




# Cloud V2I The Third Option

AASHTO CTSO

August 27, 2019

Ray Starr, Minnesota DOT



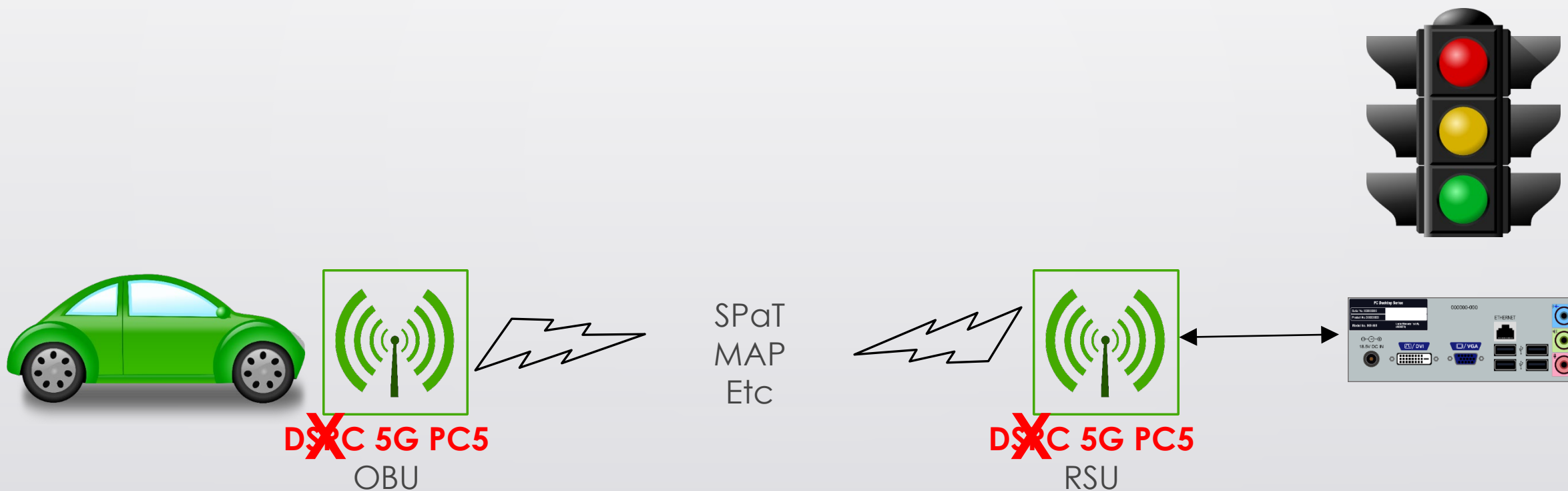
## Agenda:

- Introduction
- CV Pooled Fund Study Project: Using Third Parties to Deliver I2V
- MnDOT Project: Centralized SPaT and MAP Data Sharing

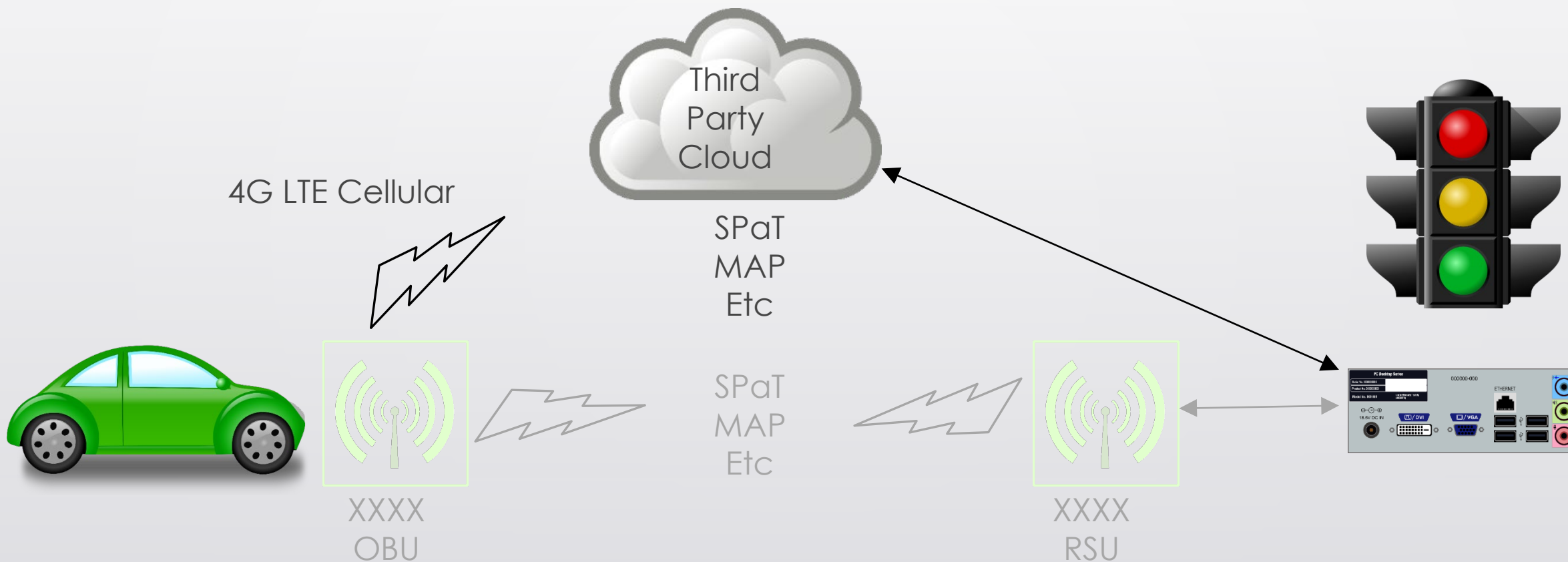
# DSRC: The Original Plan for V2I Communication



