ACES Across the Board

Lessons Learned, with Day-One ROI

Delivering Sustainable Mobility

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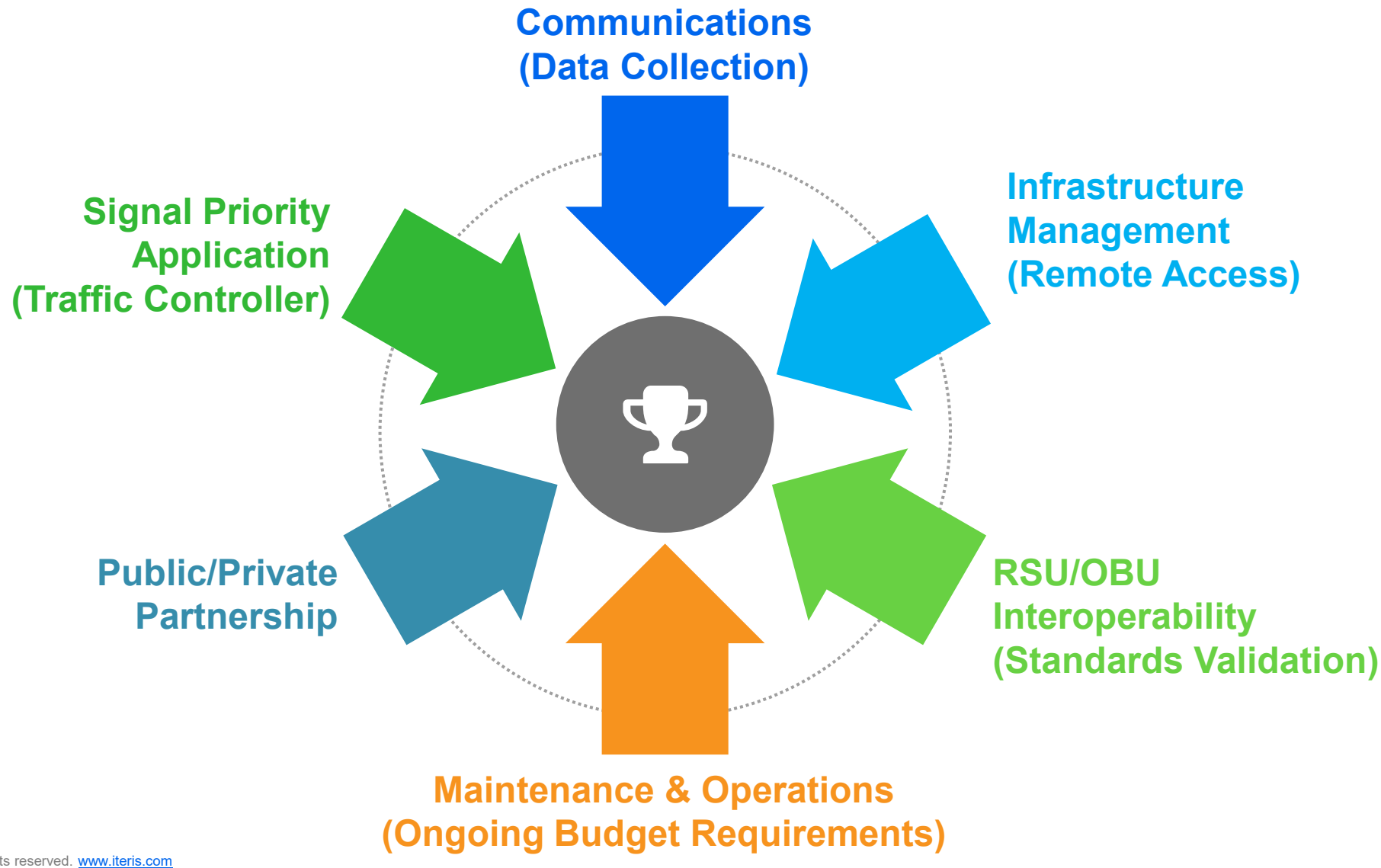
Lessons Learned, with Return on Investment…



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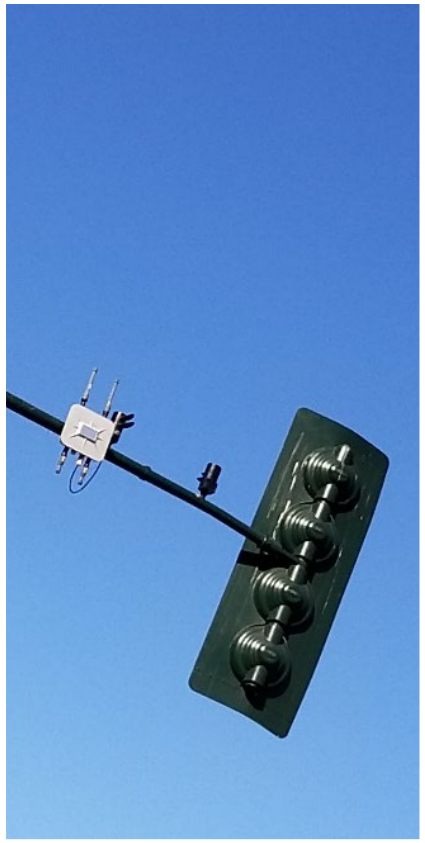
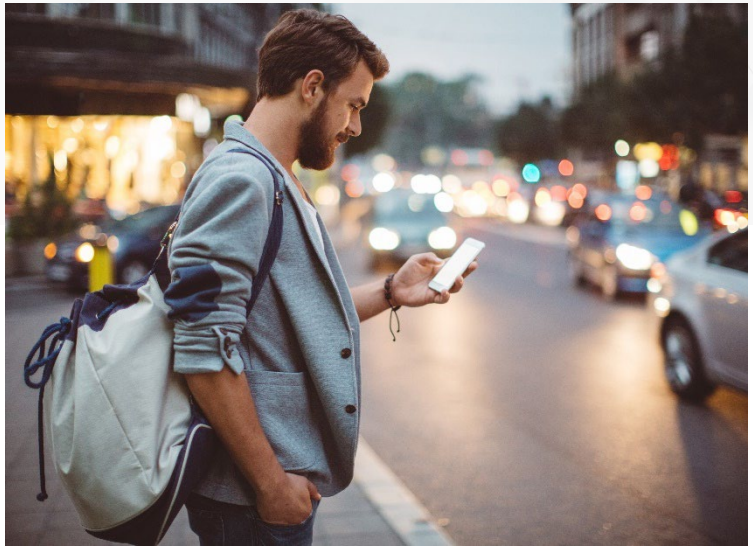
Successful Infrastructure Deployments – DSRC transition to LTE-V2X…



EXCLUSIVE: 5.9 GHz Spectrum Used for Safety Related Transportation (ITS) Applications.

