DOTD's DSRC Pilot for Connected Vehicles

SimCap Louisiana Chapter Meeting Dec. 8, 2020 Presented by: Clarke Chauvin, ITS LLC





History of Connected & Autonomous Vehicles (CAV)

Autonomous

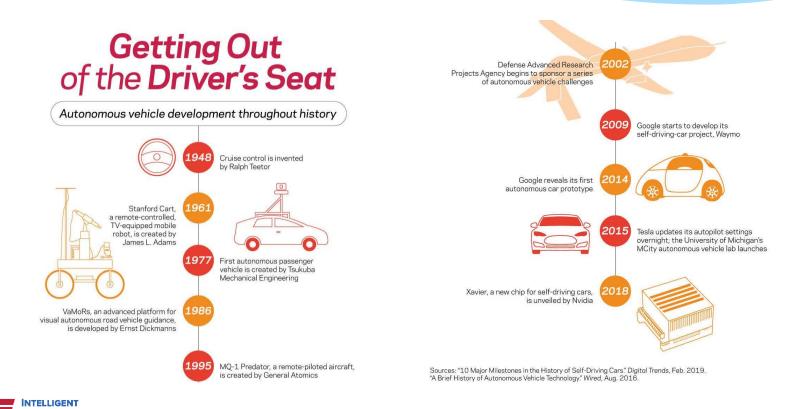
Connected







History of Connected & Autonomous Vehicles (CAV)



RANSPORTATION

Systems[®]

History of Connected & Autonomous Vehicles (CAV)

DSRC

- Dedicated Short Range
 Communications
- * FCC allocated bandwidth
- 2017 Cadillac CTS sedan first mass produced with DSRC
- Well received by global automakers

5G LTE

- 5th Generation Long-Term
 Evolution cellular
 communication
- Prevalent with cell phones
- Greater interoperability, wider bandwidth



Dedicated Short Range Communications (DSRC)



- In 1999, US allocated 75 MHz of 5.9 GHz band to be used by ITS
- In June 2017, Utah DOT demonstrated DSRC with a bus system
- In November 2020, FCC reallocated 45 of the 75 MHz to not be reserved for ITS



Why should I care?

- Reduced congestion, travel times, and increased safety through
 - Improved platooning
 - Live traffic updates & rerouting
 - Respond to incidents
 before they can be seen





Why should I care?

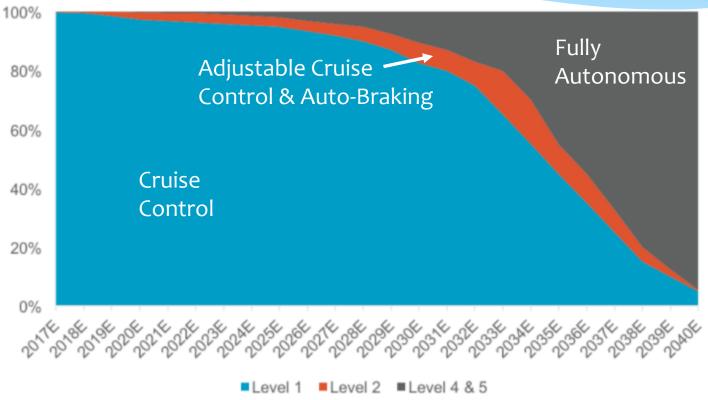
* This is SimCap Louisiana

- You are interested or working with roadway capacity
- Many Louisiana roadways are above capacity
- * It's our future and it's pretty neat!





