



City of Atlanta Smart City Deployments

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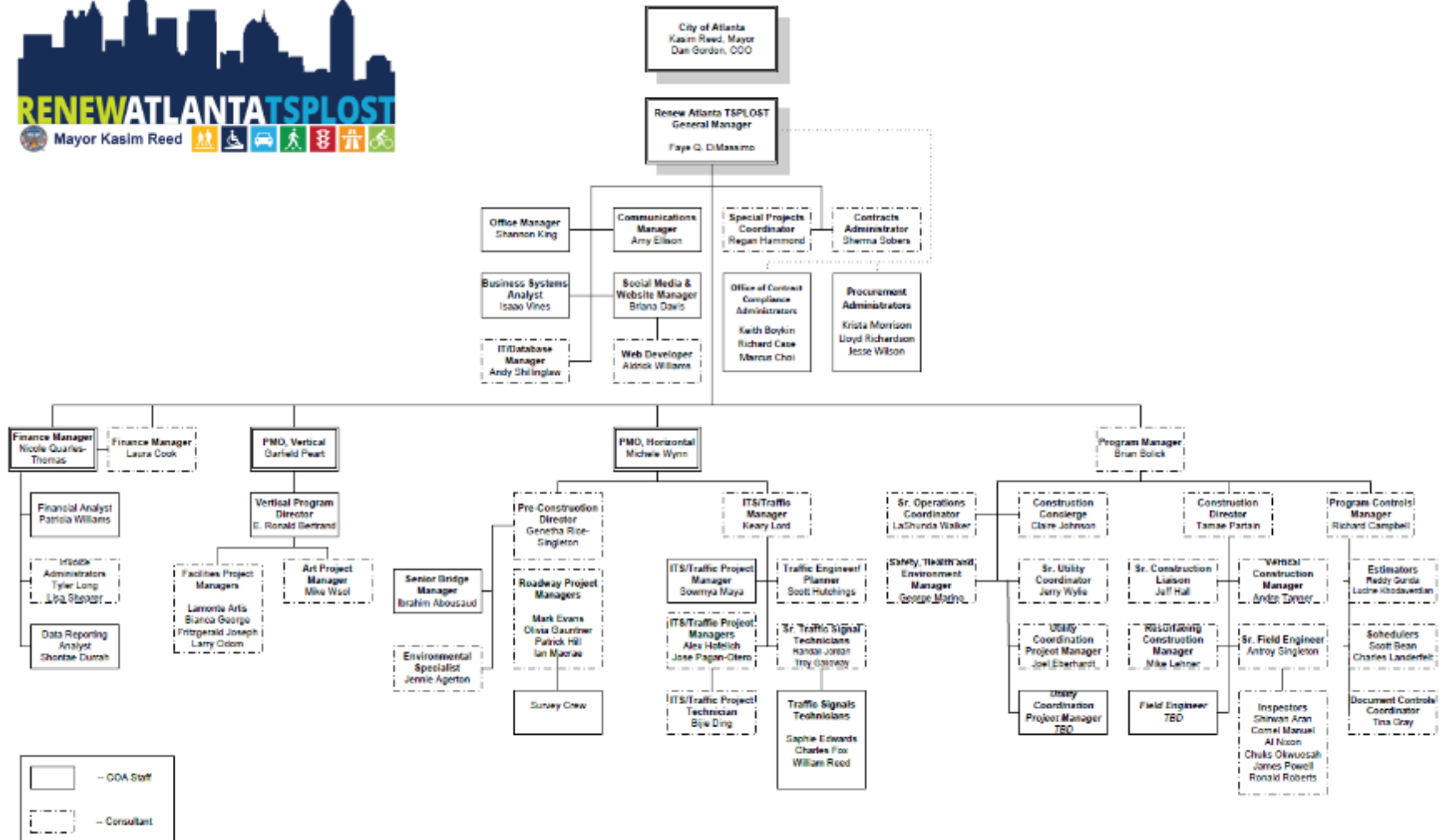
October 10, 2017

Renew Atlanta Bond/TSPLOST Program



- u Renew Atlanta Bond Program, \$363M Horizontal and Vertical Program
 - u **\$52M for Intelligent Transportation /Traffic Signal Systems (incl leveraged funds)**
- u TSPLOST, \$300M Program
 - u **Intelligent Transportation / Traffic Signal Systems \$40,000,000**
 - u Atlanta BeltLine \$65,900,000
 - u Complete Streets \$75,398,139
 - u Multi-Use Trails \$18,475,152
 - u Sidewalks and Streetscapes \$69,611,838
 - u Neighborhood Greenways \$4,107,013
 - u Street, Capacity & Vehicular Improvements \$37,797,500
 - u Project Scoping and Engineering Studies \$4,000,000
 - u Relay Bike Share \$3,000,000
 - u Partnership and Matching Funding \$40,000,000

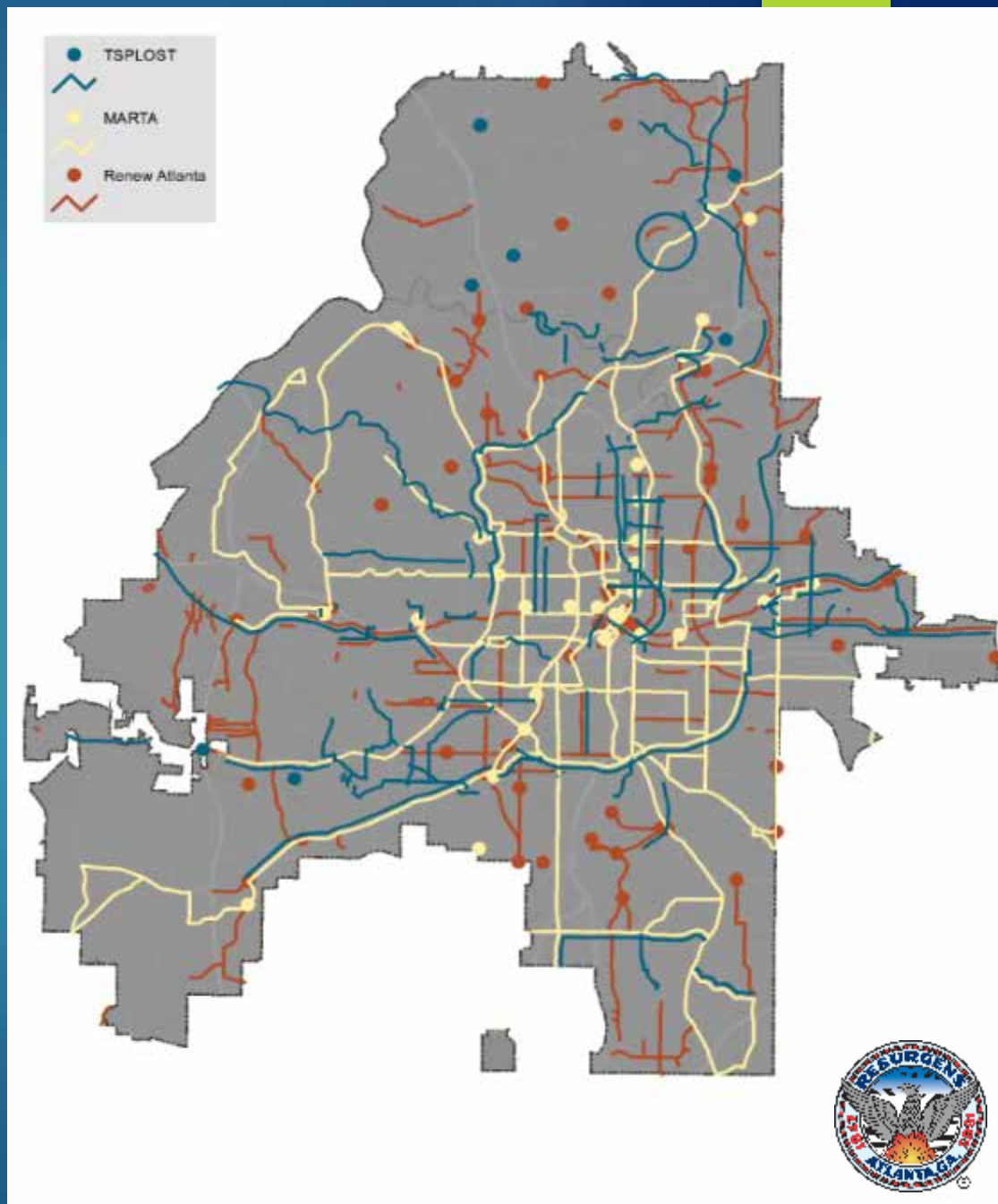
Renew Atlanta Bond/TSPLOST Program Team



A Story of Connectivity:

Renew Atlanta, MARTA & TSPLOST Projects

- u 94% of the City's population
- u 98% of the City's employment
- u Within 0.5 miles of a project



Atlanta's Smart City Initiative



- u Smart ATL
- u Renew Atlanta/TSPLOST role

The City of Atlanta has decided to focus our Smart City efforts on 5 core pillars: mobility, public safety, environment, city operations efficiency and public & business engagement.