Cellular-V2X / LTE-V2X is NOT…

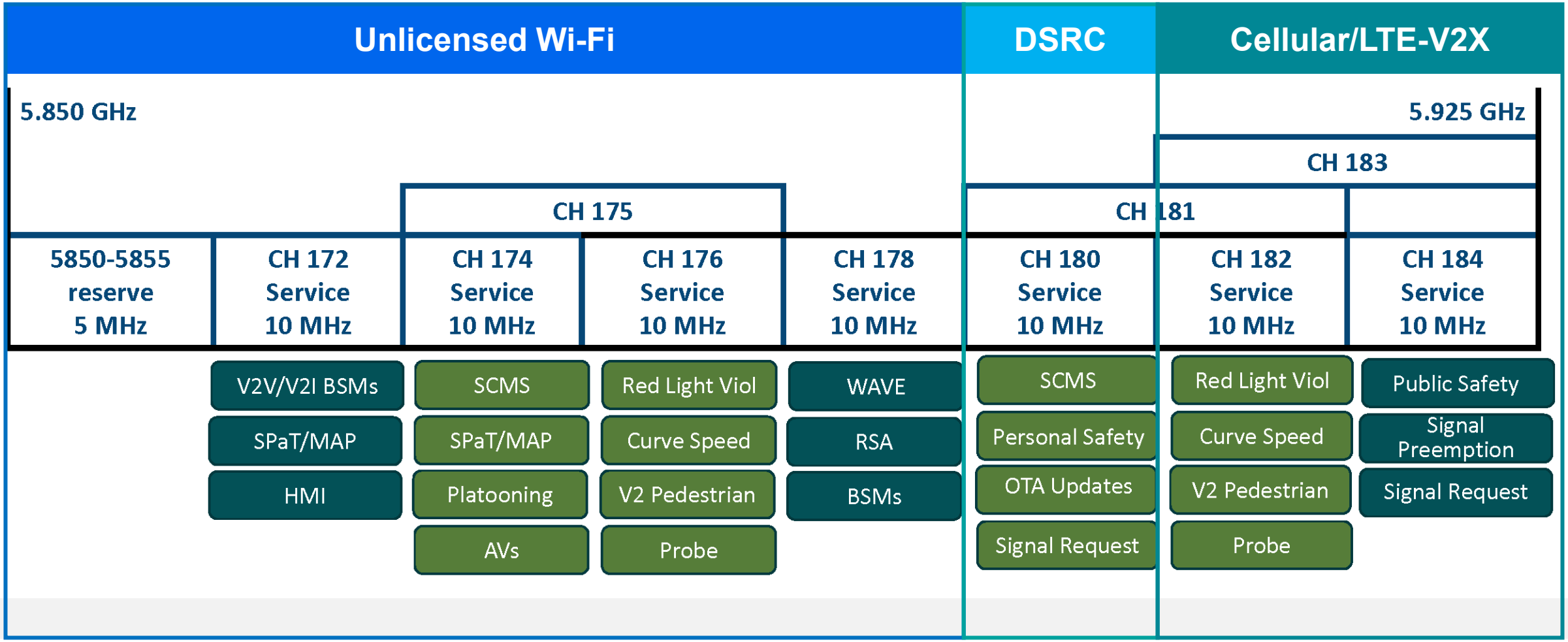
Not connected to cellular tower



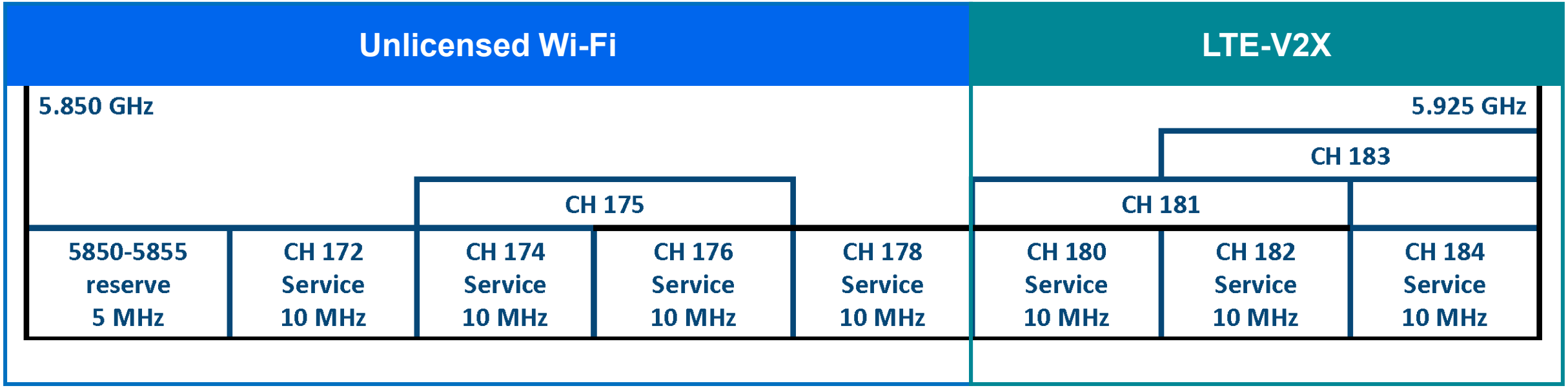
Not available on your Cellphone

Not 5G

5.9 GHz – FCC Transition…



5.9 GHz ONLY – Transition to LTE-V2X ONLY in 2023



Connected Vehicle Applications…

Who gets priority, where, when & how…

Signal Priority Based on Vehicle/User Type

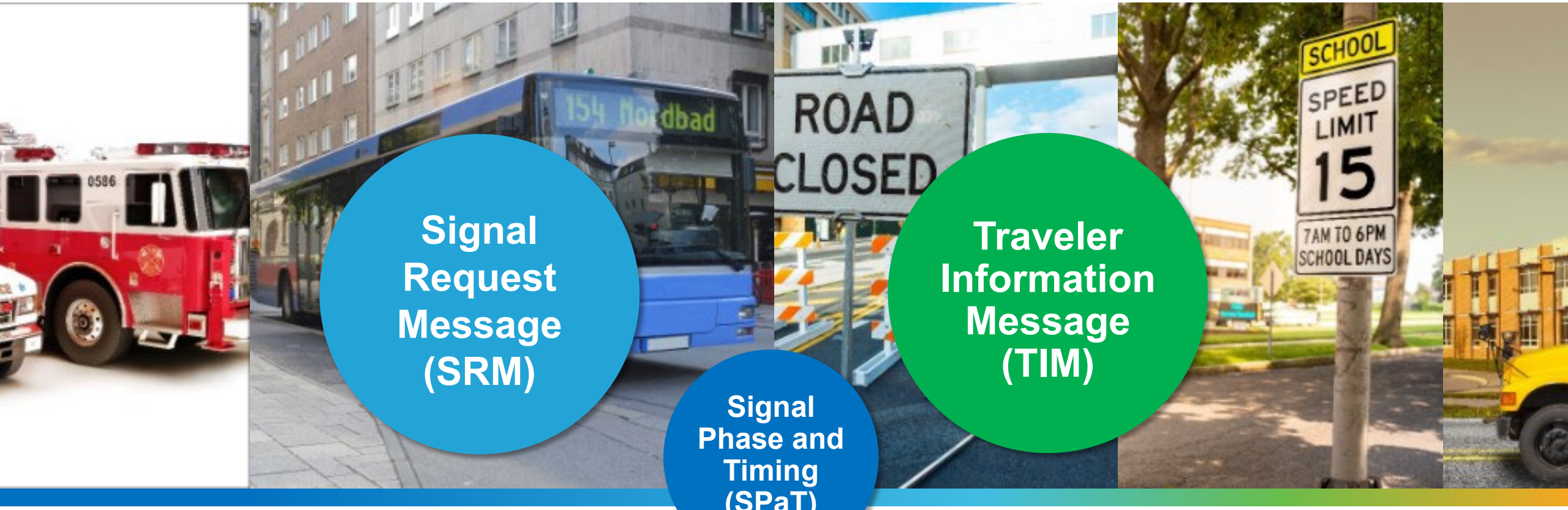
Emergency Vehicles, Police, Fire, Paramedic, Ambulance

