ATLANTA-REGION TRANSIT LINK AUTHORITY

REGIONAL TECHNOLOGY COMMITTEE

November 5, 2020

Regional Technology Committee Meeting
Thursday, November 5, 2020
Proposed Agenda

I. Call to Order – Andy Macke, Chair
II. Approval of the Meeting Minutes for September 18, 2020
III. Approval of the Agenda for November 5, 2020
IV. ATL RIDES & 3rd Party Partnership Update – Daniel Walls
V. Transit Signal Priority (TSP) Primer – Daniel Walls
VI. Adjourn

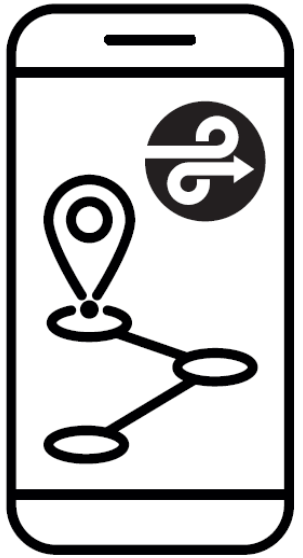
ATLANTA-REGION TRANSIT LINK AUTHORITY

ATL RIDES PROJECT UPDATE

Daniel Walls – Transit Funding Administrator

November 5, 2020

PROJECT UPDATE

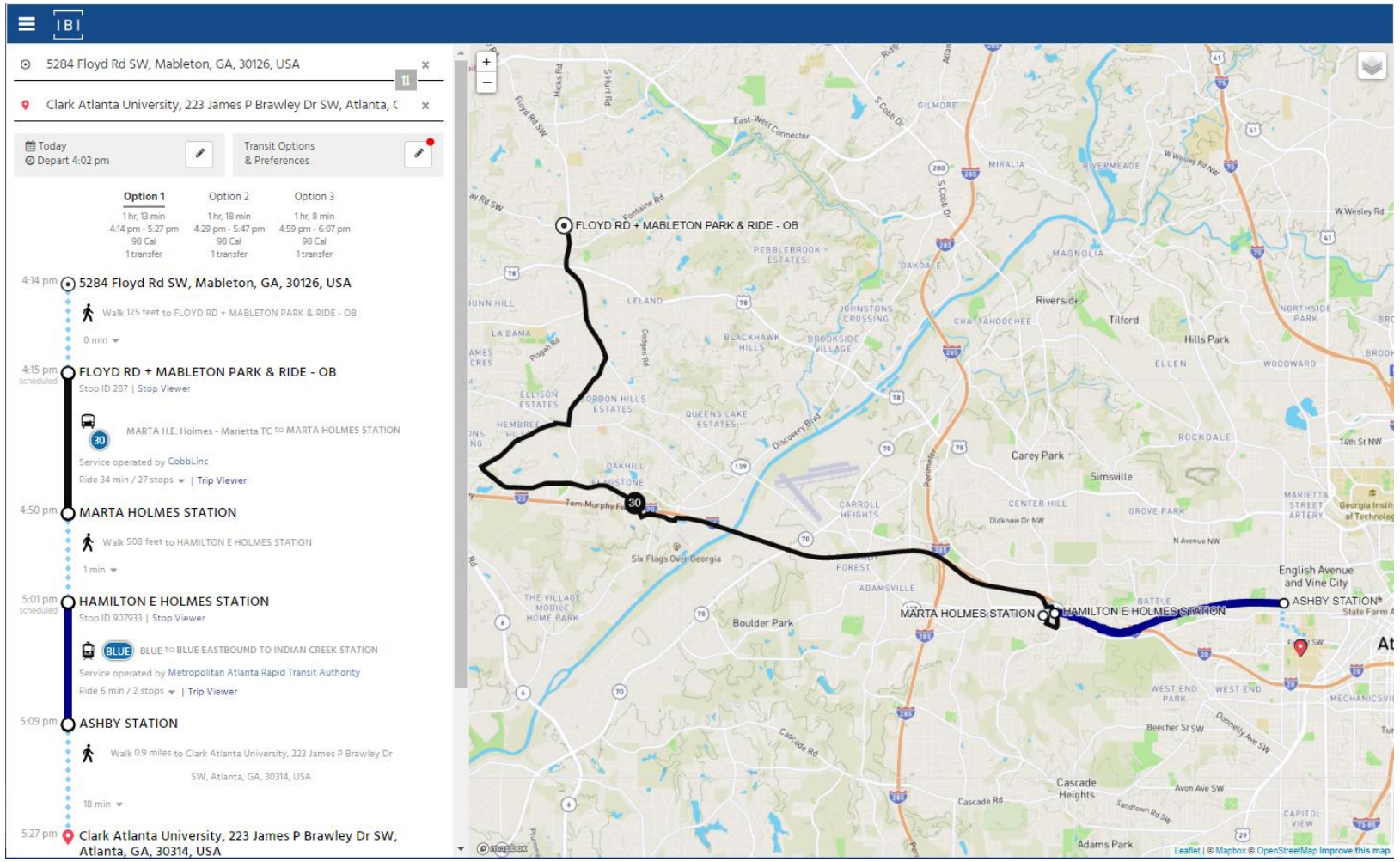


- Project deliverable status:
  - o Project Management Plan – Complete
  - o Project Charter – Draft Complete
  - o Data Management Plan – Under development, Final due to FTA 11/17

- Initial ATL RIDES backend development system is active
- Conceptual Design ramping up this month
- Ongoing coordination and collaboration with FTA

INITIAL ATL RIDES SYSTEM

- Serves as development environment
- Allows for partners to:
  - Review/test new features as they are developed
  - Spend time getting a feel for the system
  - Review routing



PROJECT WORKING GROUPS

First working group meetings to be held mid-November

Design & Development Working Groups

- Open Trip Planner (OTP) Working Group
- Mobile App Working Group
- Connected Data Platform Working Group

Demonstration Working Groups

- User Testing and Evaluation Working Group
- Regional Outreach & Education Working Group

ONGOING AND NEXT STEPS

- Partners improving GTFS feeds
- Testing of the initial ATL RIDES system
- Finalize Data Management Plan