CAV Market Penetration Estimate





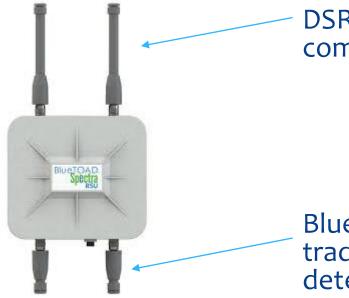
DSRC Pilot Project



Planned 5 DSRC units along Airline Hwy in Baton Rouge

Provide live SPaT data to drivers and fixed points for DSRC



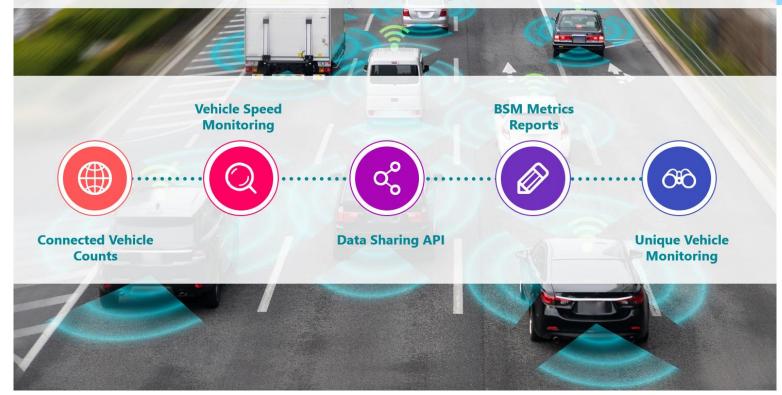


DSRC antennas for V2X communications

Bluetooth antennas for traditional travel time detection

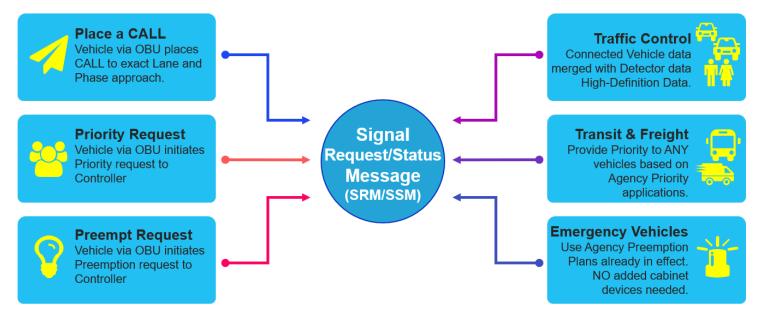


Vehicle Basic Safety Message (BSM) Data Aggregation



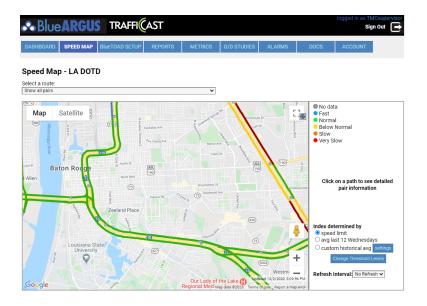


Signal Priority Applications to Increase Traffic Flow...





BlueARGUS Software Suite



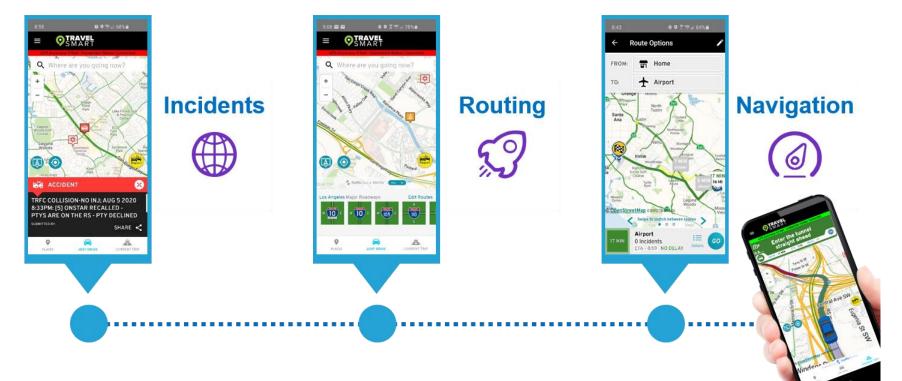


- Web-based GUI with unlimited users
- * 3 Main components:
 - * Simple setup of pairings and routes
 - Real-time information and alarms
 - * Historical Reports and Analysis
- * Over 3,500 BlueARGUS Users Worldwide



