Connected Corridor Initiative
Roadmap to Near-Term Connected Vehicle Benefits

Minnesota Department of Transportation

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m1 DEPARTMENT OF TRANSPORTATION

mndot.gov

Why are we talking about CAV & Connected Corridor?

- Respond to the SPaT Challenge

- Gain agency experience with DSRC and connected vehicle data

- Identify early benefits of DSRC through fleet use cases

- Further programs to share real-time data via mobile and traditional methods to increase value to MnDOT customers today
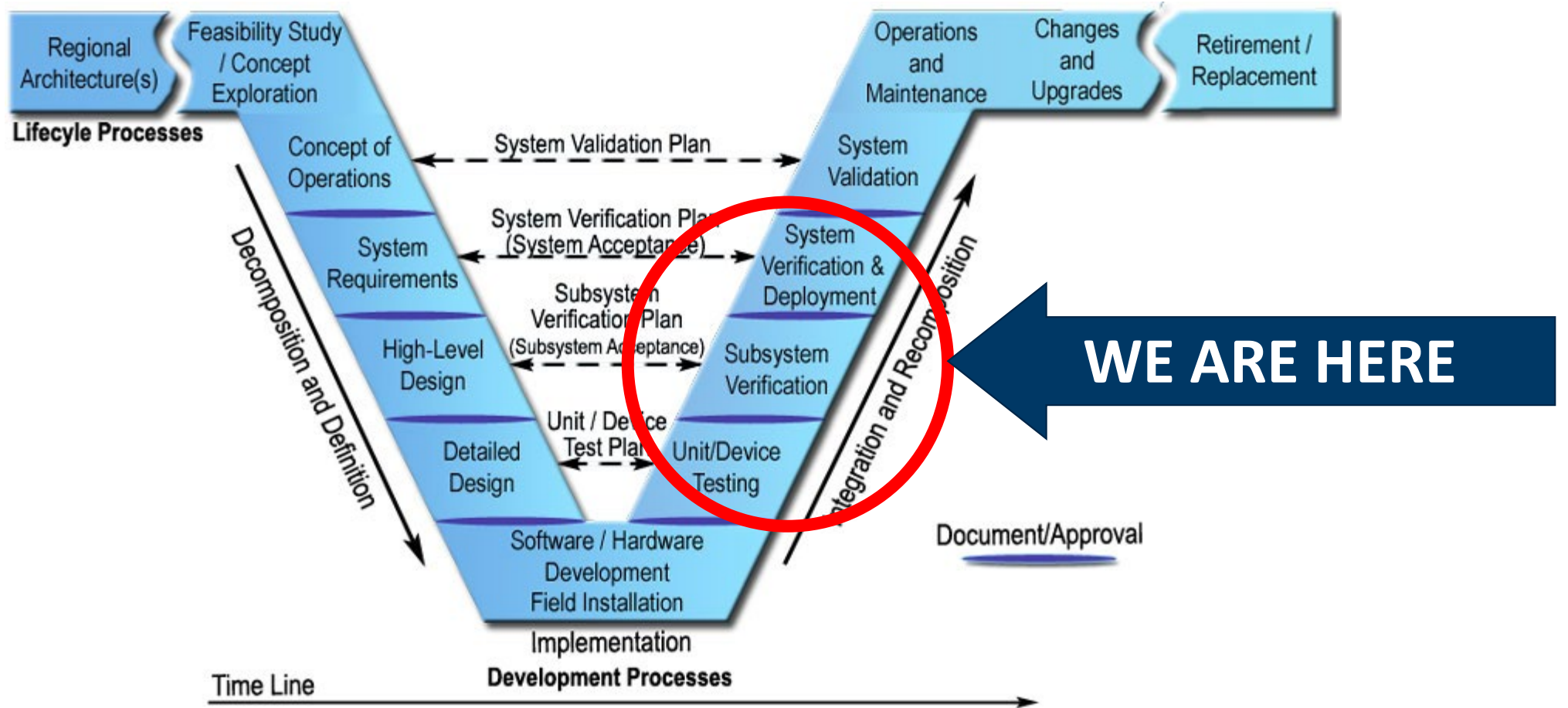
- Broadcast Signal Phase and Timing (SPaT) and MAP information using DSRC