Transit, Local Bus, School Bus

Light Trucks, Vans, Trucks, Multi-Axle, Trailer

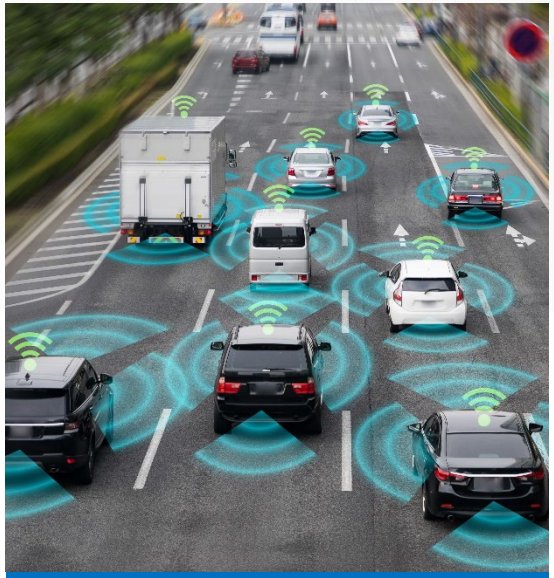
Basic Passenger Vehicles, Motorcycles Equipped Travelers

Traffic Department controls who gets priority, where, when & how…

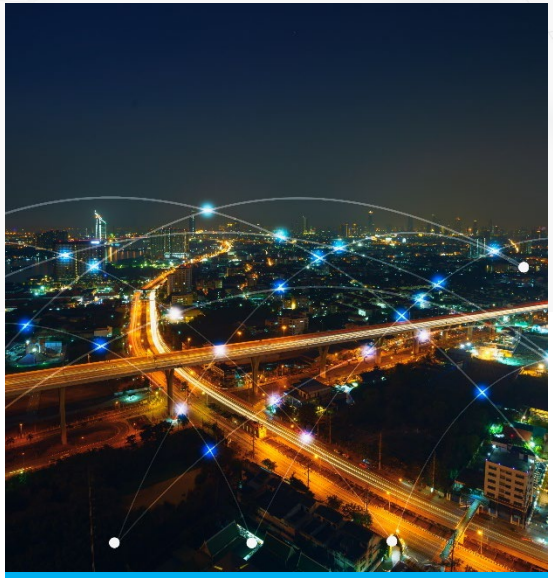


Foundation to Build Connected Vehicle Applications

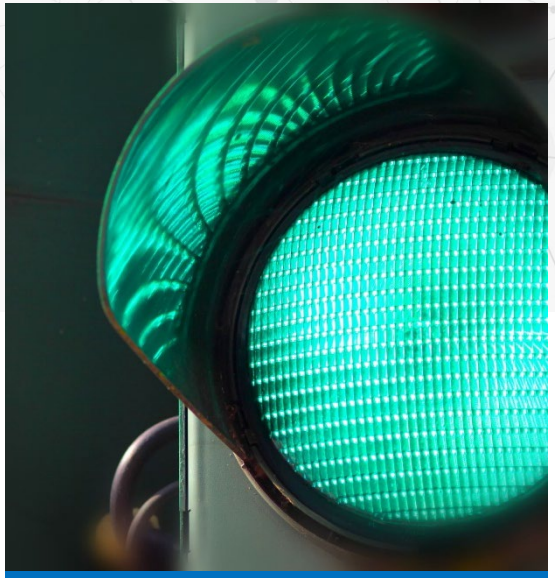
Benefits of Using Connected Vehicle for EVP and Signal Priority



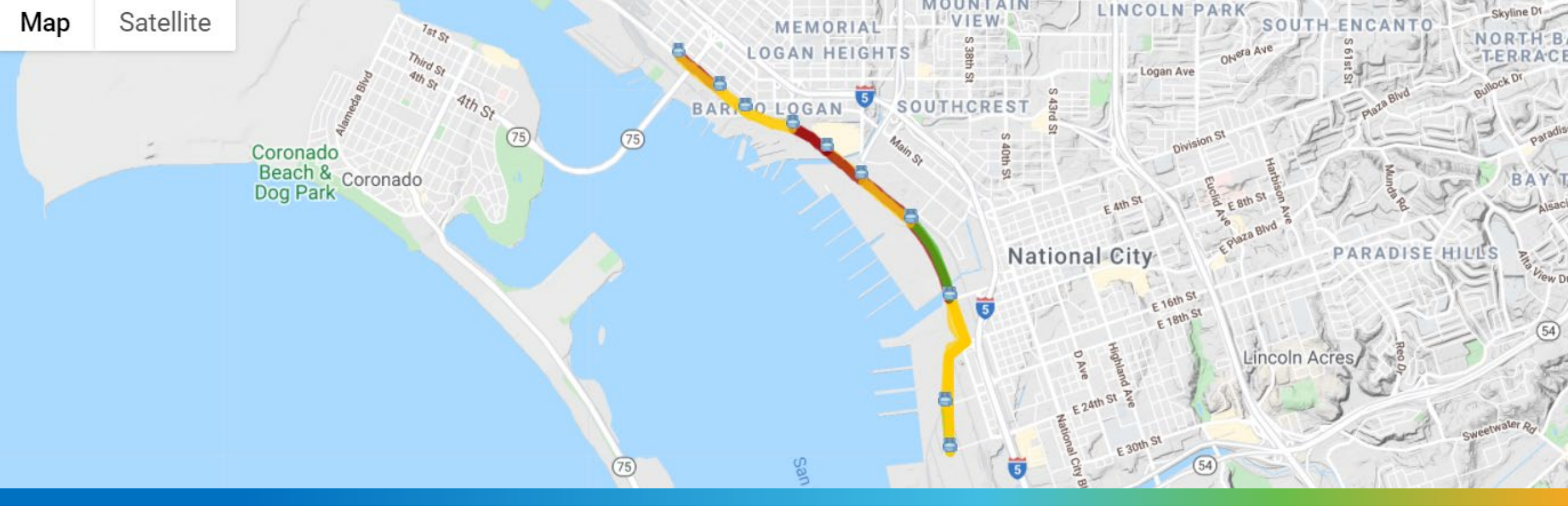
High Accuracy, Low Latency
– No communications towers or service fees with FCC Licensed System