- Working group meetings and conceptual design

Questions?

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Transit Signal Priority

ATL Regional Technology Committee

Daniel Walls

November 5, 2020

OVERVIEW

- ►What is Transit Signal Priority (TSP)?
- ►How does TSP work?
- ►Benefits and Considerations
- ►TSP in the ATL Region
- ►TSP in the Near- and Mid-term Future

5 out of 9 Bond List Projects and 27% of ARTP Projects Include TSP Components

WHAT IS TSP[1]?

- Transit Signal Priority (TSP) provides special treatment to transit vehicles at signalized intersections. TSP serves to help **make transit service more reliable, faster, and more cost-effective**
- A TSP system includes three components:
    1. Architecture
        - Hardware, software, and communication components
    2. Business Rules
        - Rules and decisions for TSP requests and response (e.g., only a late bus can request priority)
    3. Parameters
        - Specific values to a business rule (e.g., how far behind schedules must a bus be to be granted priority?)

[1] *National Academies of Sciences, Engineering, and Medicine 2020. Transit Signal Priority: Current State of the Practice. Washington, DC: The National Academies Press. https://doi.org/10.17226/25816.*

TYPES OF TSP

Decentralized Systems

All decisions are made at the intersection.

Individual buses communicate directly with upcoming traffic signals and prioritization decisions are made locally at the intersection.

Technology consideration:

- ✓ Signal equipment
- ✓ On-board equipment
- ✓ Central database (optional)

Centralized Systems

Signal priority decisions are made at a centralized transit/traffic management location.