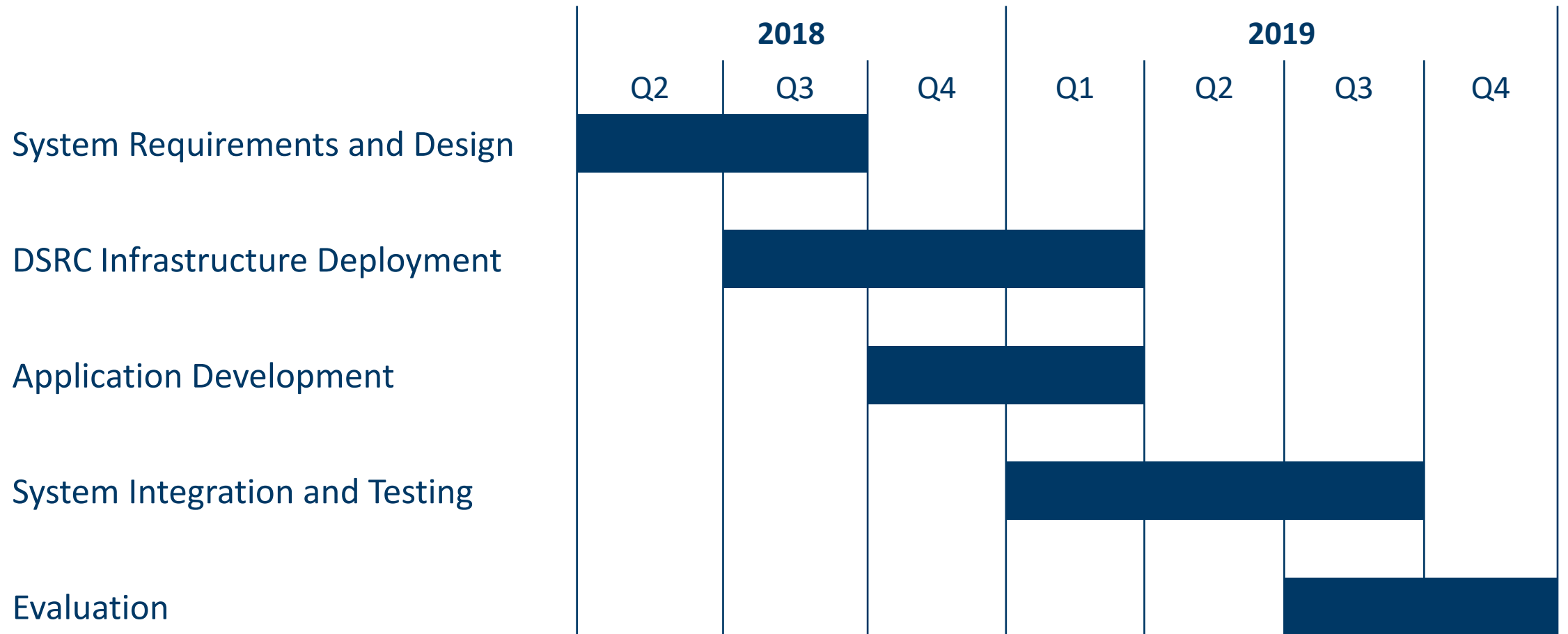- Follow SAE J2735 message format

- Fulfill the SPaT Challenge

Geographic Overview

WE ARE HERE

Schedule

	2018			2019			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4
System Requirements and Design	███	███					
DSRC Infrastructure Deployment		███	███	███			
Application Development			███	███			
System Integration and Testing				███	███	███	
Evaluation						███	███

- Concept of Operations initiated in late 2017

- Interaction with a large range of internal and external stakeholders

  - MnDOT functional groups (ITS, traffic operations, maintenance, etc.)