TravelSmart App

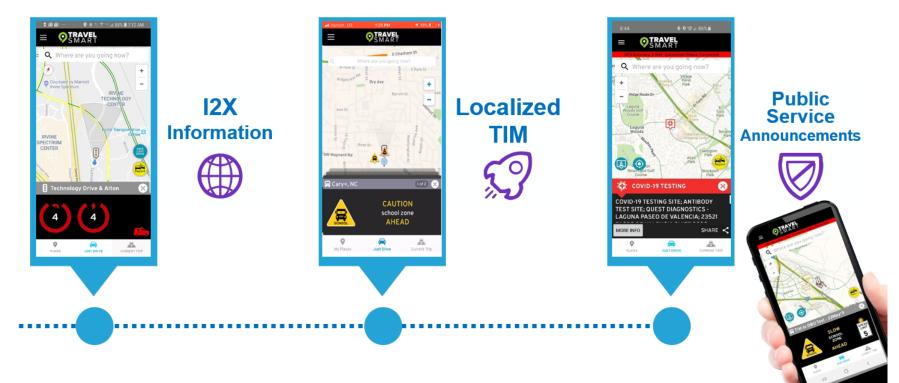
TravelSMART Smartphone Mobile App



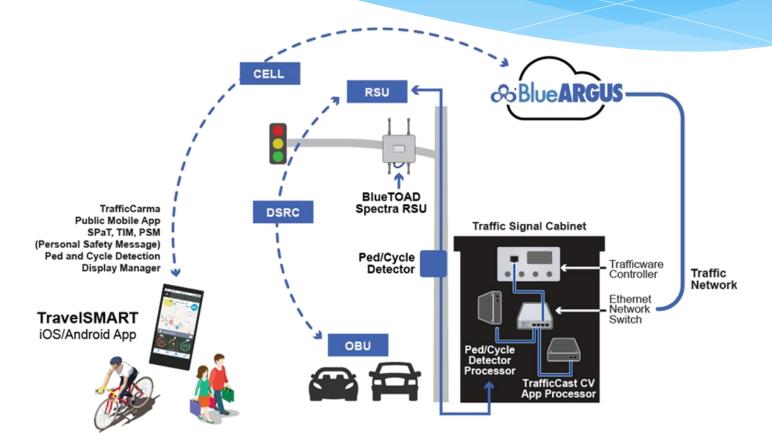
INTELLIGENT TRANSPORTATION Systems*

TravelSmart App

TravelSMART Smartphone Mobile App







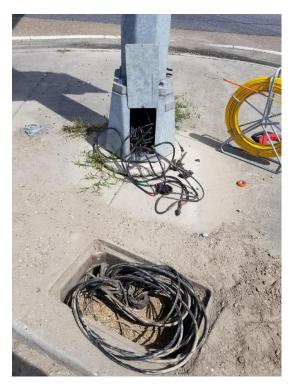


Installation





Installation







Installation







Configuration







Configuration

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 Configuration tool not ready

- Rewrote code and uploaded to device
- Helped TrafficCast develop configuration procedures



Integration



- * Firmware upgrades
- * Controller licensing
- Definitely did not put signal into flash (oops!)
- DOTD's security breach in Feb 2020
 - * Local DNS needed



Integration



- * Updated firmwares
- DOTD's security breach in Feb 2020
 - * Local DNS
 - Work with OTS to open up firewall

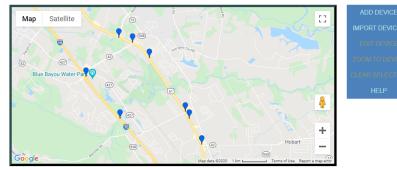


Integration



Devices - LA DOTD

Show Active Devices Show Inactive Devices



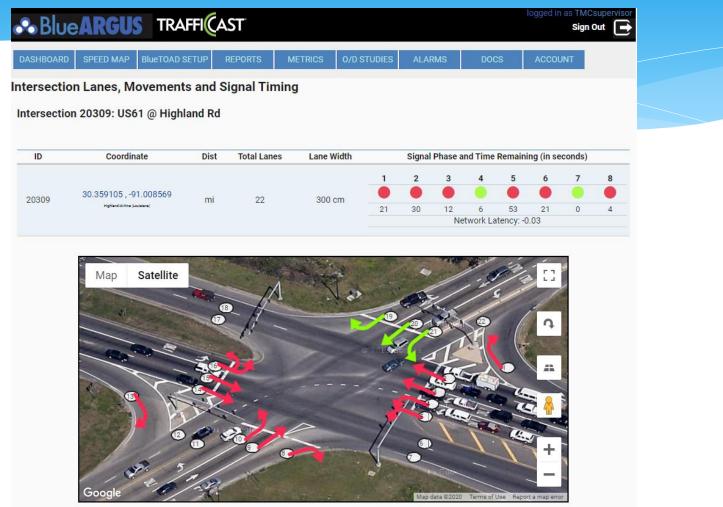


Intersections - LA DOTD





US 61 (Airline) at Highland





US 61 (Airline) at Perkins

logged in as TMCsupervisor Sign Out

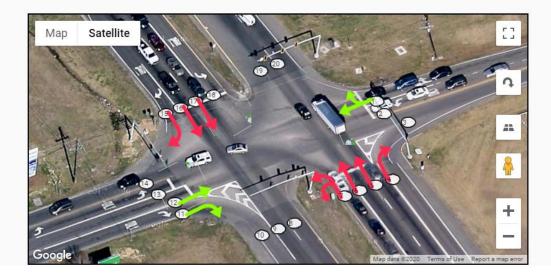
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SPEED MAP BlueTOAD SETUP REPORTS