Our strategy leverages data to make better informed decisions that impact our residents, visitors, and businesses. In utilizing a data-centric model, we are able to use descriptive, prescriptive, and predictive capabilities to radically improve city operational efficiency, service delivery, and transparency.



Atlanta's Smart City Initiative



We are a Smart City when we utilize and democratize data amongst ourselves and others to solve our urban challenges and improve overall quality of life

Customer

Benefit



City Departments

- Improve Operating Efficiency
- Improve Service Delivery



The Public

- Increase Transparency
- Enable Citizen-Centric Services



Businesses/Startups

- Foster Innovation
- Fuel Economic Growth



CIDs/Council

- Support Public Awareness
- Increase Public Engagement



Local Universities

- Boost Innovation
- Fuel Research & Development

Collectively Improve
Quality of Life in our City



Atlanta's Smart City transformation



u We are a Smart City when we collectively leverage a strategic and **data-centric approach** to:

- § Understand/solve urban challenges
- § Enhance citizen well-being
- § Foster economic growth
- § Enable the business community
- § Ensure equity
- § Strengthen resiliency

Data, transformed into actionable information, will fundamentally transform how we run our city, serve our citizens, and support the business community



Atlanta's Smart City Initiative



What can IoT (Internet of Things) do for a city?



Make visible, the invisible



"Sensing" the City



Tools to change the workings of the city



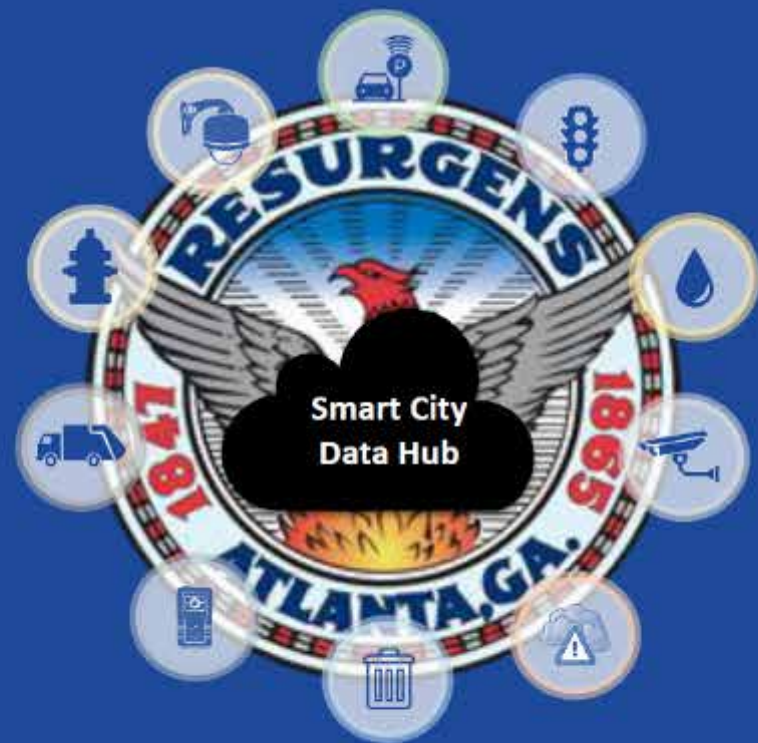
Strengthen open data



The Data Hub triggers real-time alerts of a problem, enable pro-active response

Real-time Alerts to City Departments




- A stolen vehicle is identified driving along a corridor
- A traffic light or street light has malfunctioned
- Abnormal vehicle congestion is building up at a corridor
- An obstruction on the road (i.e. trees fall due to hurricane)
- A unusually large crowd is gathering at an intersection
- Multiple gunshots are fired
- A serious water leak occurs in an aging water pipeline
- Rising waste water levels occur, possible CSO event
- High carbon monoxide levels indicating a fire



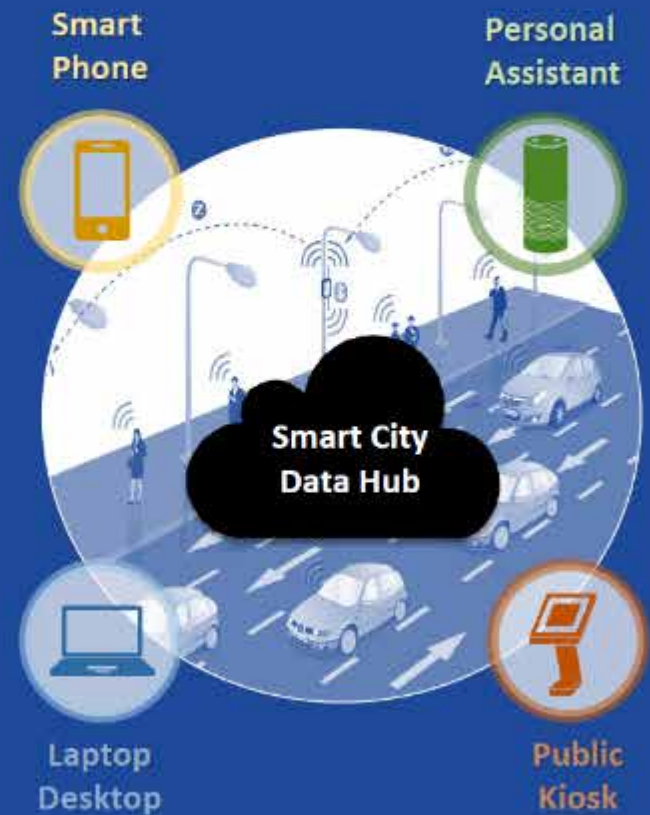


The Data Hub triggers real-time alerts and notifications to the public

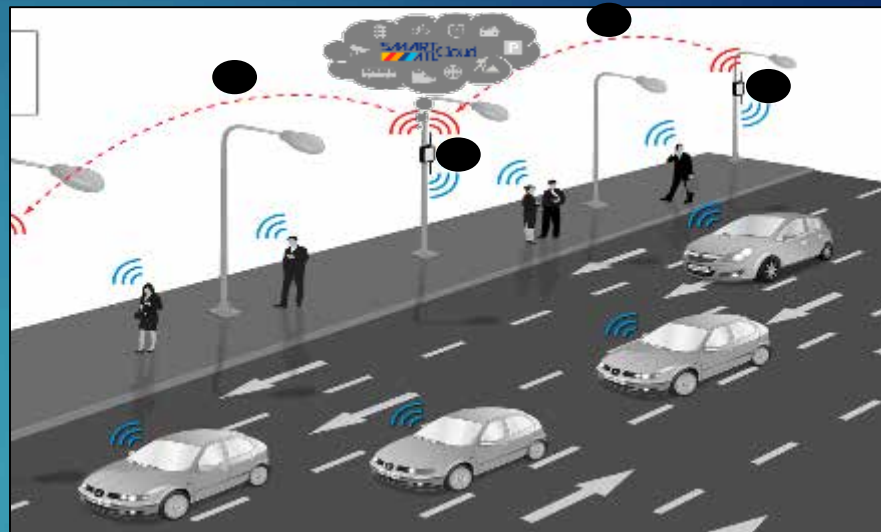
Real-time Alerts & Notifications to the Public

-  General City-Wide Alerts
-  Personalized Alerts "Area of Interest"
-  Personalized Alerts Current Location

