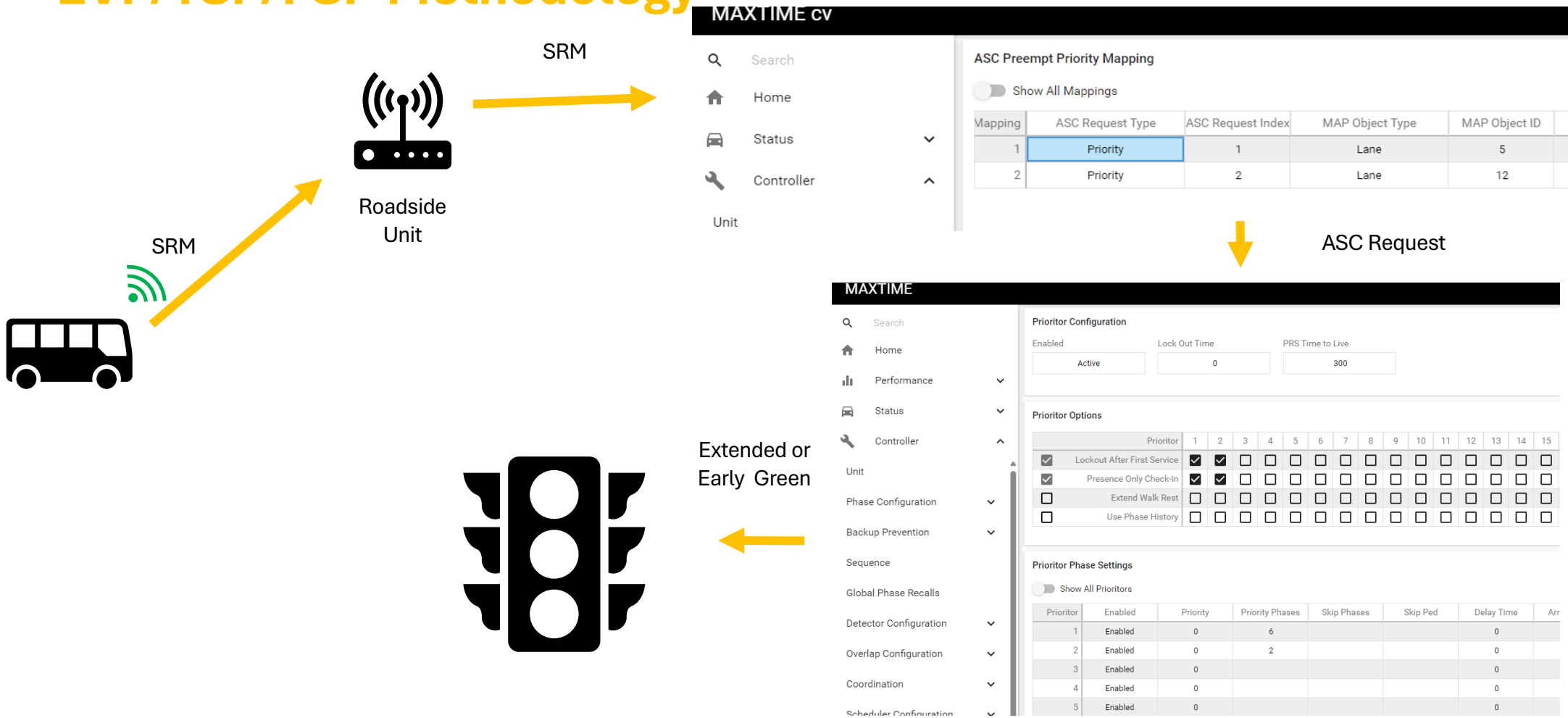
- Installation of RSUs at signalized intersections around port ingress/egress routes
- Broadcasting SPaT and MAP, traveler information messages for road conditions
- Demonstration of freight signal priority
- Outfitting fleet vehicles (installing OBU's)





GDOT V2X Pilots:

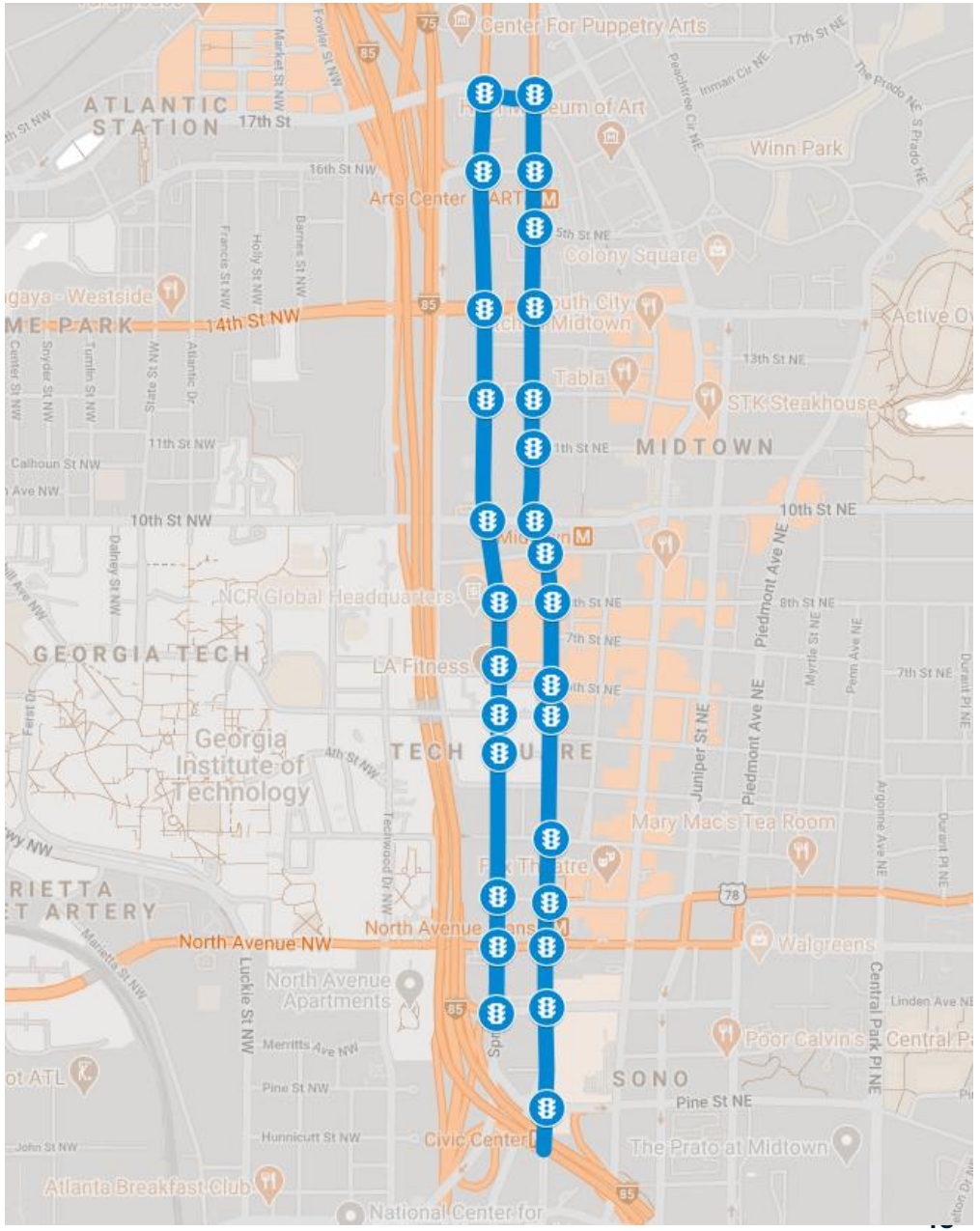
EVP/TSP/FSP Methodology



GDOT V2X Pilots:

ATL Transit Signal Priority Pilot

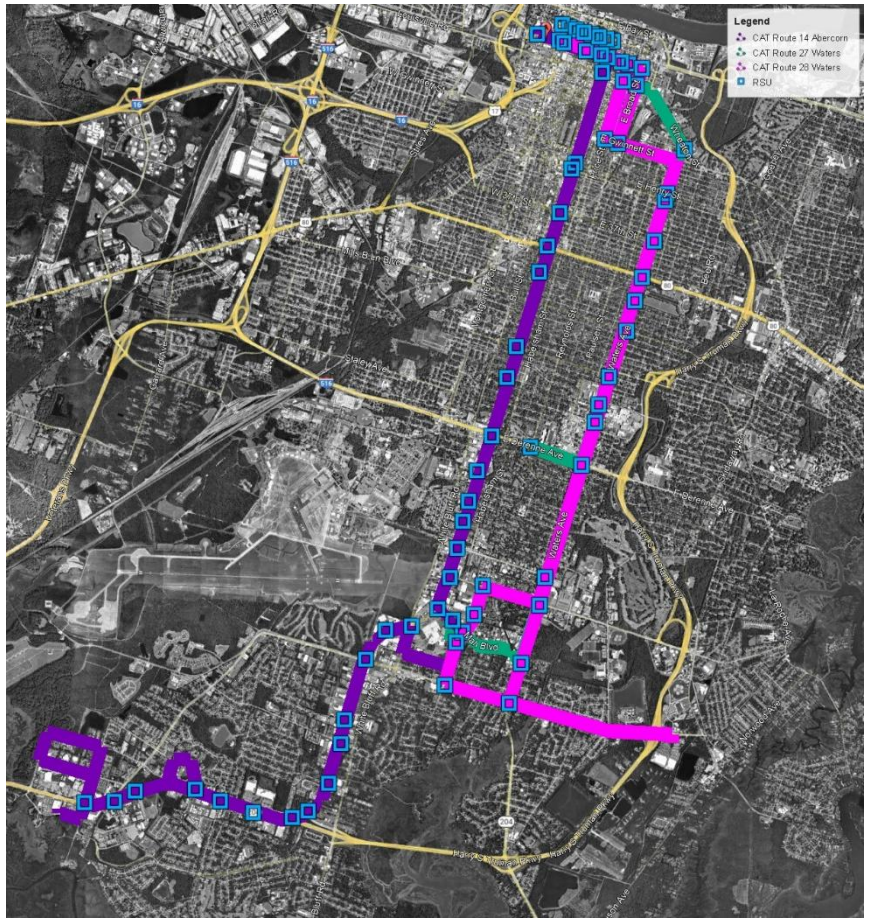
- Installation of RSUs at signalized intersections in midtown Atlanta
- Broadcasting SPaT and MAP, traveler information messages for road conditions
- Demonstration and implementation of freight signal priority
- Outfitting fleet vehicles to demonstrate applications and benefit



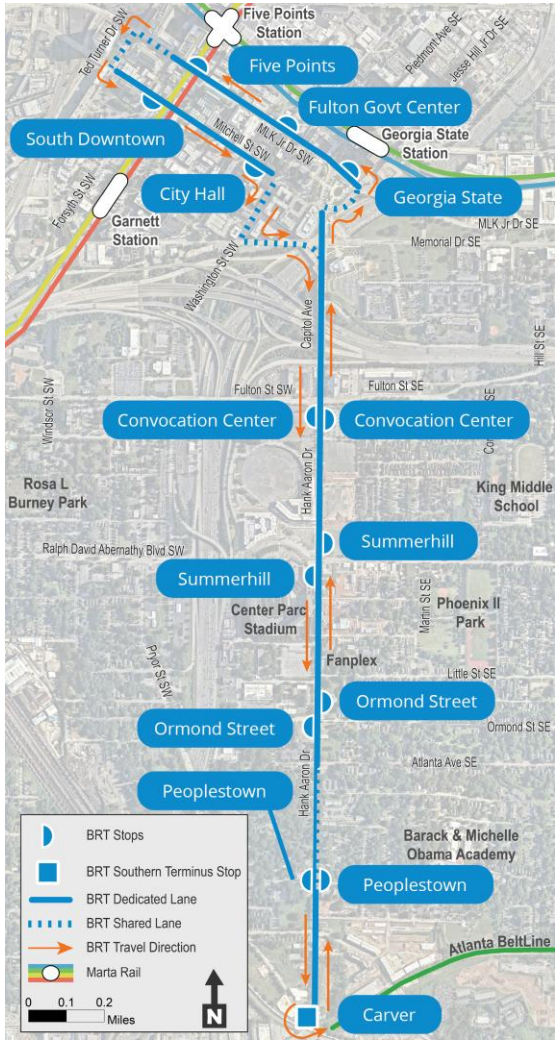
GDOT V2X Applications:

Transit Signal Priority Expansion

Savannah



Atlanta MARTA BRT



GDOT V2X Pilots:

The Ray on I-85

- LTE-CV2X and DSRC RSUs deployed along 18 mile stretch of I-85
- Partnership with the Ray C. Anderson Foundation, Panasonic, and FHWA
- Demonstration of interstate safety applications
- Data platform (Cirrus) for BSM capture and analyzation
- 4 GDOT Vehicles and 10 Kia Georgia Vehicles equipped with LTE-CV2X OBUs
- Future partnerships and intersection deployments

GDOT V2X Pilots: USDOT ATCMTD Grant #2

Emergency Vehicle Preemption Using Connected Vehicle Technology

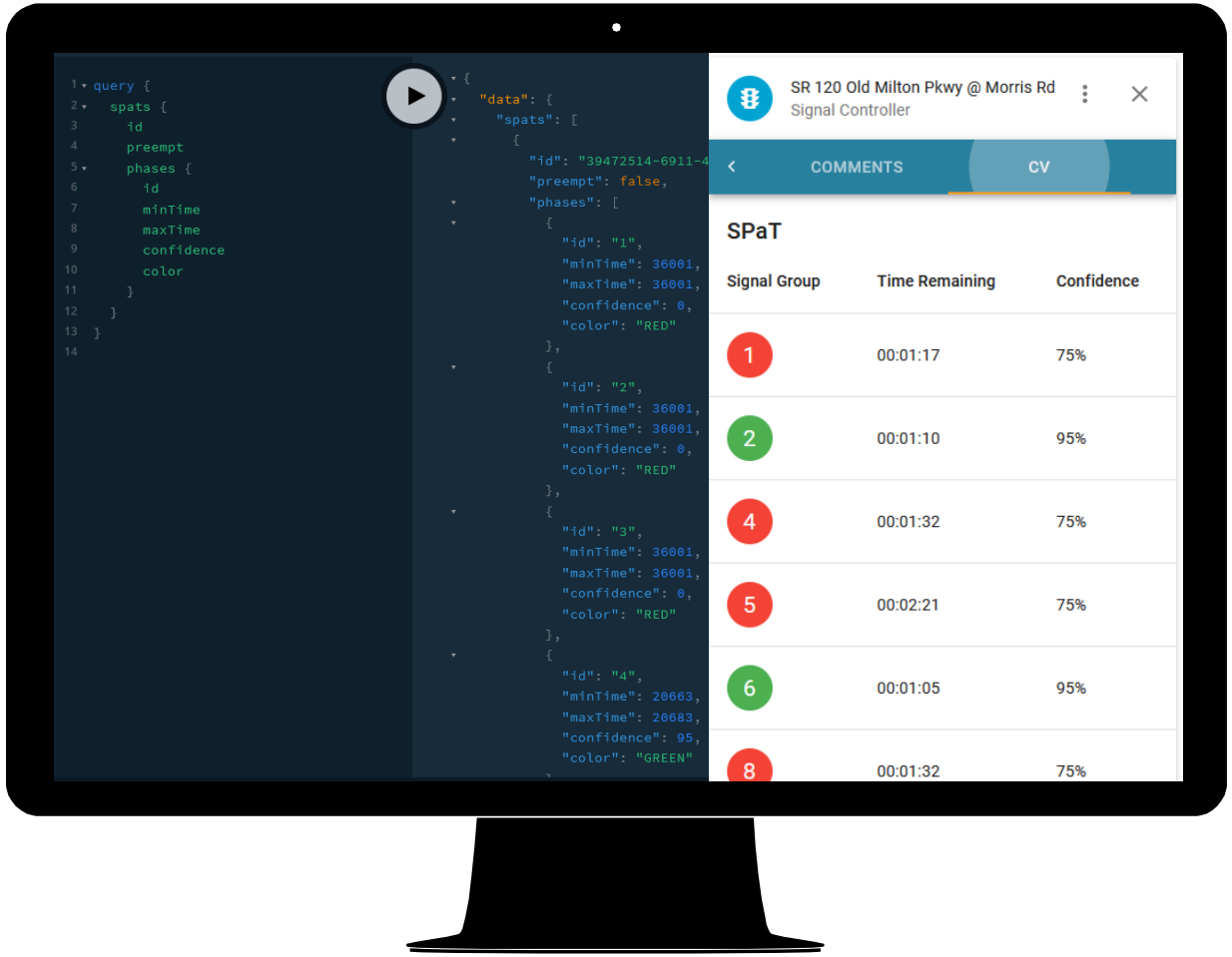
- Leverage ITS, traffic signals, CV, incident mgt investments
- Safety benefits through CV integrated with traffic signals
- Reduce HERO incident response time
- Reduce ambulance transport time to Emory Midtown
- Decrease pedestrian crashes near Georgia Tech
- Facilitate arterial traffic flow and reduce delay
- Measure and report system performance measures