Futureproof System
– Ready for ALL Signal Priority Applications…



State-of-the-Art Security – Use USDOT Security Credential Management System (SCMS)



The Project: San Diego Freight Signal Priority (FSP)

STATE OF CALIFORNIA ENERGY COMMISSION

PORT of SAN DIEGO

Objectives

- Manage Travel Times
- Reduce Vehicle Stops
- Reduce Carbon Emissions

Solution

- Connected Vehicle FSP
- RSU/OBU Hardware and Software

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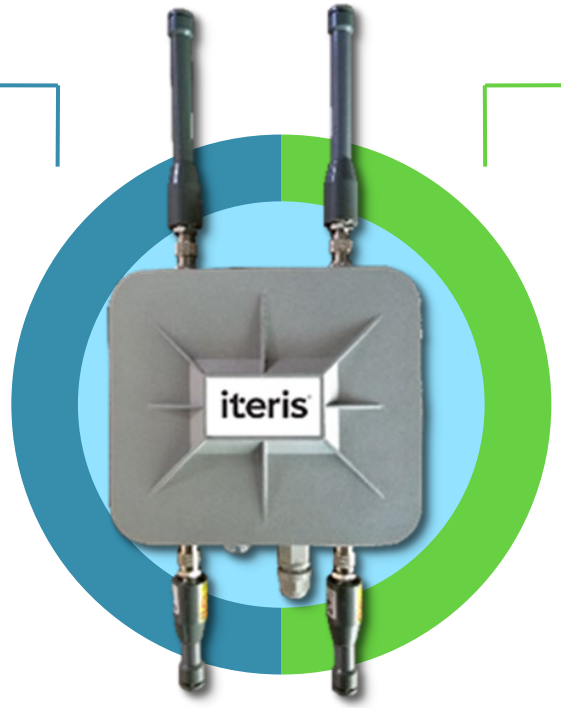
ITS Technology Convergence

– Bluetooth Travel Time system with Connected Vehicle technology…

Bluetooth® 2.4 GHz

BlueTOAD® Travel Time

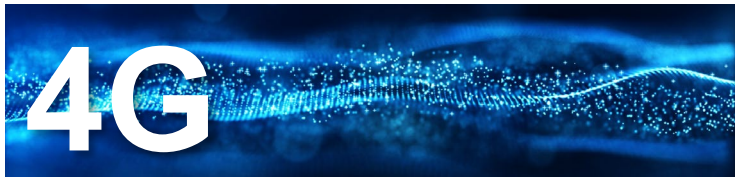
Iteris, Inc. excels in empowering organizations to harvest traffic data they produce, with the objective to build useful products and expand services.



3GPP Rel.14/15 (5.9 GHz)

LTE-V2X (C-V2X)

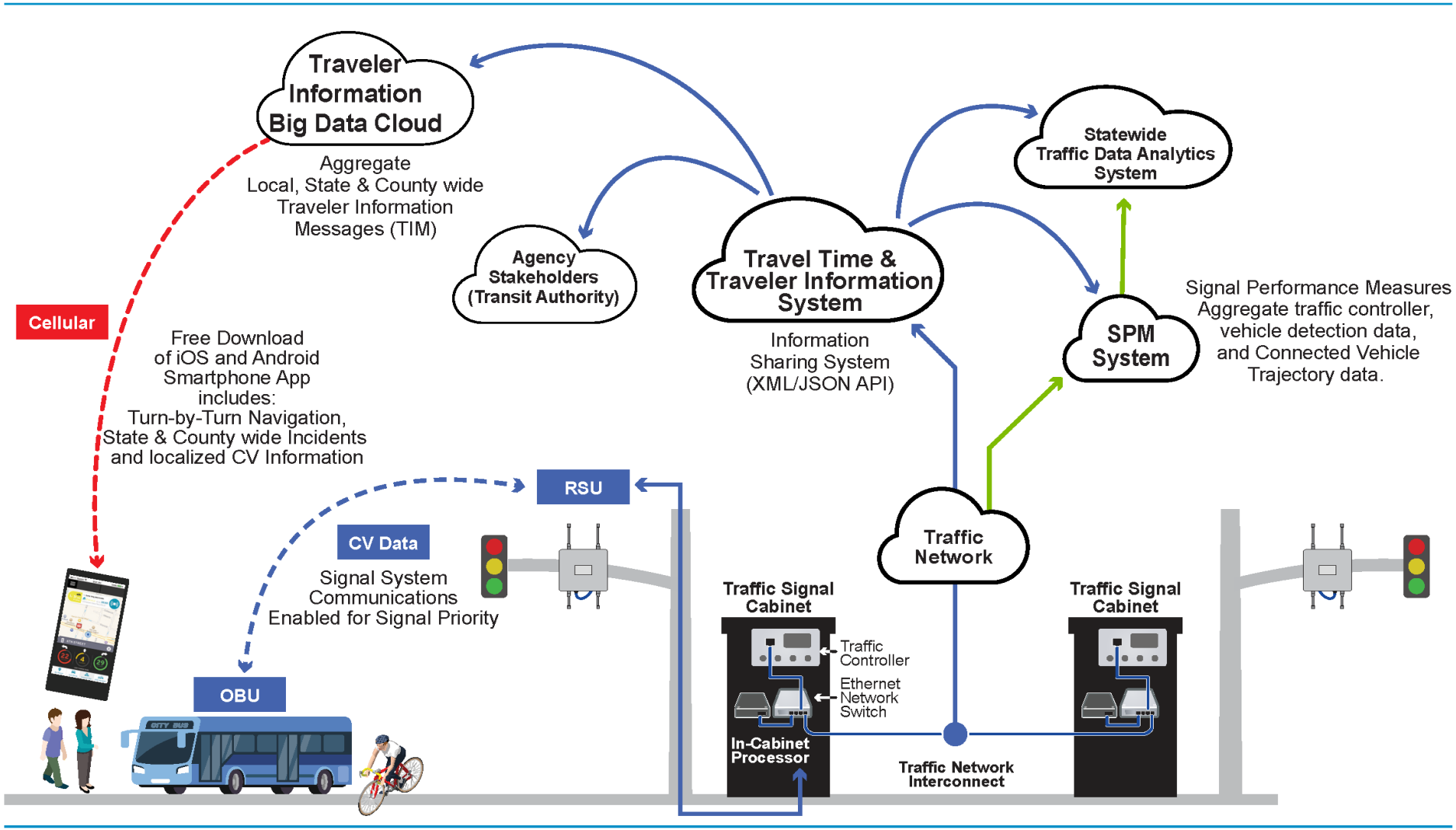
Based on proven standards developed by the USDOT – IEEE and SAE standards development for Cellular (LTE) Vehicle to Everything.