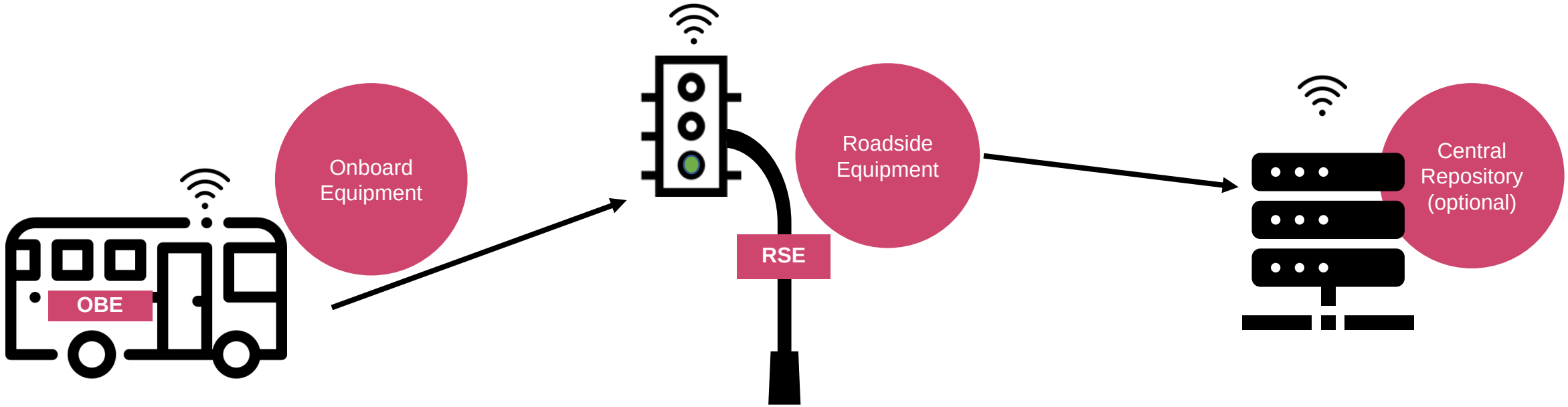
Bus locations are monitored by a centralized management system that submits prioritization requests to the traffic signals as needed.

Technology consideration:

- ✓ On-board automated vehicle location (usually standard)
- ✓ Central management system

HOW DECENTRALIZED TSP SYSTEMS WORK

- A **bus's onboard equipment (OBE) sends a request** for a green light to the upcoming traffic signal
- The **roadside equipment (RSE) processes the request** and determines **if it meets the system's business rules and parameters**
- The traffic signal will either **extend the length of a green light**, or **shorten the length of a red light**
- **Request can be logged** for future analysis by optional central repository



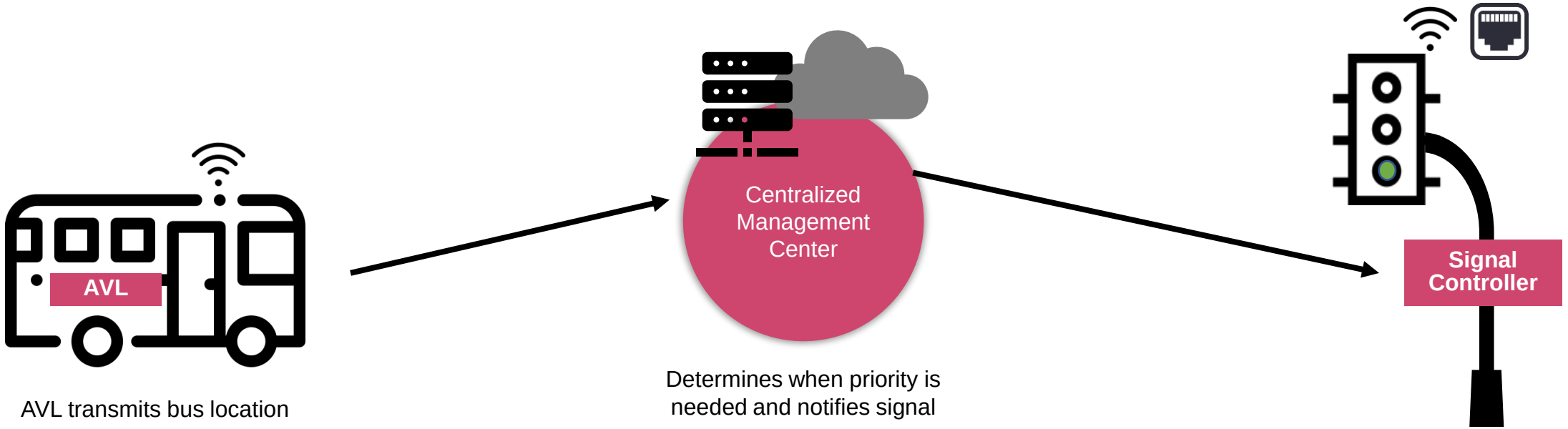
Request contains:
Signal Request Message (SRM)
Basic Safety Message (BSM)