- Severe weather event
- A public safety threat
- A road obstruction
- A flood warning
- A water main break
- A CSO event
- An air quality issue
- Beltline Alerts
- Transit options (MARTA, Relay Bike)
- Public events
- Road closures
- Public health warning
- Sanitation notifications
- Recycling reminders
- NPU meeting reminders
- Centers of Hope Event reminders



Atlanta's North Avenue Smart Corridor Demonstration



A **public demonstration** and “**living lab**” for Internet of Things (IoT) deployment, data collection/analytics, autonomous vehicles, and partnerships



Establish first-ever high-speed public WIFI on a City of Atlanta corridor



Deploy over 100 connected devices/sensors on North Ave to baseline **mobility, public safety, and sustainability** KPIs



Demonstrate autonomous vehicle capability and interaction with city infrastructure (V2I)



Establish comprehensive and scalable smart city data platform

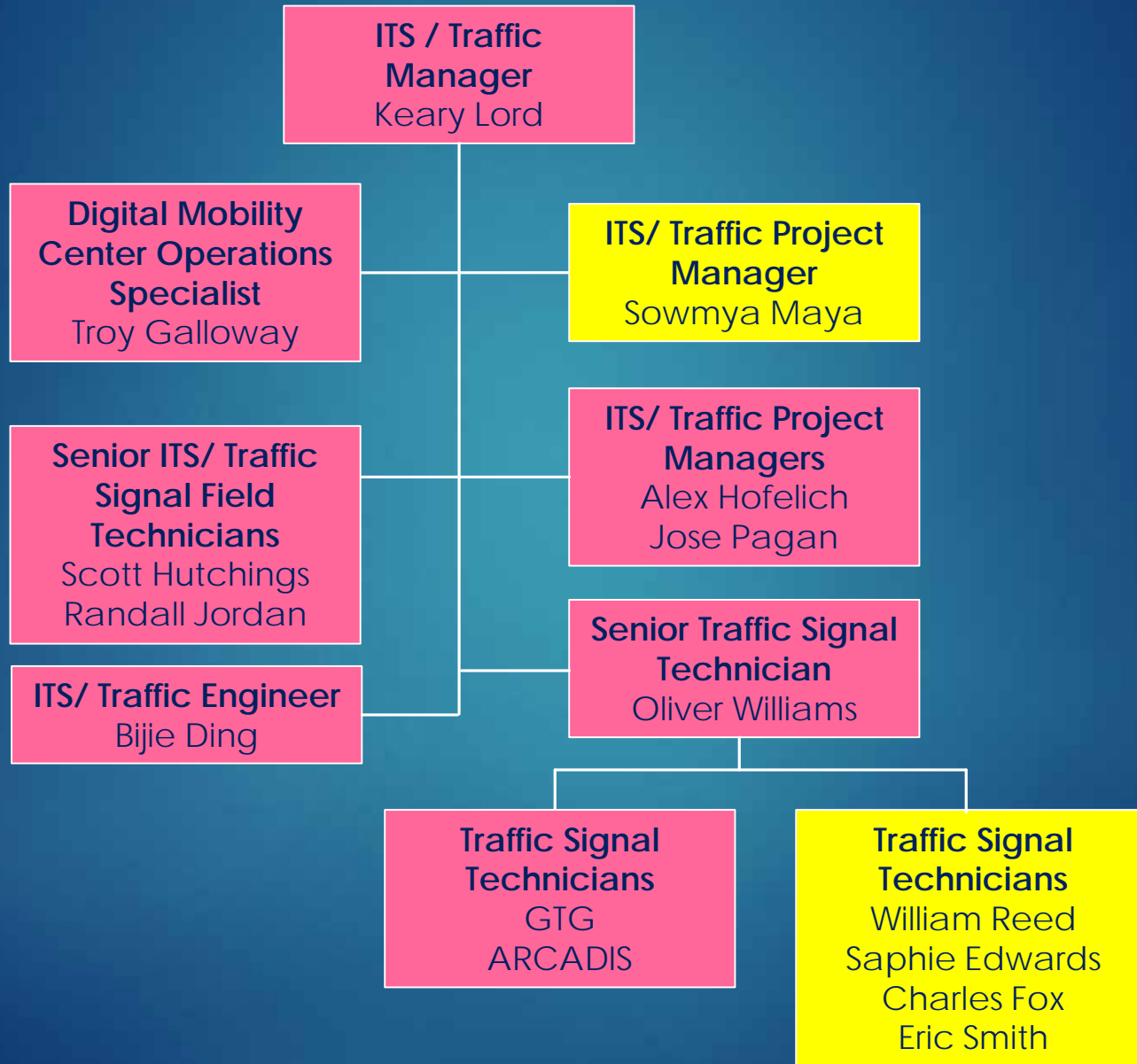


Demonstrate use-cases across description, prescriptive, and predictive using advanced analytics and data visualization technologies