Providing the foundation for an integrated safety and mobility strategy…

FDOT Applications:

- Enterprise Data Cloud
- V2X Data Exchange Platform
- SunGuide (TIM)
- Florida Turnpike (API)
- RSU Monitoring System (NTCIP 1218)



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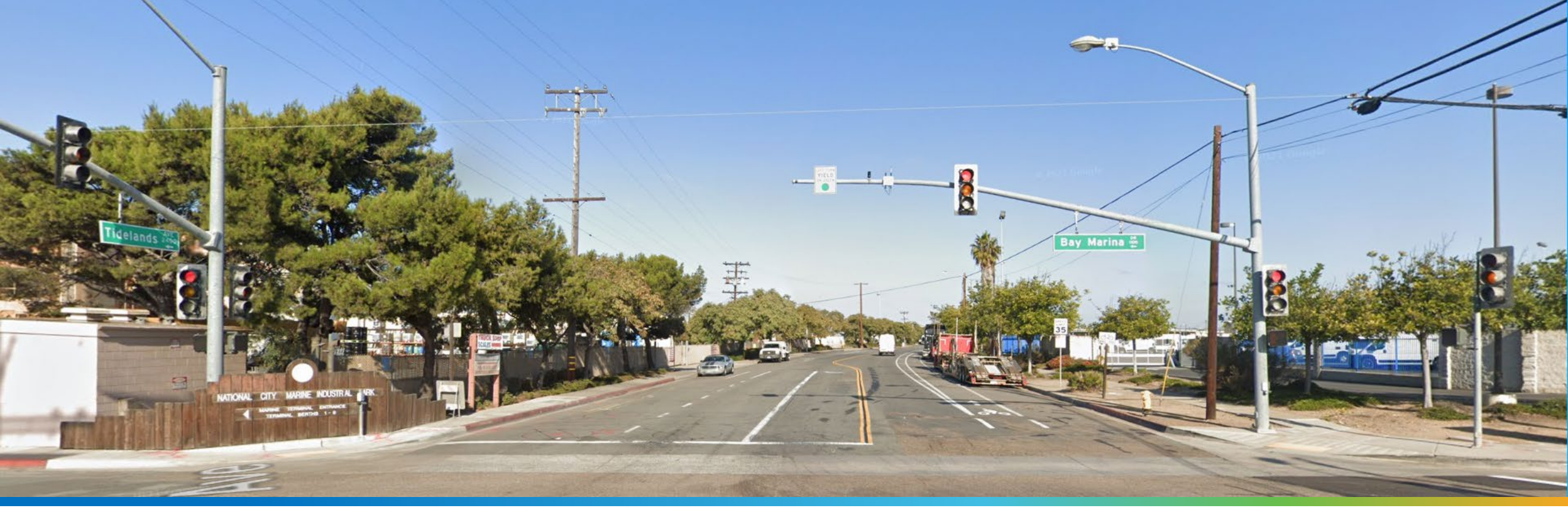
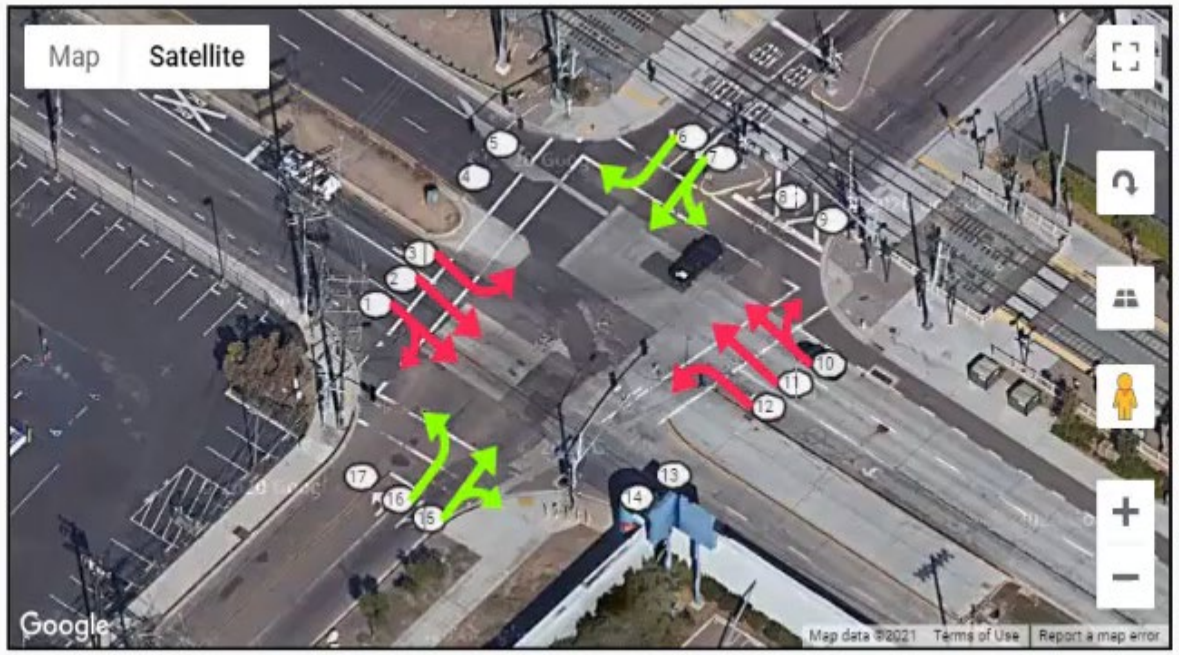