SigOps
Powered by GDOT

Open Data Access

Open data portals to traffic signal and ATMS data for third parties to develop and launch mobility platforms.

Open data platforms – rely on medium agnostic systems that can adapt to market and regulatory trends.



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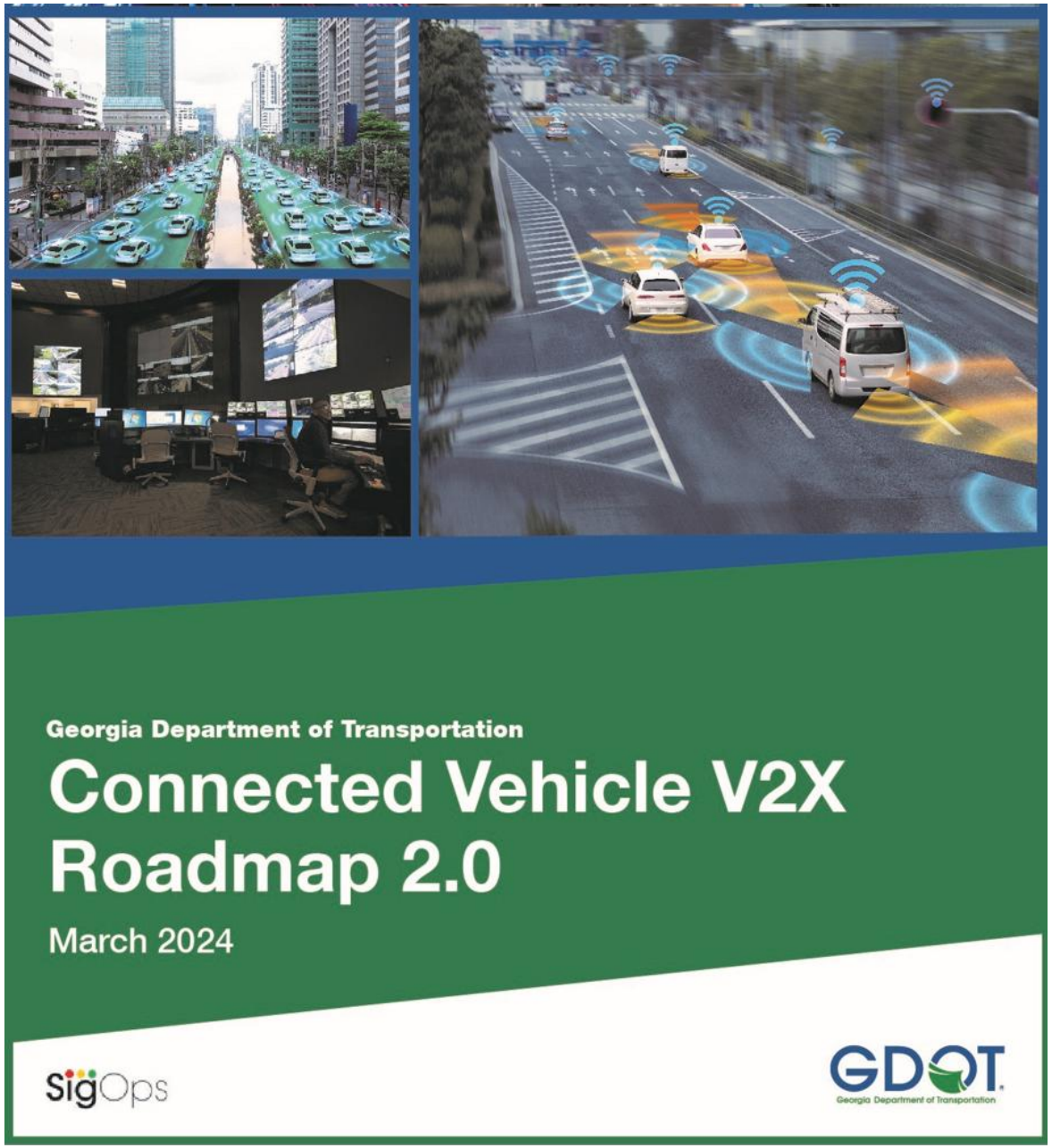
The Roadmap to the Future

GDOT V2X – Roadmap

- Funding through FY 23 – FY 33 to deploy, operate, maintain, and innovate a statewide V2X ecosystem.
  - $75M over 10 years

- Equipping regional transit vehicles with on-board units to support transit signal priority.
  - Over 1200 vehicles in metro Atlanta

- Participating in national efforts to enhance and validate in-vehicle safety applications, including Connected Intersections.
- Deploying RSUs at every signalized intersection on state routes in Georgia (6,500 locations).
- Deploying RSUs along interstate corridors for full V2X coverage of every route.



GDOT V2X – Moving Forward

- Delivering safety and mobility to public sector fleets
- Being prepared for private vehicles ready to use infrastructure vehicles
- Regulatory Certainty at last!
- Infrastructure needs to be ready
- How to manage a statewide system?
  - Assets
  - Data
  - Cybersecurity

GDOT V2X – Building the Digital Interstates

Two distinct but related elements

A series of Design-Build projects is constructing:

- Statewide Broadband Network within limited access ROW dedicated to GDOT traffic operations (GDOT Network) with
- Additional capacity for commercialization (Commercial Network)

An Operate-Maintain-Commercialize (OMC) contractor is undertaking**:**

- Maintenance of the GDOT Network (dark fiber only) constructed via the Design-Build projects
- Operations, maintenance, and commercialization of the Commercial Network

GDOT Network:

- GDOT will have 2 conduits for its operations
- 1 conduit filled with 288 strands of fiber
- 1empty for future use

Commercialization Network:

- OMC will have five conduits
- 1 conduit will have 288 strands of fiber
- 4 empty micro-ducts / conduits are available for commercialization services

GDOT V2X – Building the Digital Interstates

Five (5) Design-Build Projects:

- Design-Build #1: Under Construction
- Design-Build #2: Under Construction
- Design-Build #3: Procurement Underway
- Design-Build #4: Project Programmed (FY 2028)
- Design-Build #5: Project Programmed (FY 2028)

Project Scope:

- **Communication infrastructure**:
  - 7 Conduits
  - 2 288-Count Fiber Optic Cables
- **ITS devices**:
  - C-V2X RSUs,
  - CCTVs and other ITS devices

Project Goals:

- Provide infrastructure necessary to support CV and broadband initiatives
- Provide additional ITS coverage to support Interstate safety and operations

GDOT V2X – Building the Digital Interstates

Operate, Maintain, and Commercialize

- **P3**
- **25-year** base contract with two 5-year option periods
- **Procurement timeline** structured to get OMC Contractor onboarded in time for asset acceptance of DB #1 by GDOT

GDOT Network	
	Maintenance of dark fiber only, paid by GDOT
	Device maintenance not included (remains with current ITS maintenance contract)
Commercial Network	
	O&M and commercialization services for Design-Builds
	Opportunity to add additional laterals and install/use poles for commercialization
	Net revenues for the Project flow back to the Department
	Compliance with FCC requirements
	Maintenance and Operation of Commercial network, not paid by GDOT

Data Analytics

Building the Digital Interstates

- Every device and sensor a tool for safety and mobility
  - ITS devices
  - Traffic signals
  - Connected vehicle infrastructure
- AI and ML needed to make sense of data
- Infrastructure build-out for tomorrow's data needs

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Funding

Federal Funding

Grants aren't the (only) answer

- Lump Sums
  - A pot of funding to be used to accomplish multiple similar projects
  - Each project is environmentally cleared, though most likely in the same manner (such as PCE)
  - Simplifies the Federal planning process
- Annual Elements
  - A pot of funding to be used to accomplish a single endeavor, though that might consist of multiple discrete procurements
  - The entire effort is cleared, environmentally

Federal Funding Examples

Program	Source	Notes
ITS Maintenance	STBG	Statewide ITS device maintenance
CV/ITS Design/Build #1 & #2	NHPP	Statewide Interstate CV, ITS infrastructure
HERO/Incident Management	NHPP	Atlanta incident management
CHAMP	STBG	Statewide incident management
511/Navigator	NHPP	Statewide ATMS software
TRIP	NHPP	Quick major incident clearance
Signals Lump	STBG	
RTOP Annual	Carbon, NHPP, STBG	
ITS Lump	State	ITS Infrastructure Projects
Signal Maintenance	STBG	
Safety Lump	HSIP	Safety projects

V2X Federal Funding

From the IIJA/BIL

ural disasters.".

SEC. 11107. FEDERAL SHARE PAYABLE.

Section 120 of title 23, United States Code, is amended—

(1) in subsection (c)—

(A) in paragraph (1), in the first sentence, by inserting "vehicle-to-infrastructure communication equipment," after "breakaway utility poles,";

(B) in subparagraph (3)(B)—

(i) in clause (v), by striking "or" at the end;

From the US Code

Federal share than the Federal share determined under the preceding sentences of this subsection.

(c) INCREASED FEDERAL SHARE.-

(1) CERTAIN SAFETY PROJECTS.-The Federal share payable on account of any project for traffic control signalization, maintaining minimum levels of retroreflectivity of highway signs or pavement markings, traffic circles (also known as "roundabouts"), safety rest areas, pavement marking, shoulder and centerline rumble strips and stripes, commuter carpooling and vanpooling, rail-highway crossing closure, or installation of traffic signs, traffic lights, guardrails, impact attenuators, concrete barrier endtreatments, breakaway utility poles, vehicle-to-infrastructure communication equipment, or priority control systems for emergency vehicles or transit vehicles at signalized intersections may amount to 100 percent of the cost of construction of such projects; except that not more than 10 percent of all sums apportioned for all the Federal-aid programs for any fiscal year in accordance with section 104 of this title shall be used under this subsection. In this subsection, the term "safety rest area" means an

THANK

YOU

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