# 5G PC5: New Rival for V2I Communication



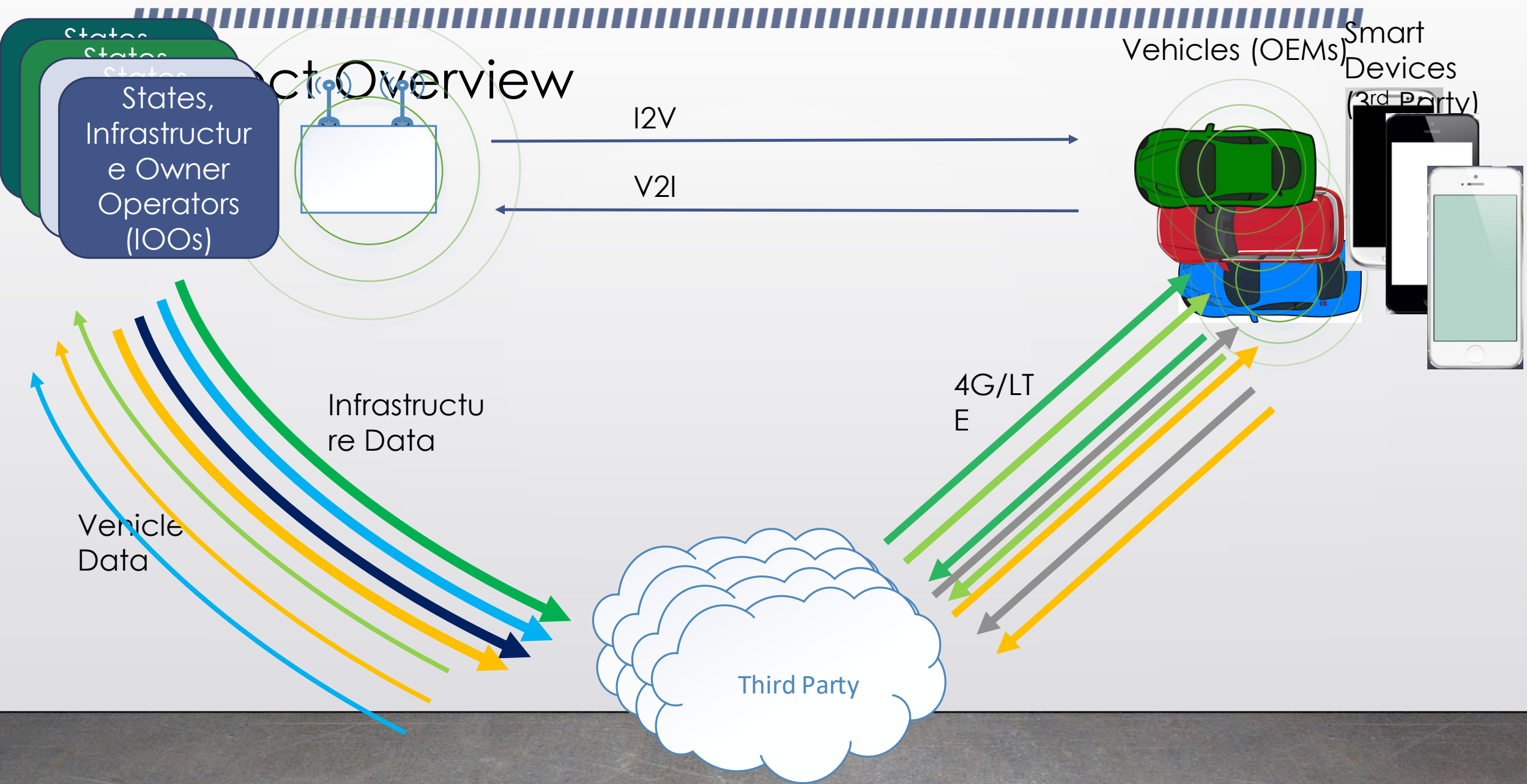
# Cloud V2I: 3<sup>rd</sup> Option for V2I Communication?