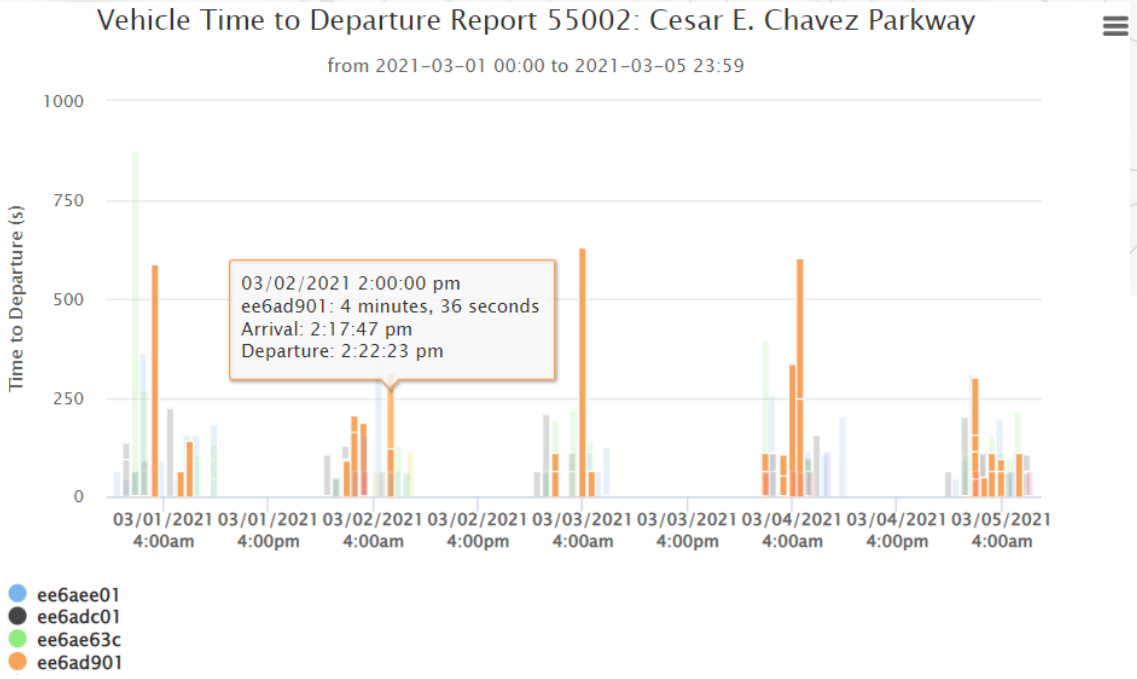
Connected Vehicle Data Analytics

Vehicle Trajectory Information – Basic Safety Messages (BSM)