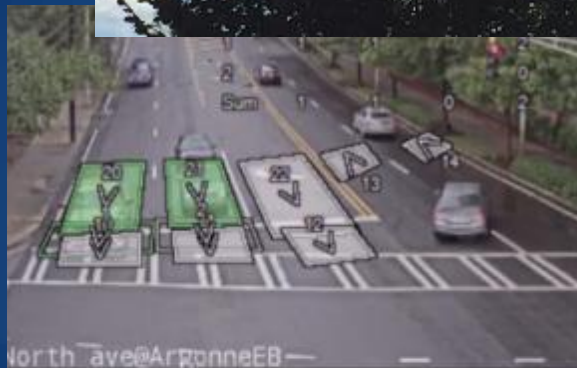


Establish a one-of-a-kind smart city deployment support model with Georgia Tech

Atlanta's Smart City Deployment Team



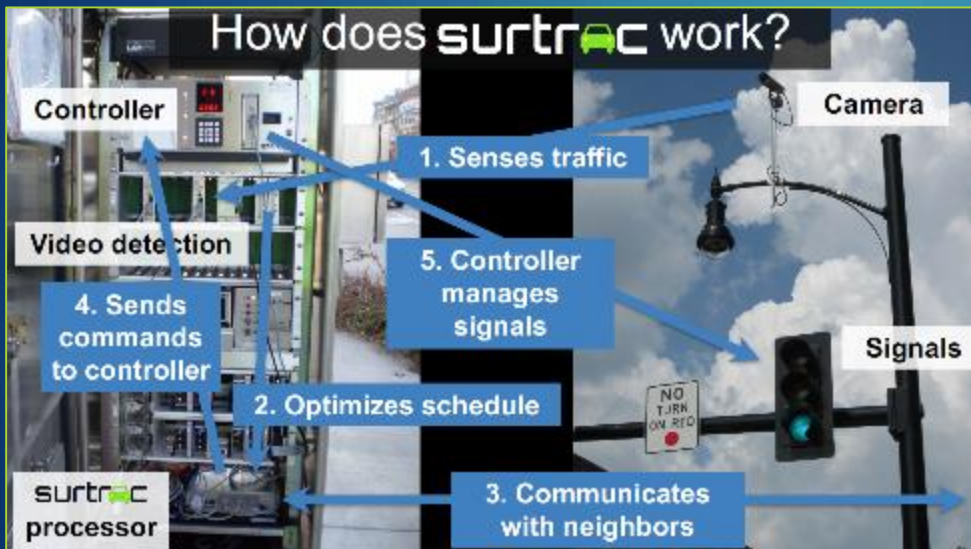
North Avenue Smart Video APP Analytics



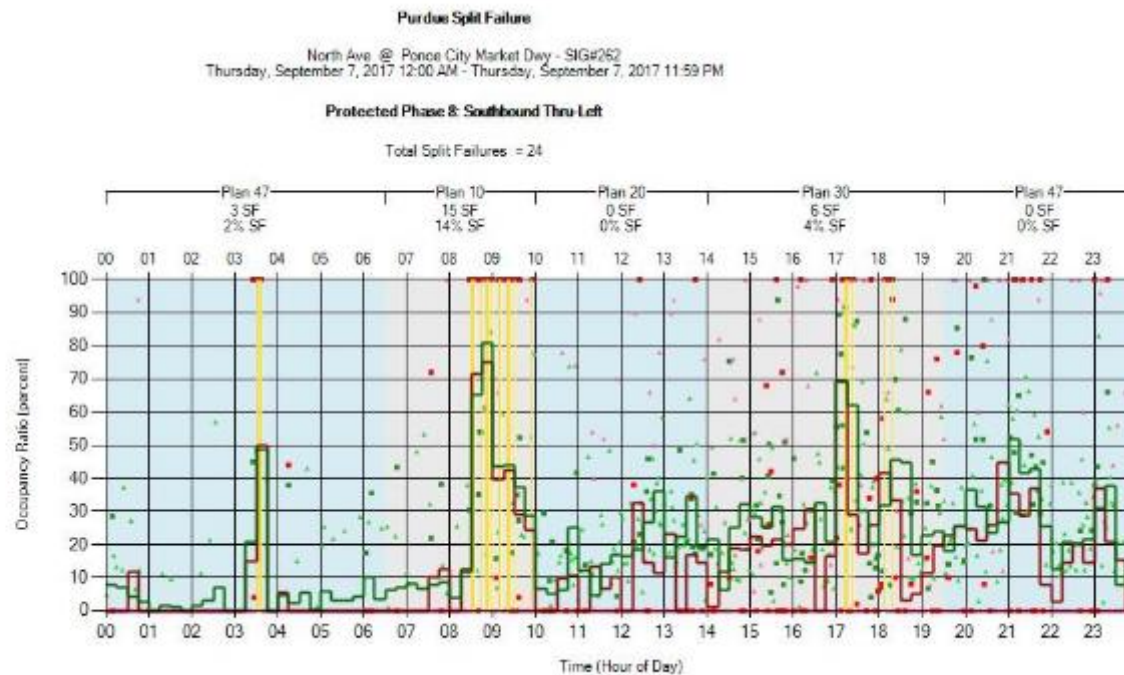
North Avenue Pedestrian and Bicycle Detection



- ▶ Combines artificial intelligence with traffic theory
- ▶ Not a fixed timing plan, instead traffic control that adapts to actual urban traffic in real-time



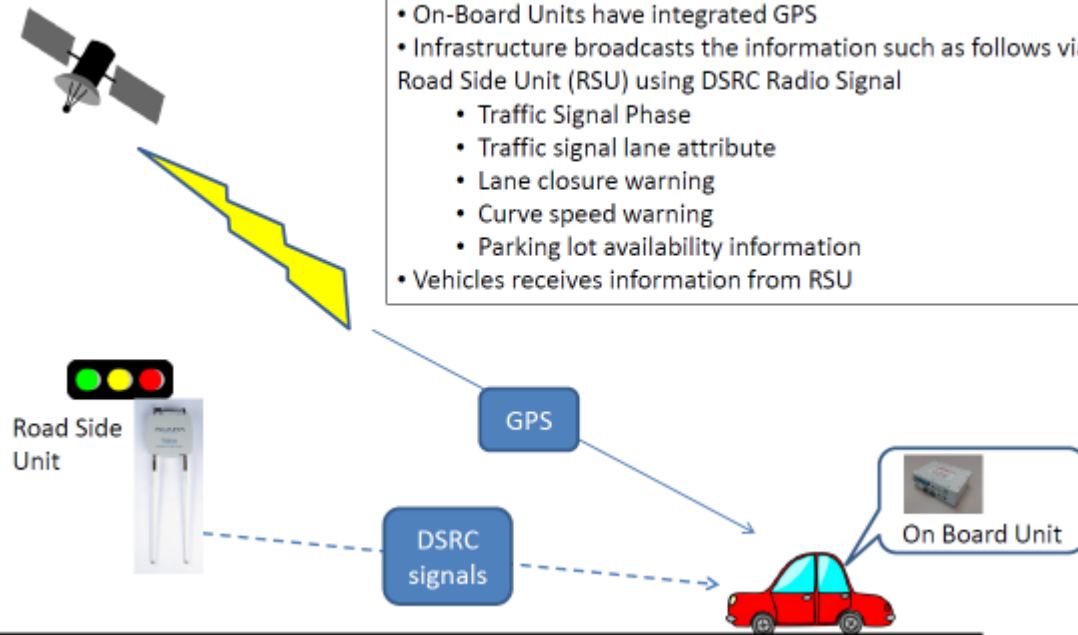
Performance Measurement with ATSPM & BlueTOAD



North Avenue: Connected Vehicle



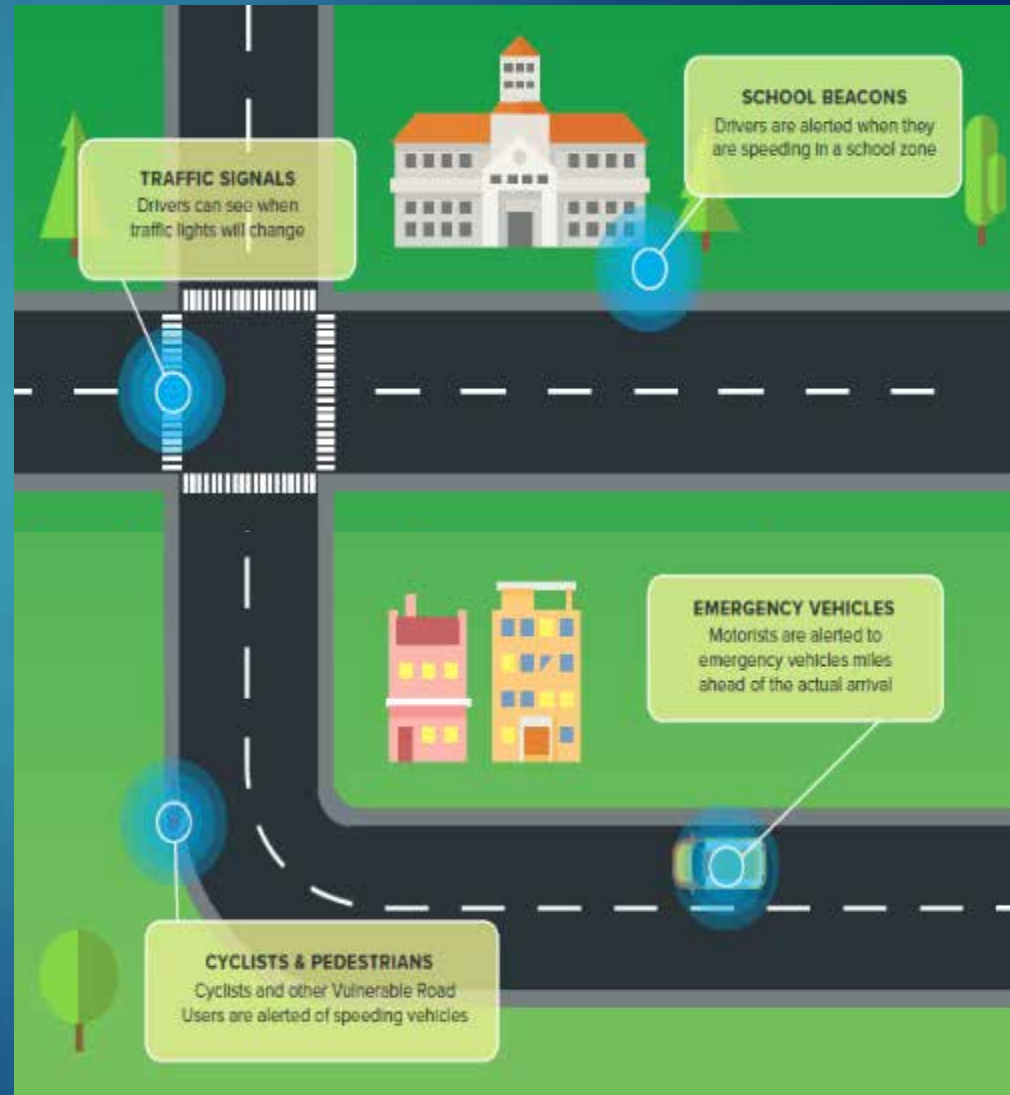
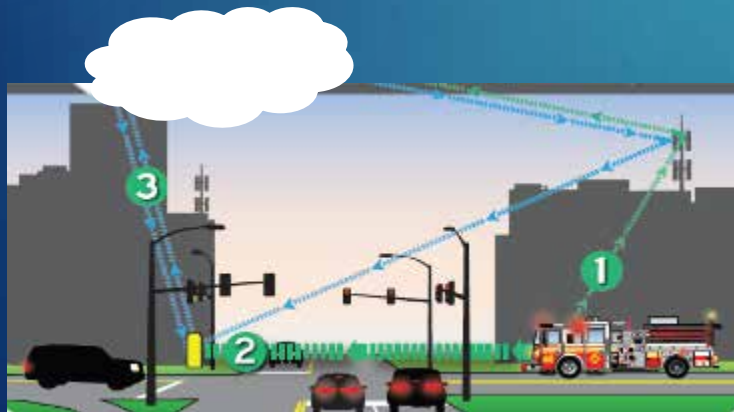
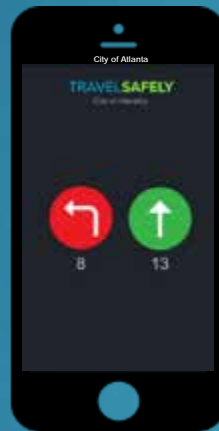
- Vehicles are equipped with On-Board Units
- On-Board Units have integrated GPS
- Infrastructure broadcasts the information such as follows via Road Side Unit (RSU) using DSRC Radio Signal
 - Traffic Signal Phase
 - Traffic signal lane attribute
 - Lane closure warning
 - Curve speed warning
 - Parking lot availability information
- Vehicles receive information from RSU