  - Regional transit agencies (Metro Transit, Plymouth Metrolink)

  - Corridor communities (Minneapolis, Golden Valley, Plymouth, St. Louis Park)

- Identified top challenges and derived user needs

Vehicle-Pedestrian Conflict Warning

- Warn driver of a pedestrian crossing a conflicting crosswalk

- Infrastructure-based detection of pedestrians

- Initial deployment in buses

Mobile Work Zone Warning

- Provide warning to vehicles upstream of a moving work zone (i.e. maintenance and plowing operations)

- Maintenance vehicles communicate directly to MnDOT systems

- Automated messages via DMS, mobile application and DSRC messaging

Snow Plow Signal Priority

- Provide signal priority for snow plows during active plowing operations

- DSRC-based signal priority

- Support improved plow efficiency and safety of roadway during snow events

SPaT Data Considerations

- SAE J2735

- Lear Connexus Roadstar RSU

- Broadcast 10 times per second

- Accompanied by Intersection MAP Data

- Archive?

Light will change in 32 seconds

Time To Light: 0 seconds
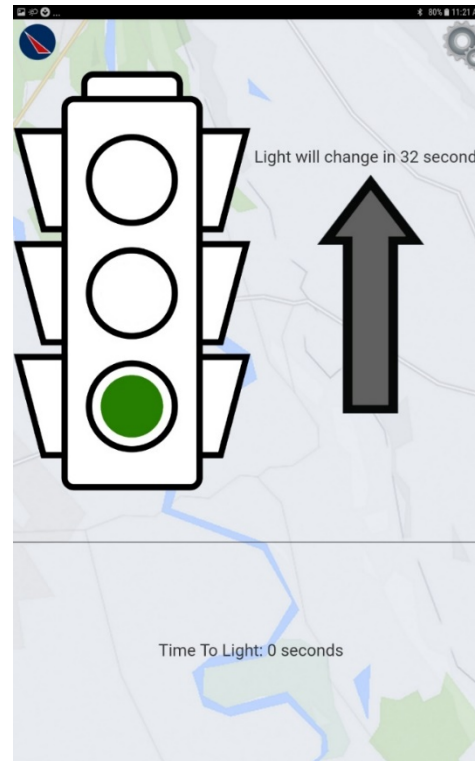
Rhode Island Ave
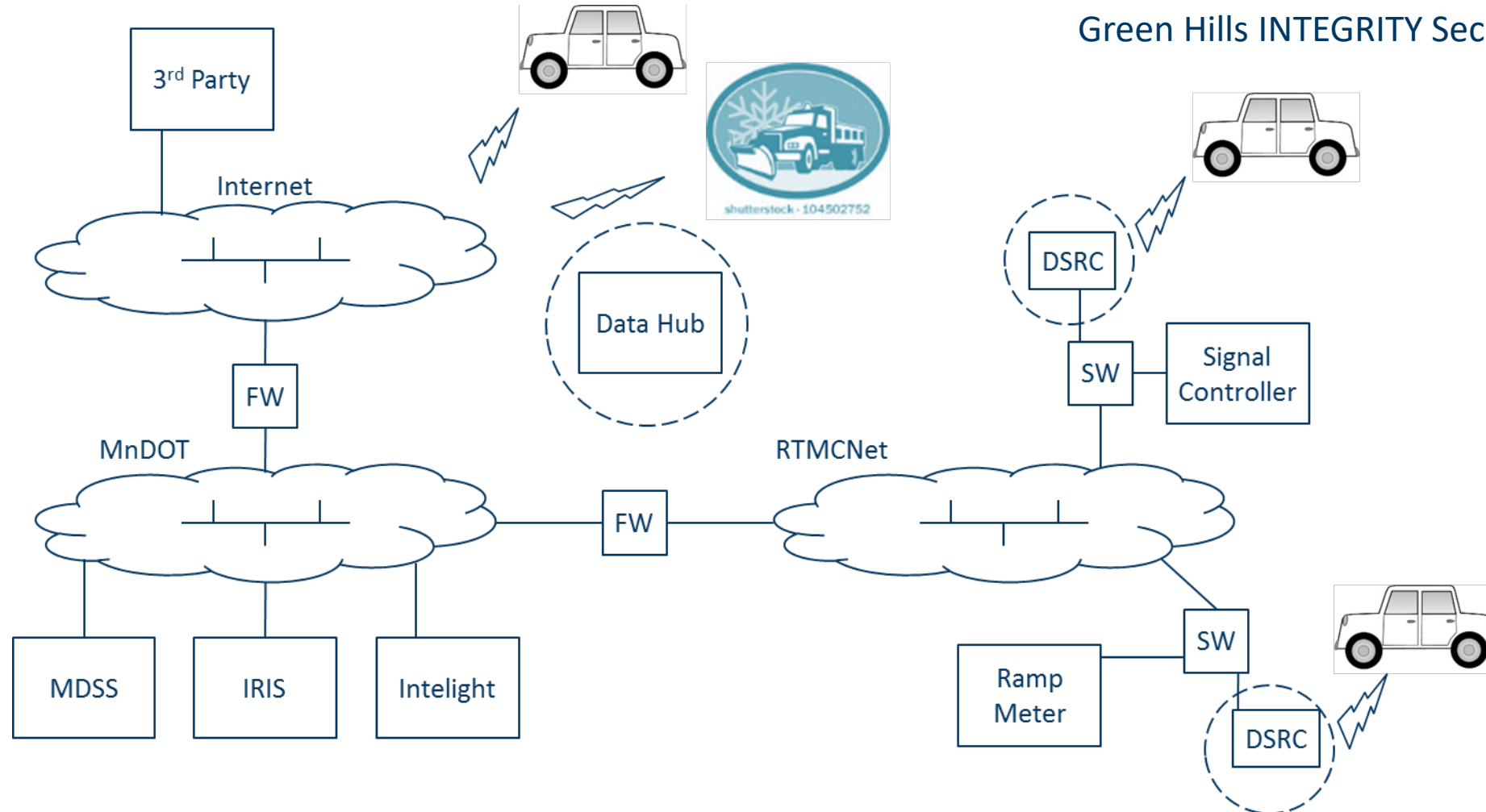
- Range of 1000 feet

- Heat map

- Rain/snow

Third-Party Traffic Signal Data Sharing

- Create standardized process for publishing traffic signal data to third-parties (web portal)