BlueARGUS – SPaT/MAP and Connected Vehicle Data Reports

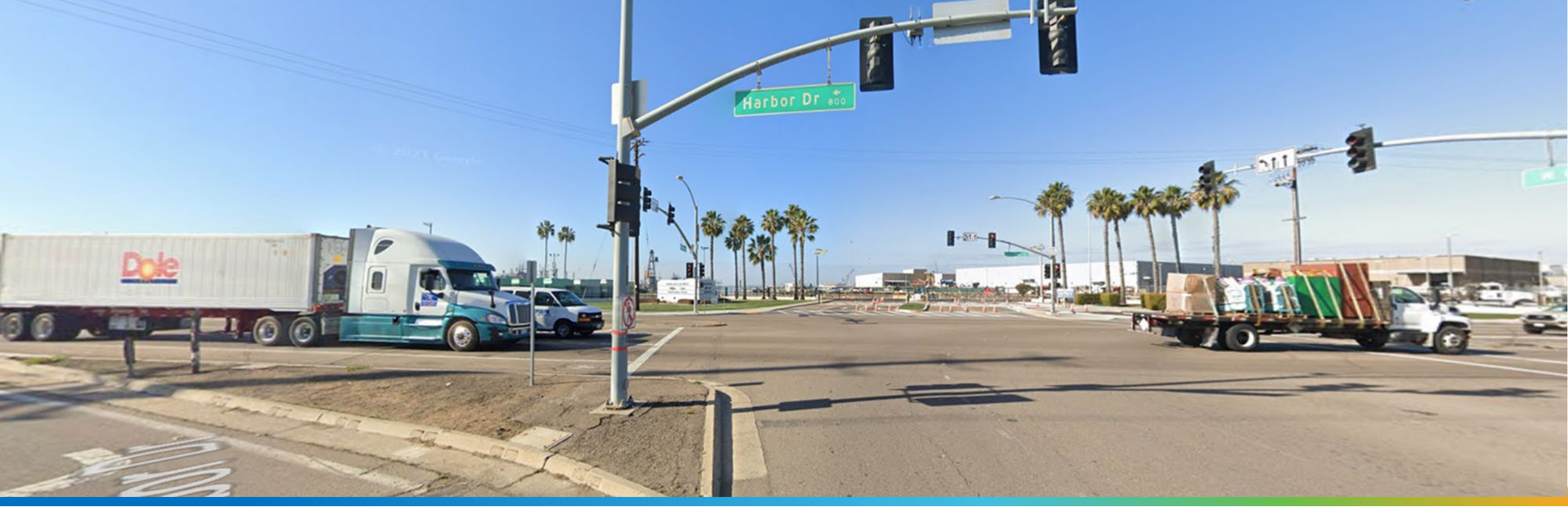


LIVE SPaT, MAP and BSM Display



Time to Departure – Passage Time/Delay

CV Data shared with ATMS and/or SPM systems…



Travel Time Data Analytics

BlueTOAD: Bluetooth Travel-Time Origination And Destination

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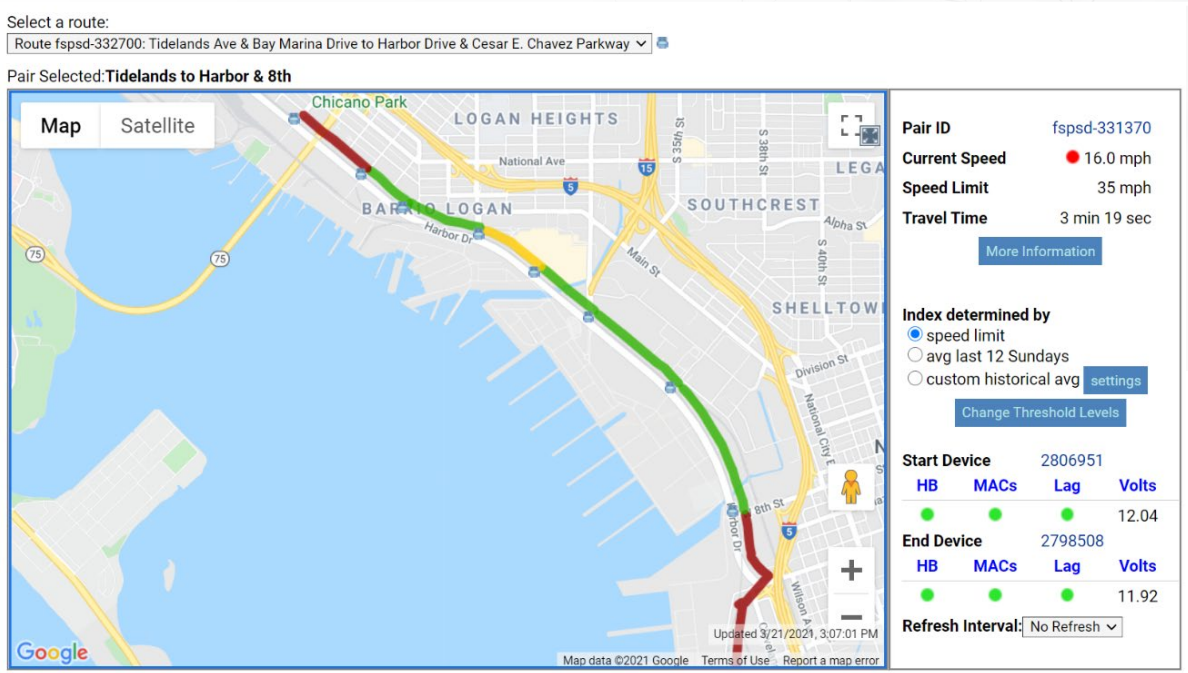
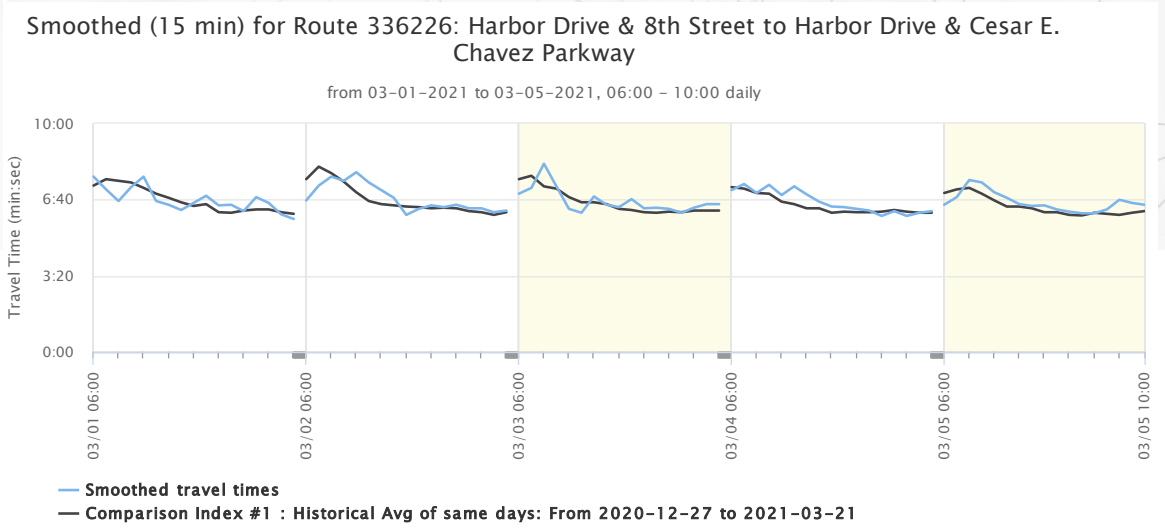
Manage Traditional Real Time and Historical ITS Data





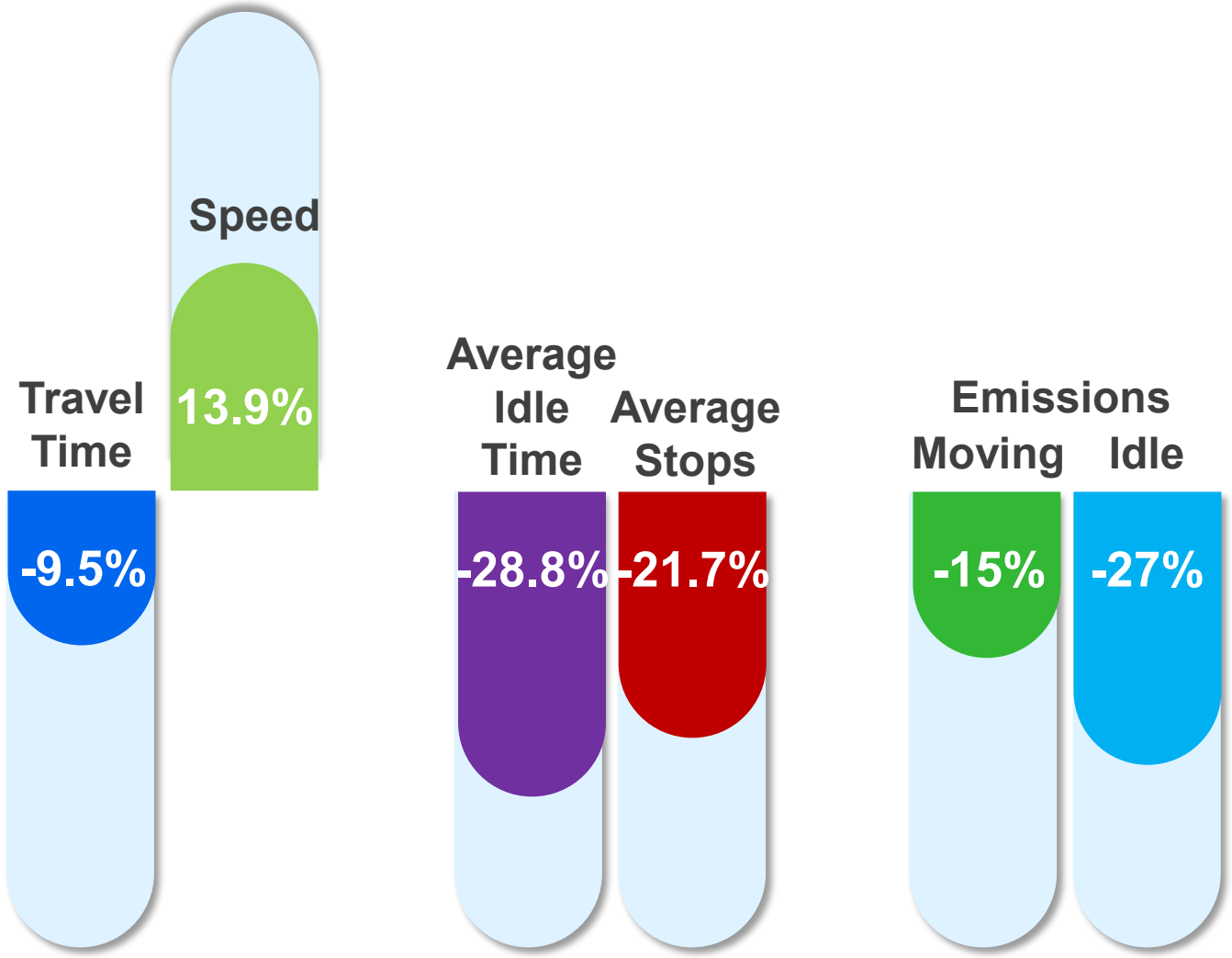
Real Time Travel Time – Interactive Speed Maps

Origin/Destination, Before & After Studies

Travel Time Data shared with Advanced Traffic Management Systems (ATMS) and Signal Performance Measures (SPM) systems…

"Performance results show the (Connected Vehicle) FSP system provides substantial benefits…"

STC Traffic, Carlsbad, CA



Trucker participation interest increased as word spread of the improved travel times and reduced stops.