North Avenue: “Everything Connected to Everything”



- ▶ Emergency vehicle preemption, signals change to green for faster response times
- ▶ Infrastructure connected to vehicles/phone
- ▶ Travel Safely App



North Avenue: Connected Vehicle



glance

Renew Atlanta - Renew Atlanta

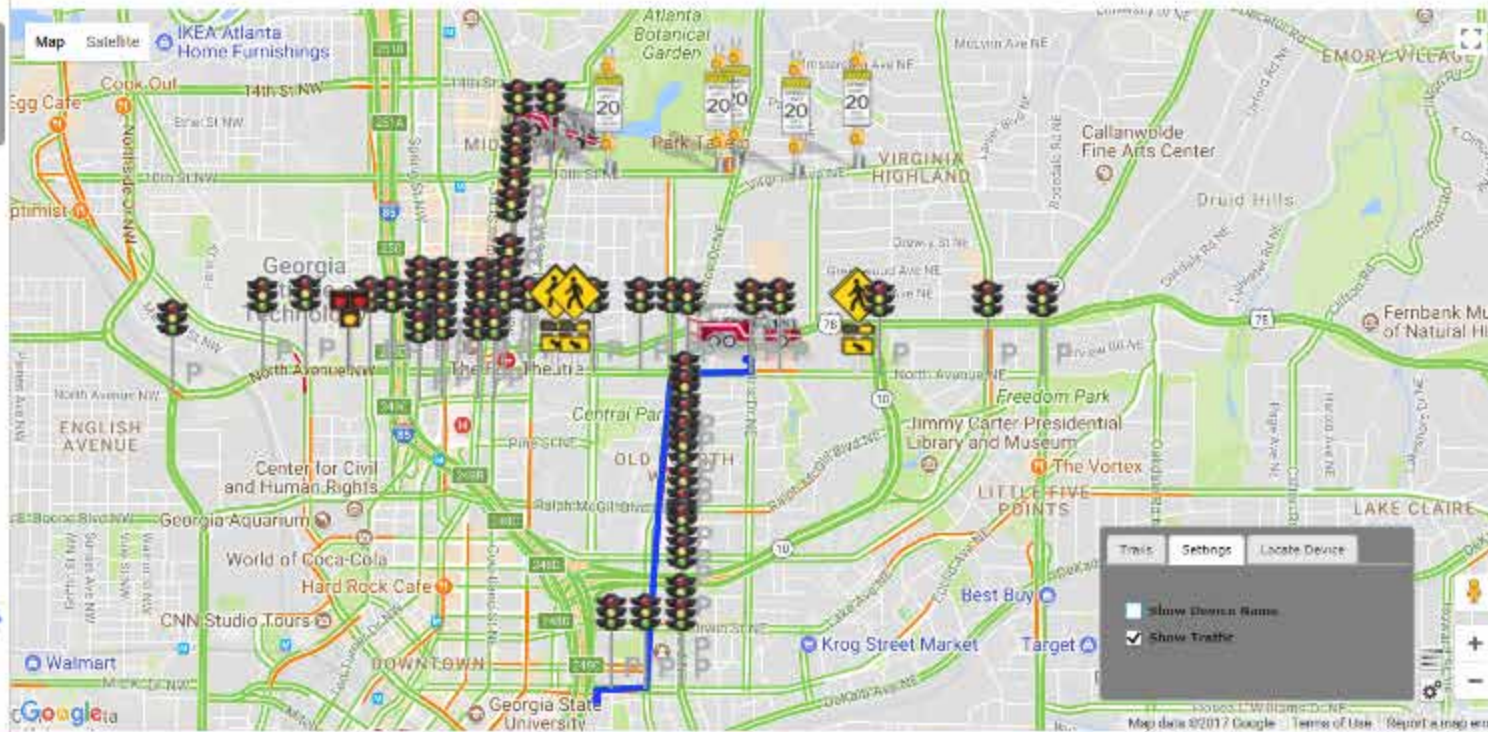
powered by Applied Information

Playback | Home | Edit Profile | Report | Log Off

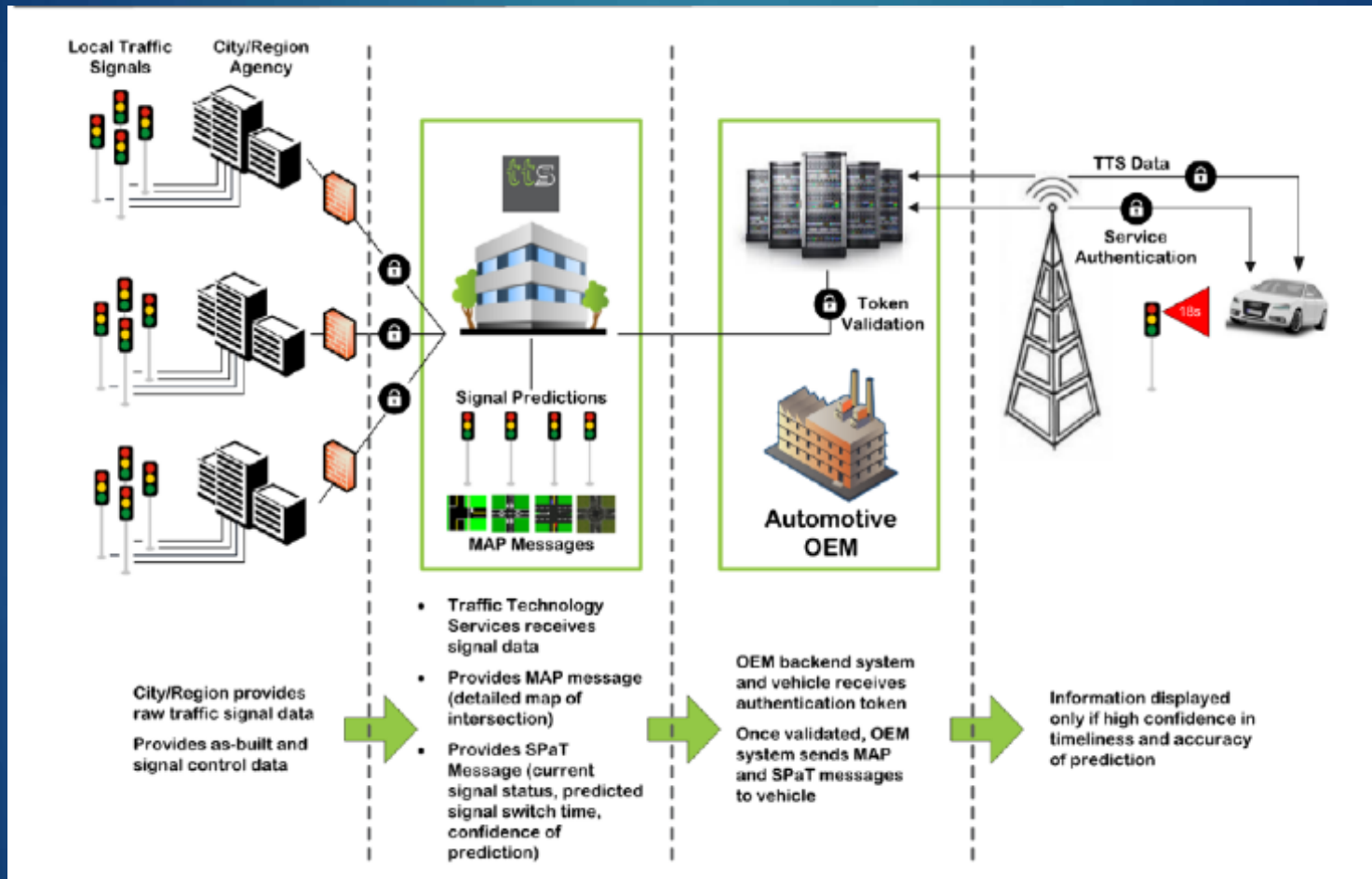
Renew Atlanta

Name	Status	A
CV_Bldg Angier	Online	0
CV_Bldg Auburn	Online	0
CV_Bldg E Ave	Online	0
CV_Bldg Edgewood	Online	0
CV_Bldg I-ram_Pkwy	Online	0
CV_Bldg Highland	Online	0
CV_Bldg Irwin	Online	0
CV_Bldg John_Dobbs	Online	0
CV_Bldg Ralph_McGill	Online	0
CV_Bldg Rankin	Online	0
CV_Bldg Wabash	Online	0
CV_Edgewood-Hillard	Online	0
CV_Edgewood-Jackson	Online	0
CV_Juniper 10TH	Online	0
CV_Juniper 3RD	Online	0
CV_Juniper 5TH	Online	0
CV_Juniper 6TH	Online	0
CV_Juniper 7th	Online	0

Alarm	Ack	Unack	Supp
Critical	0	0	0
High	0	0	0