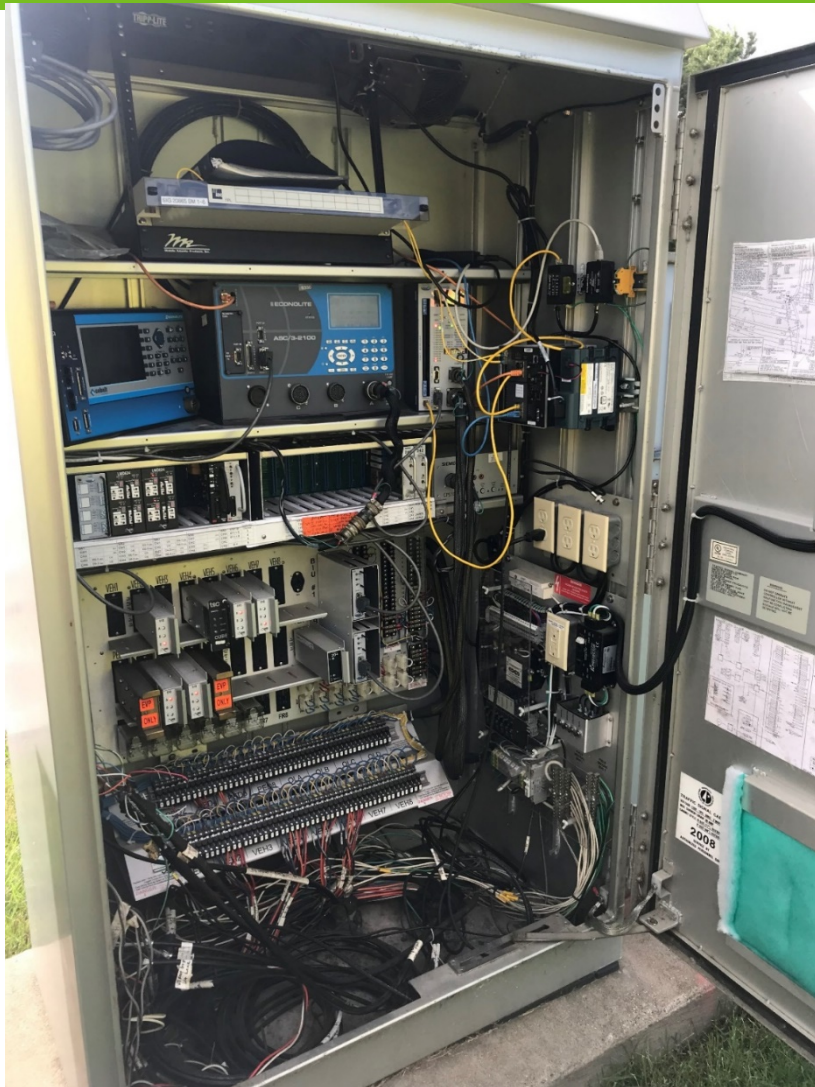- Accelerate availability of information to customers for eco-driving and other applications