Intersection Lanes, Movements and Signal Timing

Intersection 18773: US61 @ Perkins Rd

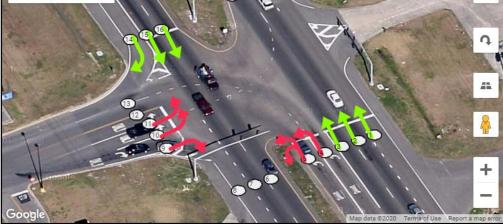
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US 61 (Airline) at Wal-Mart

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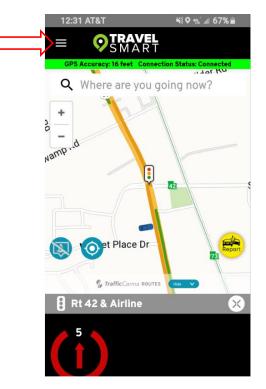


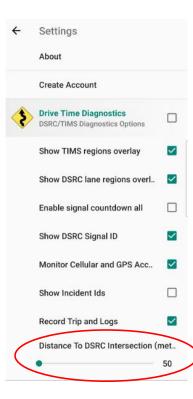
US 61 (Airline) at LA 42

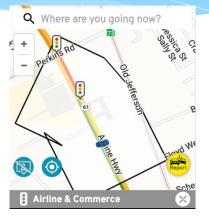
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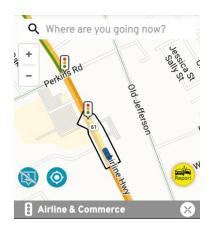


Results: More Troubleshooting



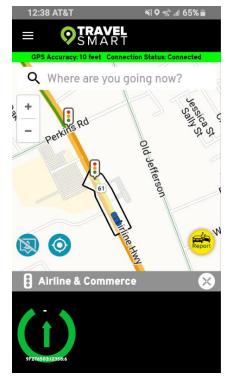


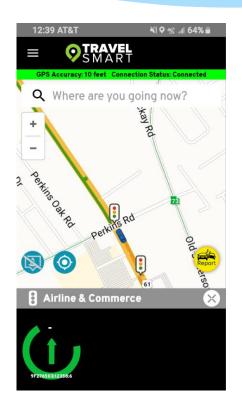






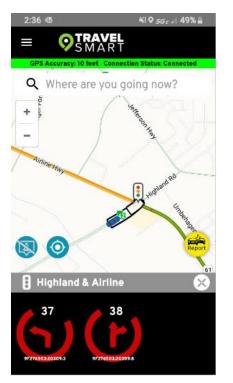
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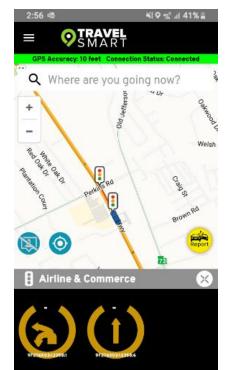


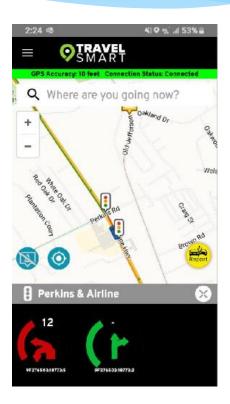




Improved Experience



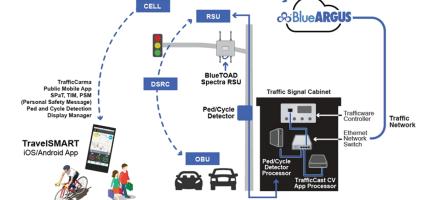






Summary

 System fully operational
 Learned a lot
 Louisiana's first CV pilot
 Hopefully more technology is introduced to Louisiana







Clarke Chauvin, P.E., PTOE, PMP Project Engineer



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