Low	0	0	0



North Avenue: Connected Vehicle



Automated Vehicle Demonstrations





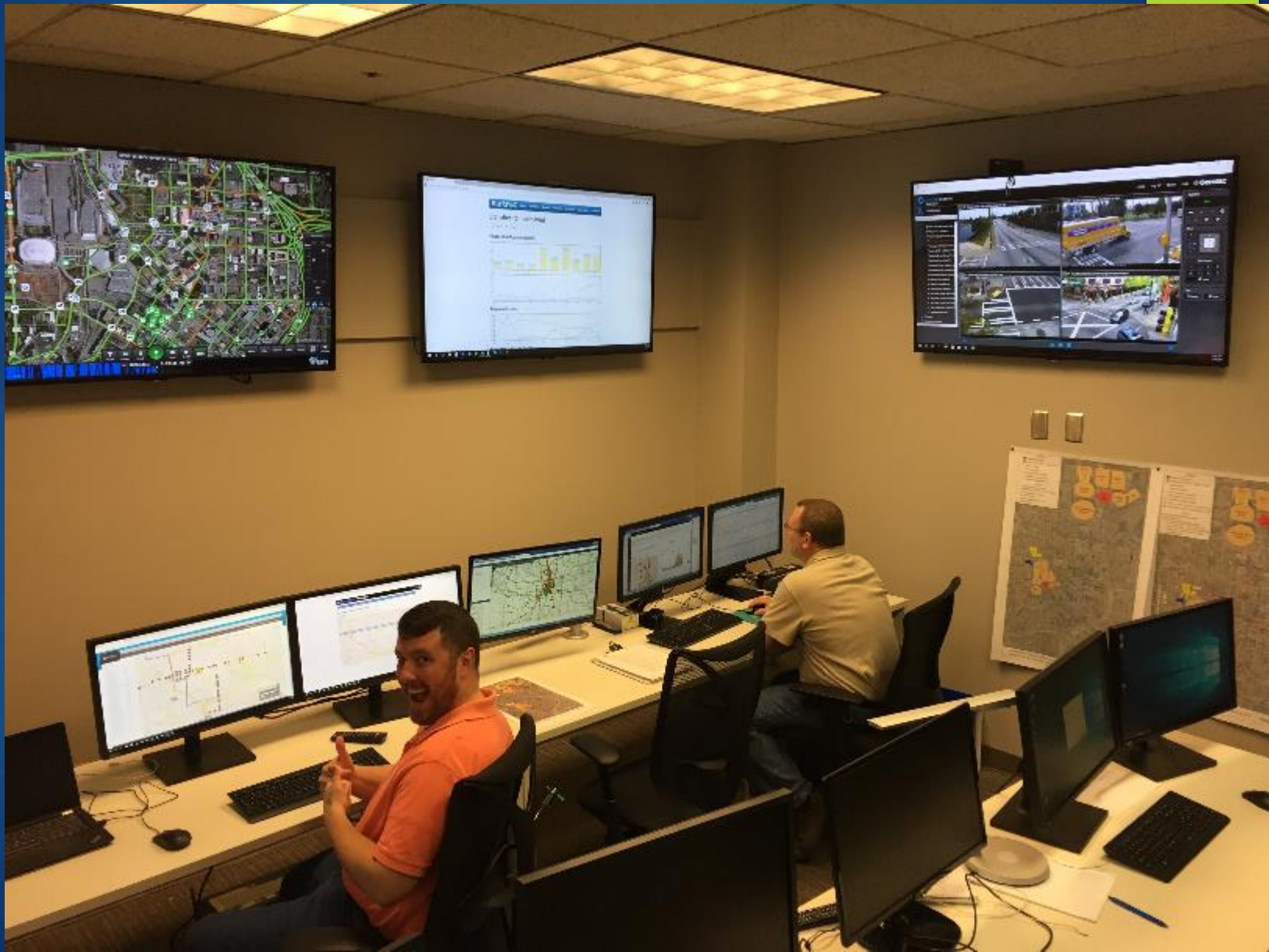
Members actively work together to create a measurable and sustainable impact in road safety by:

- ▶ Leveraging member companies' collective intellectual capital and expertise to advance best practices for companies and their fleets
- ▶ Addressing strategic road safety challenges in select locations by working with local government and stakeholders
- ▶ Identifying actionable insights through data collection and management to advance innovative solutions
- ▶ Collaborating with the broader road safety community to be the leading voice for the private sector

FEBRUARY 21, 2017

Washington, D.C. – Together for Safer Roads (TSR), a coalition of global private sector companies, is partnering with three cities around the world— **Atlanta, Ga., USA; São Paulo, Brazil; and Shanghai, China**— to identify and address the cities' strategic road safety challenges.