Response contains:
Signal Status Message (SSM)
Basic Safety Message (BSM)

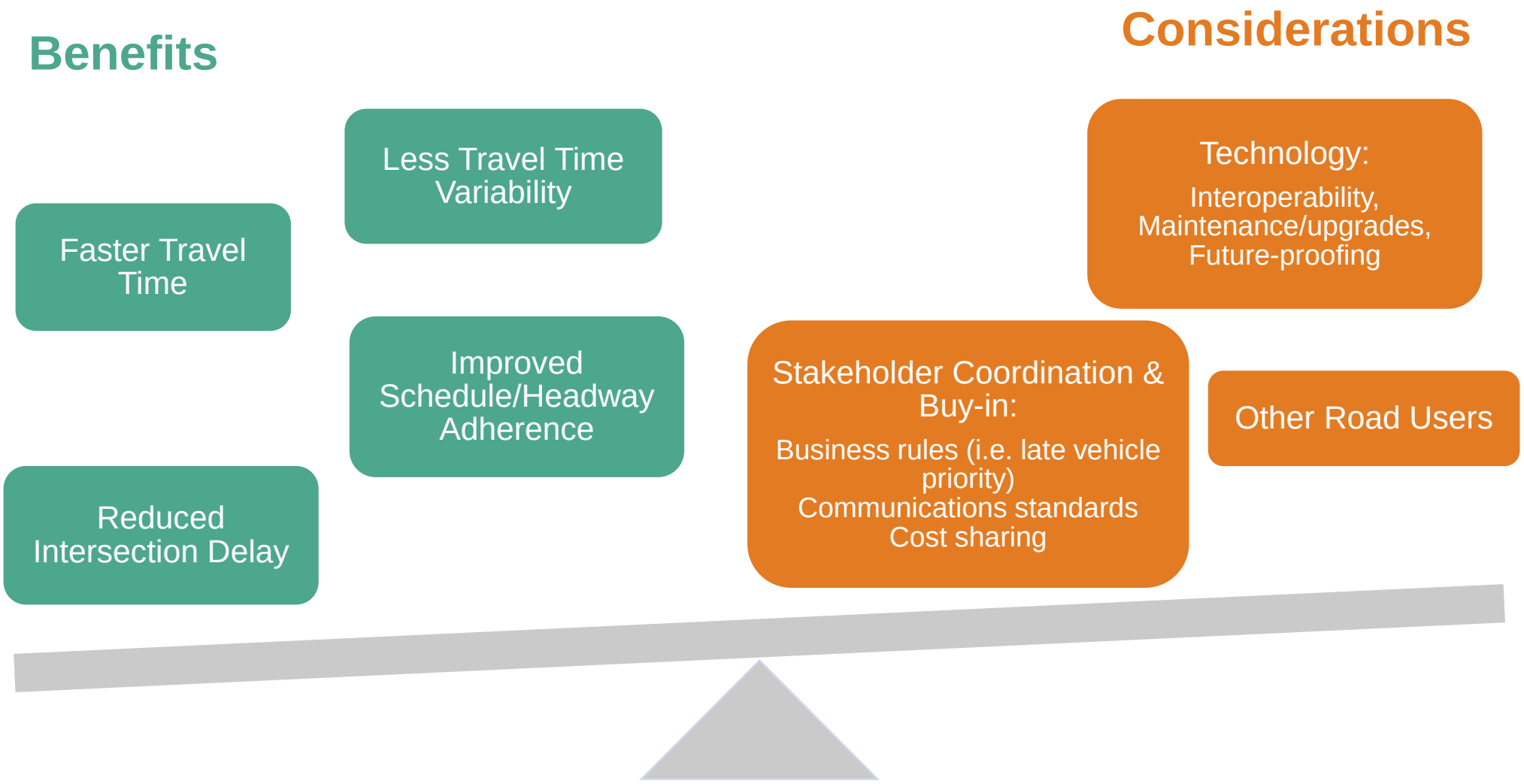
Response logged in backend system

HOW CENTRALIZED TSP SYSTEMS WORK

- Automatic vehicle locators **(AVL) continuously transmit bus locations** to the centralized transit/traffic management center
- Centralized management center **monitors bus fleet locations, determines when priority is needed, and if it meets the system's business rules and parameters**
- The centralized management center **directs the appropriate traffic signal** to either **extend the length of a green light**, or **shorten the length of a red light**
- **Requests are logged** in the centralized management center for future analysis



POTENTIAL BENEFITS AND CONSIDERATIONS



STATE OF PLAY IN THE REGION - ARTP

Operator	Effort	Timeline
CobbLinc	Town Center CID to Marietta to Cumberland CID	6-Year
GCT	Rapid Bus Routes: 200, 201, 202, 203, 204, 205, Rapid Bus Corridors: 207, 208, 209 Bus Rapid Transit (BRT) Routes: 701, 702, 703, 704, 705 Fleet TSP Enhancements	Planned
MARTA	Capitol Ave/Summerhill BRT Cleveland Avenue Arterial Rapid Transit (ART) Clifton Corridor (Phase 1) Metropolitan Parkway ART Peachtree Road ART North Avenue BRT (Phase 1) Atlanta Streetcar East & West Extension Beltline Northeast, Southwest, Southeast Light Rail (LRT) Campbellton Road High Capacity Transit (HCT) Northside Drive BRT GA 400 BRT Clayton County Transit Initiative – BRT & Commuter Rail Transit (CRT)	6-Year Planned 20-Year Planned Planned Planned Planned 20-Year Planned 6-Year 6-Year 20-Year
Xpress	Route 431 Pilot in Downtown Atlanta	Under Development