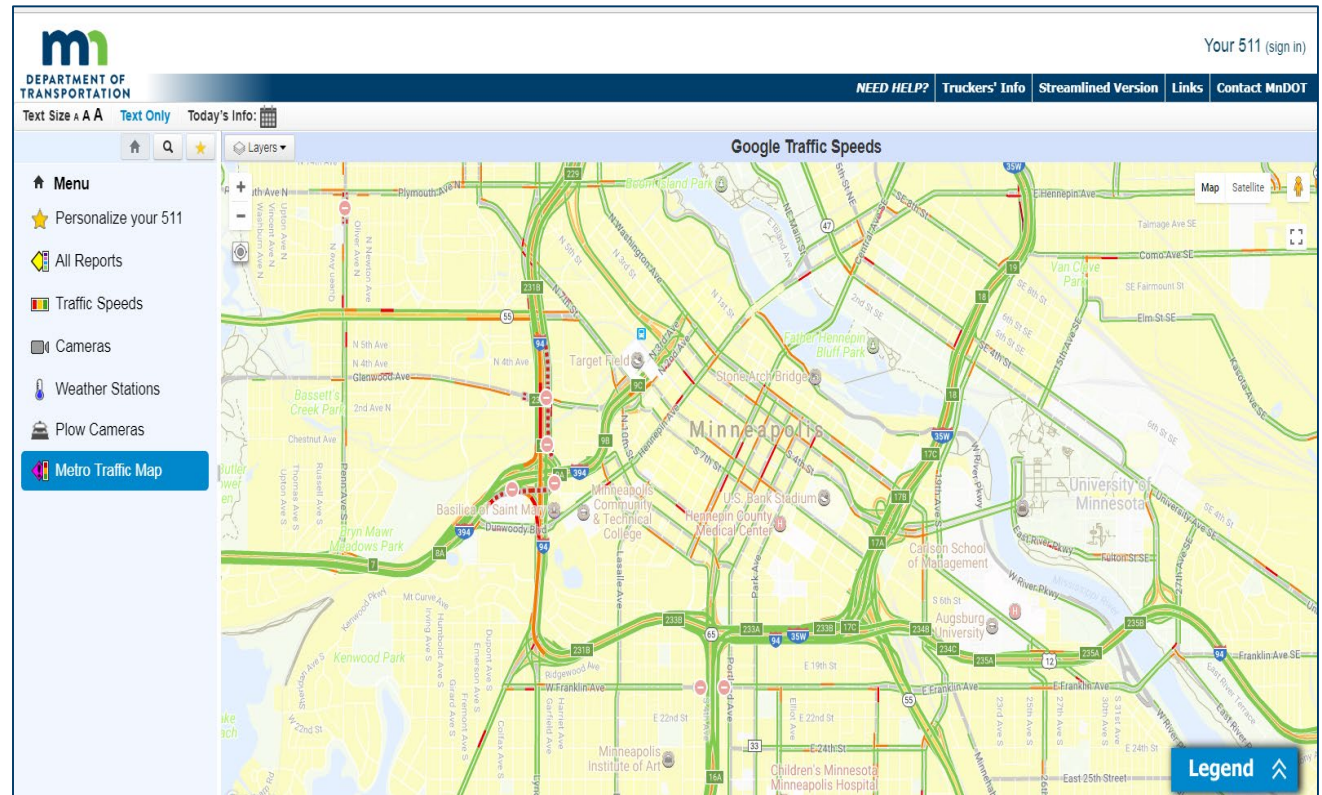
Project 1805: Network Security Design for Connected Vehicles