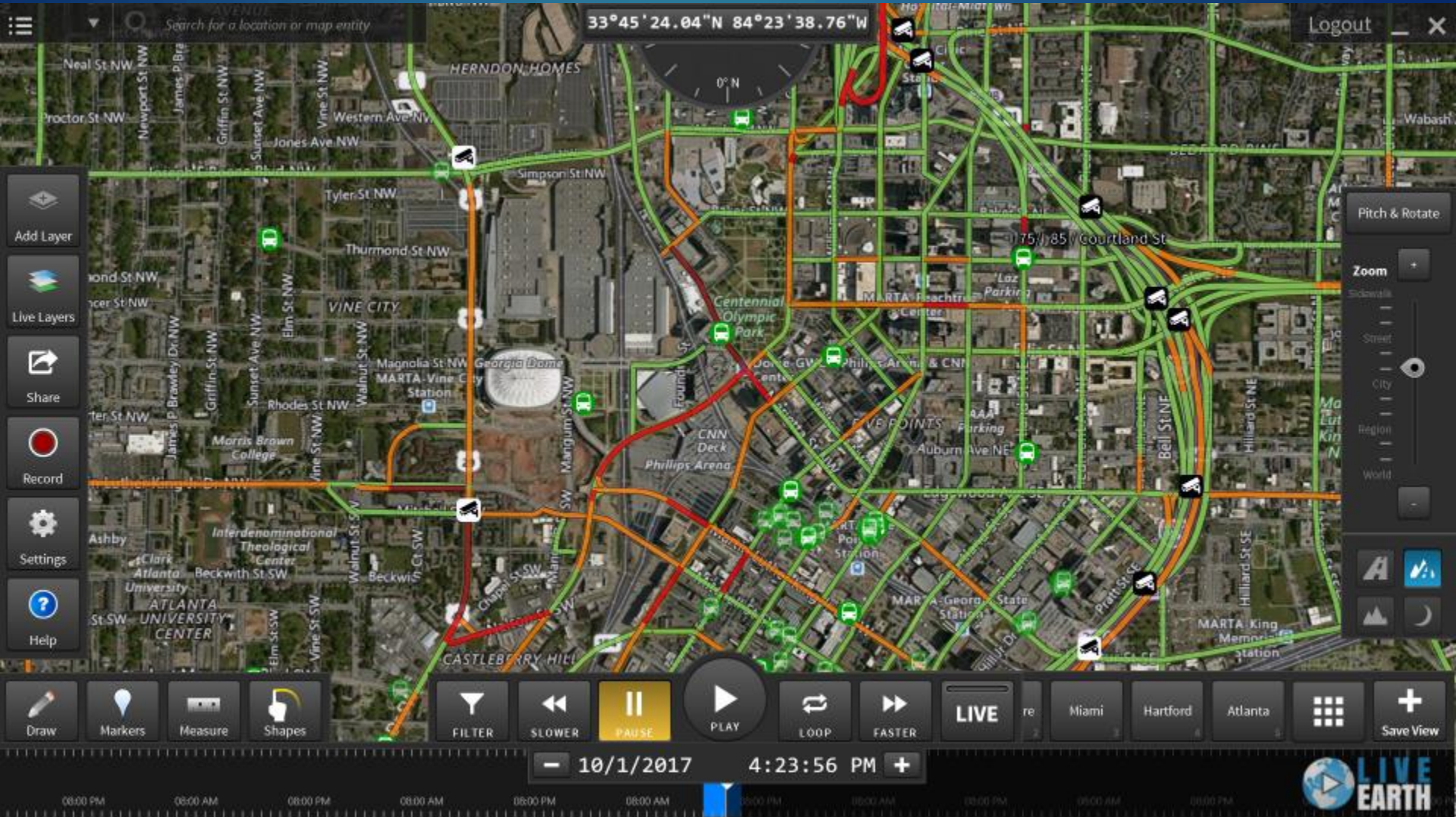
Digital Mobility Center

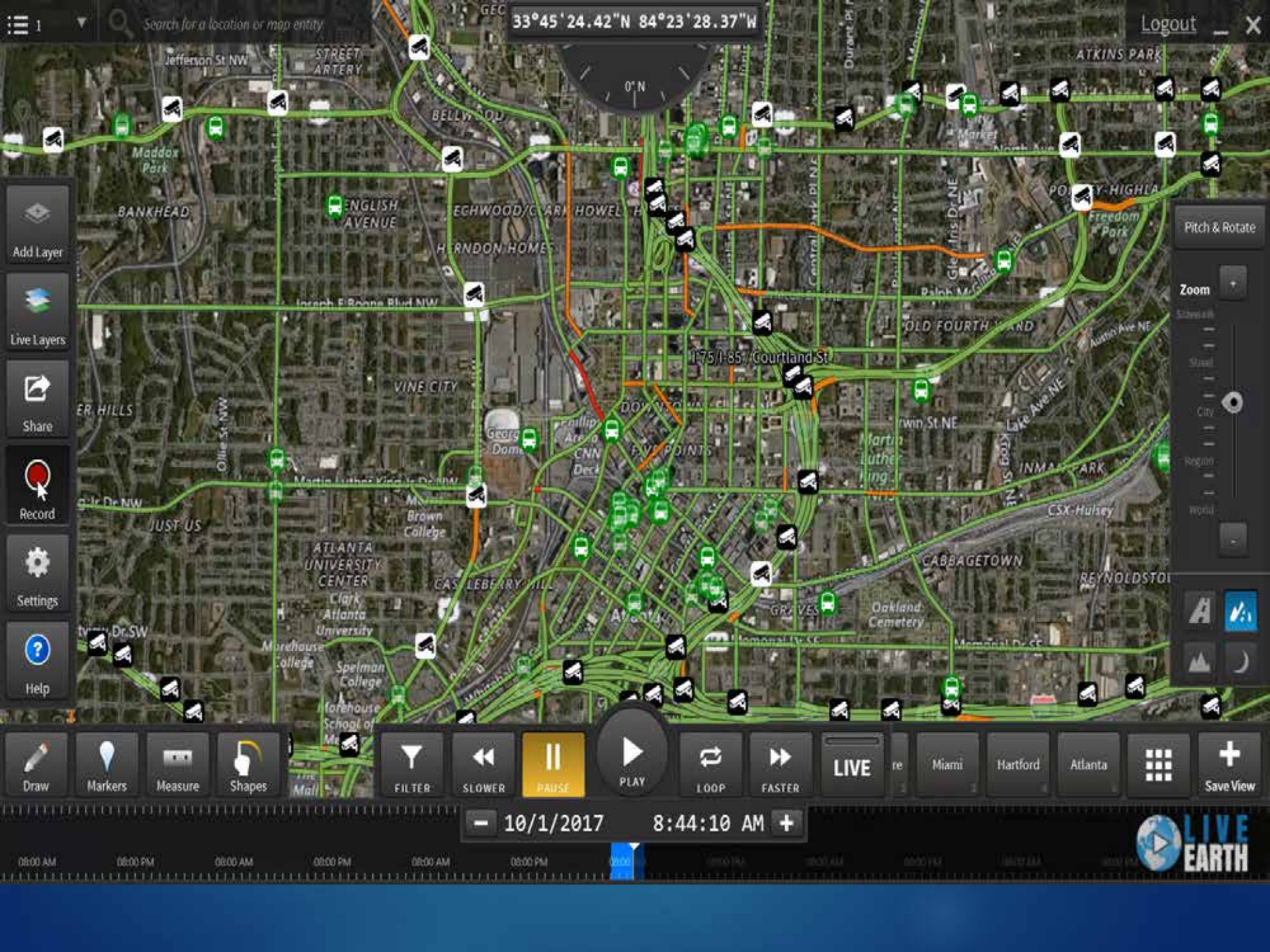


ATKINS

Member of the SHoL Group

Live Earth



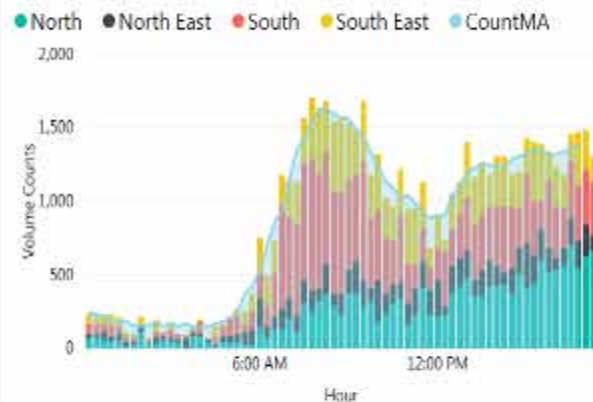


10/05/17 05:15:00 PM

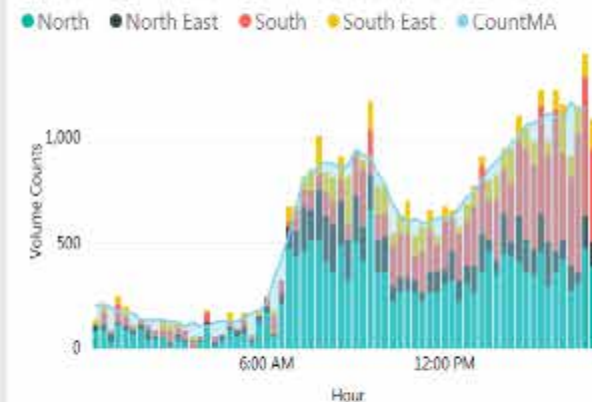
60.87K

41.01K

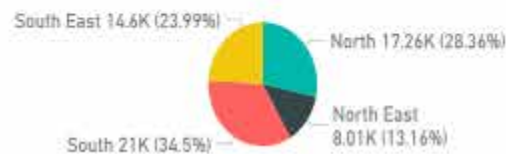
Ingress Volume per 15 mins



Egress Volume per 15 mins



Ingress direction distribution



Egress direction distribution





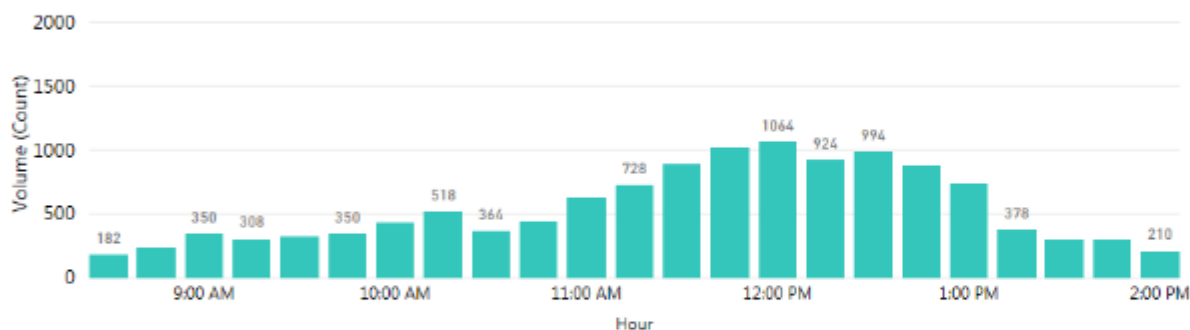
Event Report: Sunday, October 1, 2017



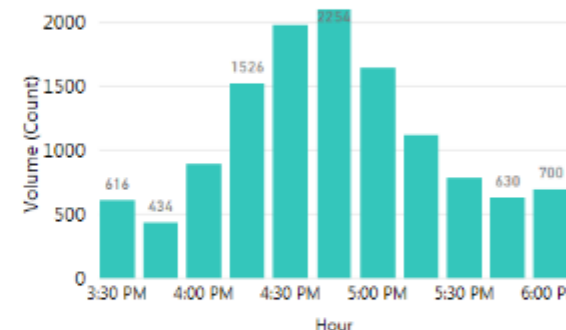
Total Event Ingress/Egress Volume

13K

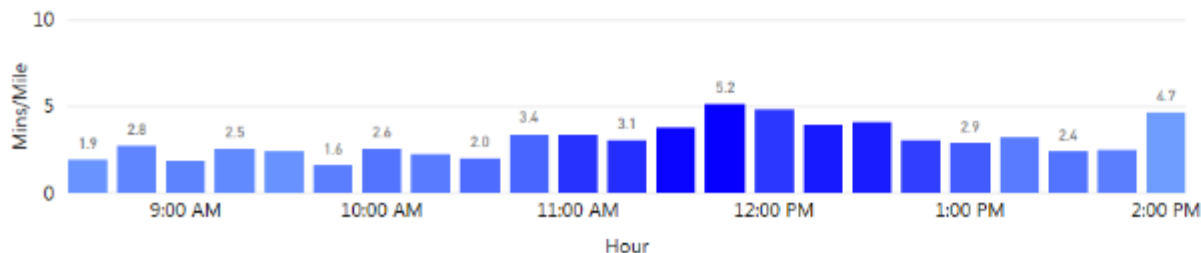
Volume per 15 mins - Ingress



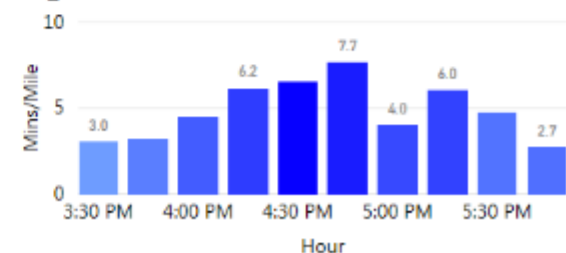
- Egress



Normalized Network Travel Time per 15 Mins - Ingress



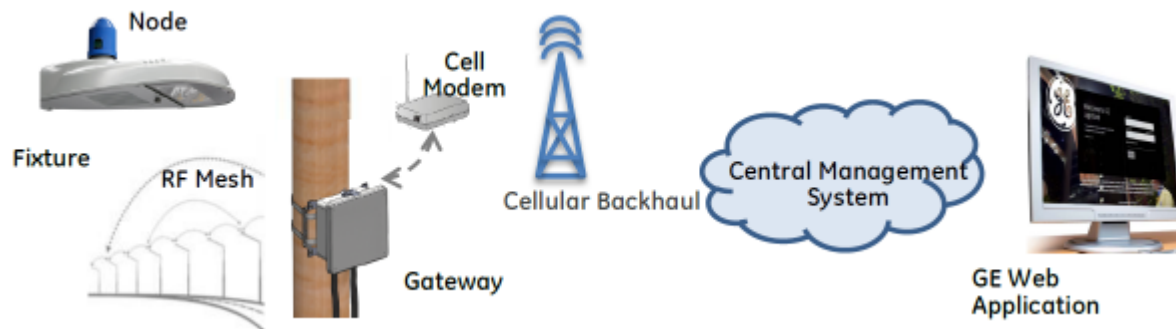
- Egress



Smart Lighting: Project Summary

- **Current high-pressure sodium lighting consumes more power than LED alternative**
- **No ability to remotely monitor/control lighting power consumption or performance**
- **Opportunity to use light pole to mount sensor array**

- Launched pilot to test GE LED Smart Lighting use cases in partnership with Georgia Power and AT&T. Deployment includes an attached sensor array on the light that can “sense” the environment (see, hear, and smell)
- Issued RFP seeking full-scale deployment of LED street lights with advanced lighting control and an attached sensor array





Total Waste Containment
Transforms Aesthetics



Increased Capacity
(5x Traditional Bin)



Automated Real-Time
Collection Notifications



Uniform Public Space
Recycling Programs



No Windblown Litter or
Access for Critters



No Overflows or
Visible Waste



Operational Insights,
Analytics & Reporting



Measurable Recycling
Diversion Rates

What's Next?



- ▶ North Avenue Phase 2 Deployment
- ▶ Automated Vehicle Shuttle Route
- ▶ Next focus areas:
 - ▶ Campbellton Road
 - ▶ Buckhead Loop
 - ▶ Special Event Area (MBS, GWCC, Philips Arena, COP)
- ▶ Adaptive System Expansion
- ▶ Feasibility evaluation ITS/Signal System Performance Based Maintenance
- ▶ Teralytics pilot partnership with ARC, GDOT

Questions?