2020 ARTP Projects

27% (66 of 245) of ARTP projects include TSP

10 Projects Sponsors

STATE OF PLAY IN THE REGION – DEPLOYMENTS

Entity	Effort	Status
ARC, GDOT, and multiple cities/counties/CIDs	CV1K – Planned deployment of CV technology inclusive of a TSP option across Atlanta Region	Planned
CobbLinc	1 signal active, seeking additional deployments	Active and Planned
City of Atlanta	200 intersections equipped with TSP capable RSUs, additional deployments planned	Active and Planned
GDOT	Deploying CV hardware with TSP software along RTOP corridors; 600 signals currently equipped with total of 1,600 signals in 2021. Developing preemption and priority guidance document	Active and Planned
MARTA	Streetcar TSP is active Three planned pilots/deployments, including Sandy Springs Route 5, North Ave, and Summerhill BRT	Active and Planned
Xpress	In coordination with GDOT, implementing TSP pilot on Route 431 in Downtown Atlanta	Under Development

GDOT Phase 2 Connected Vehicle Deployment Corridors

THE FUTURE OF TSP

Communications Uncertainty

Pending FCC rulemaking to repurpose Safety Spectrum

Technology Considerations

Balancing speed of delivery with safety, cyber security, interoperability, and other technologies

Transit Vehicle Technologies

Bus and equipment manufactures working to meet diverse technology demands

Standards

Transit Operators and partners need to coordinate for the development of regional standards

To future-proof regional TSP investments, regional collaboration is critical.

Thank you

Questions?

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