Private Sector Provider
Green Hills INTEGRITY Security Services (ISS)

Controller Challenges

- ASC3 controller
  - ASC3 software
  - Tried and true but no signal priority

- Cobalt controller
  - EOS software
  - Does signal priority but needs more testing from Metro Signals
  - Pedestrian issue
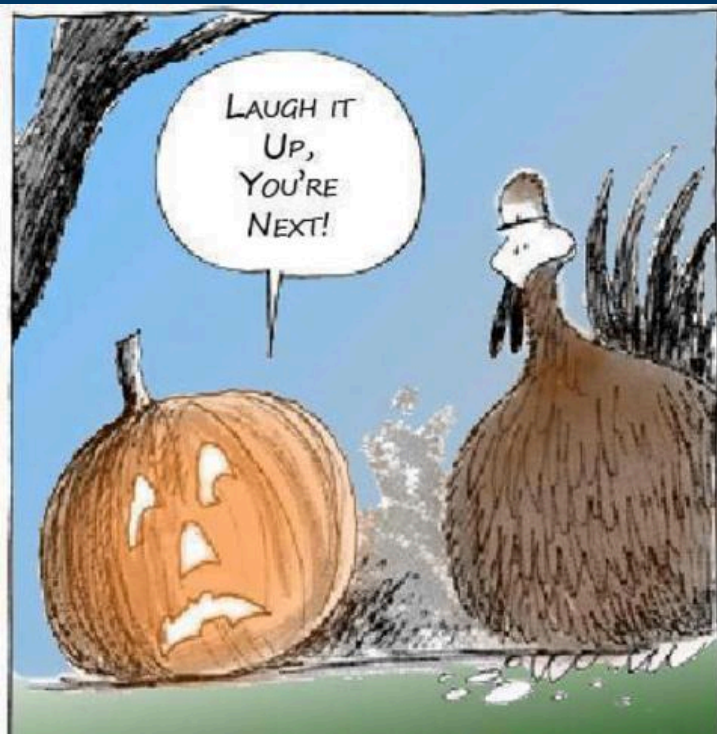
- Mounted downwards to meet line of sight requirement

- Building an understanding of new technology throughout MnDOT

- Schedule, budget

- New technology for public – consumer does not have DSRC yet

Thank you!

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