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www.atlantatsplost.com

October 10, 2017

Partners/Technology Providers



City of Atlanta Event Management Area



PHILIPS



GEORGIA

WORLD

CONGRESS

CENTER

- u Phillips Arena, Georgia World Congress Center, Mercedes Benz stadium, Centennial Olympic Park, etc.
- u June 17th: Birthday Bash

“With almost 17,000 guests in attendance, we were able to empty our parking decks and have the streets around the arena clear in under 45 minutes. With the same number of guests last year, and the same number of staff and police officers, it took nearly 90 minutes. Signal management and the revised traffic plan supported by the technology had the single greatest positive impact on traffic I have witnessed for any event.”

– Jason Parker, VP, Customer Service, Security, Parking & Operations, Atlanta Hawks and Philips Arena



Preparation for College Football Championship

- ▶ Collaborative development of the "Playbook" for differing special events
- ▶ Infrastructure upgrades including: closed circuit TVs, detection, Bluetooth probe data, parking guide & availability signage,
- ▶ Active Traffic Management, monitoring, remote traffic signal control on the fly from City Hall and on the ground



North Avenue is the first major corridor located in the Midtown “smart” zone that we are actively working on to collect real-time data and demonstrate how we can use it to improve the corridor



A public demonstration and “living lab” for IoT deployment, data collection/analytics, autonomous vehicles, and partnerships.



North Avenue Smart Corridor Ribbon Cutting: September 14, 2017, 10:30 A.M. at Ponce City Market



First-ever high-speed public WIFI on a City of Atlanta corridor



100+ IoT sensors (see, hear, smell) along 5 miles, 18 signalized intersections)



Citizen kiosks delivering wayfinding, transit updates, emergency messages, etc.



Deploy smart city data platform and demo **open APIs**, advanced analytics and data visualization tech



Re-pave, re-stripe, repair the entire corridor and upgrade street signs



Connected and coordinated traffic signals with advanced traffic responsive signal timing