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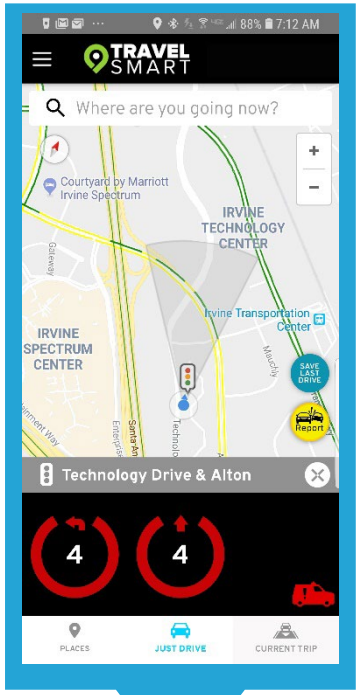
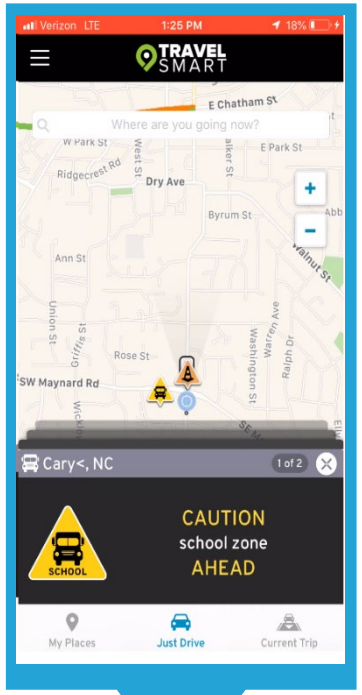
Combine Smartphone App with Connected Vehicle Notifications



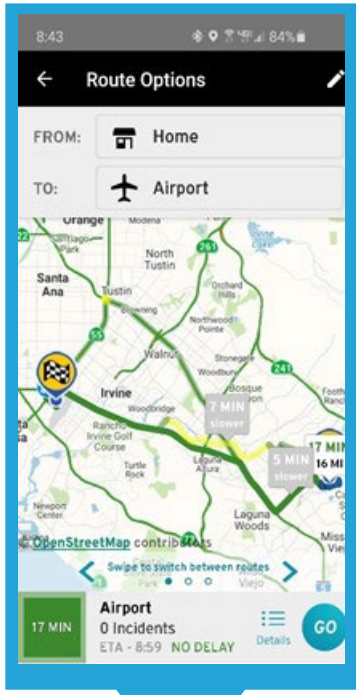
I2X
Information

EV Alerts
Signal Status



Localized TIM

School Zone
Construction Zone
Notifications



Navigation

Trucker participation interest increased with mobile device application!

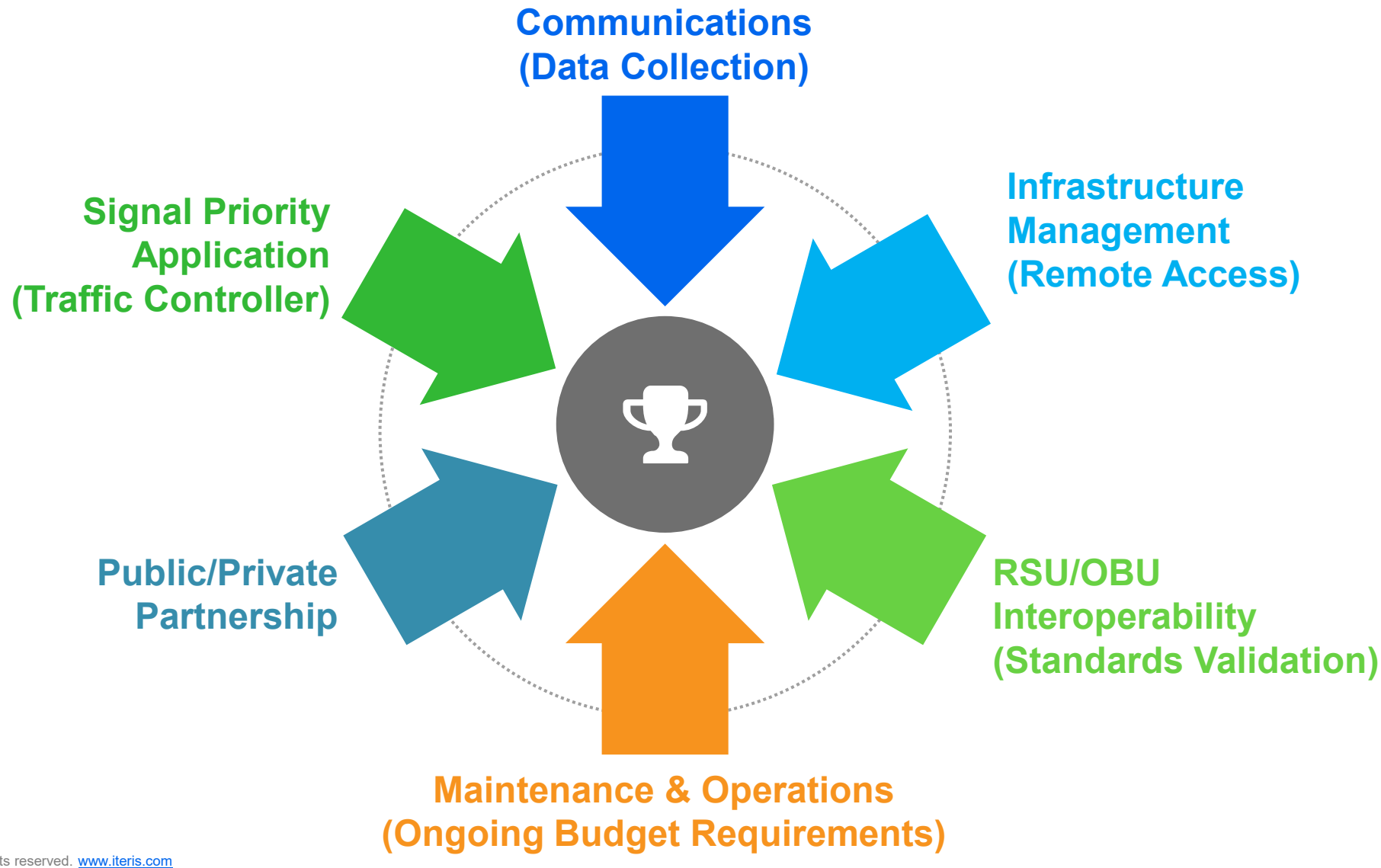
iteris V2X Connect™

Used for Agency install signoffs, project management, and technical support…

Connected Vehicle data/application validation:

- Signal Priority & Preemption Implementation and Monitoring
- Traveler Information Messages
  - Construction Zone Alerts
  - Vehicle Incident Notifications
- Pedestrian Safety Messages
- Speed Limit Warnings
- Wrong Way Vehicle Alerts

In Summary – all ITS parts work in harmony…



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Thank You.

Questions/Comments?

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