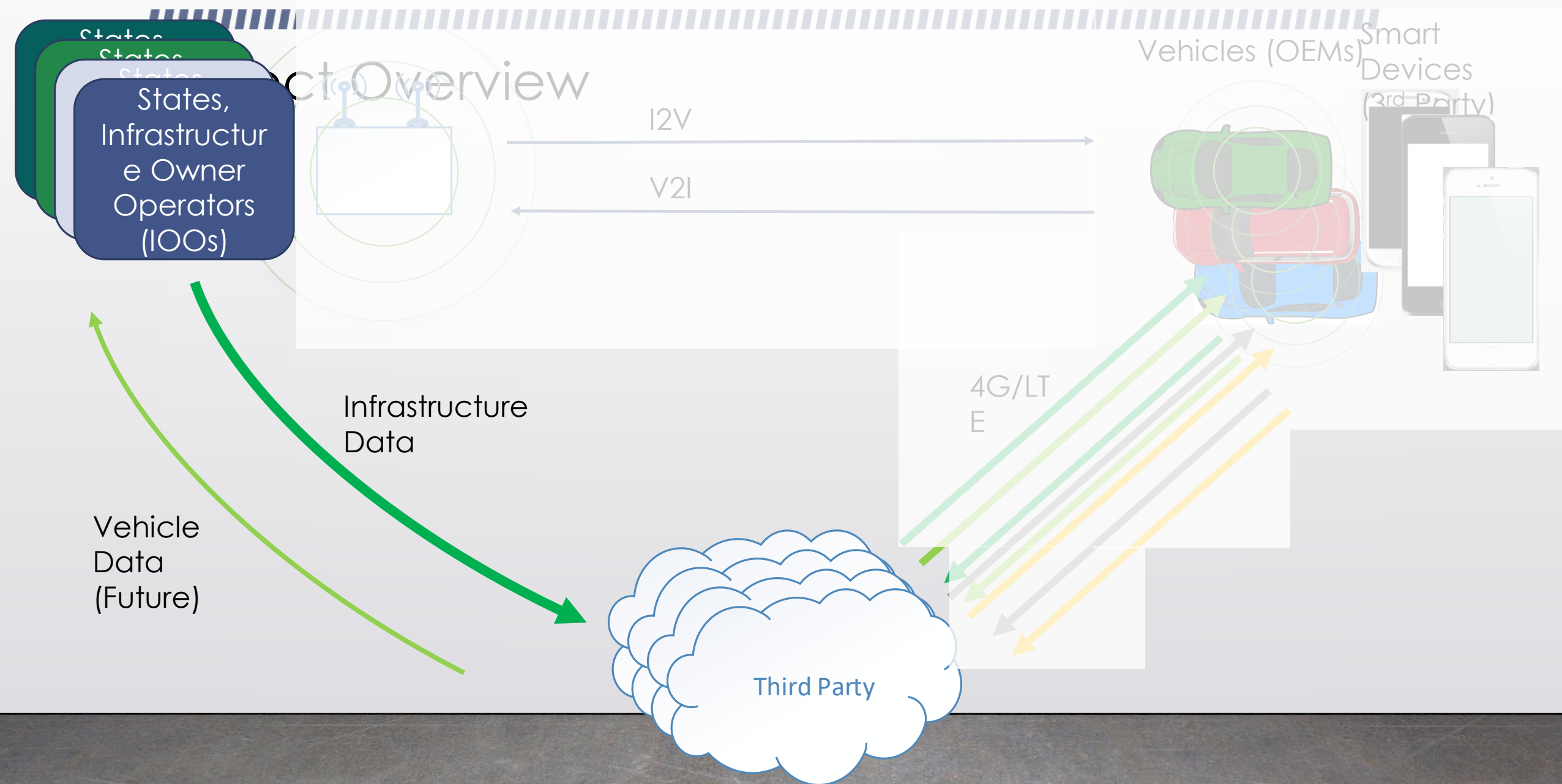




# Using Third Parties to Deliver 12V









## Task 2: Survey of the Current Status

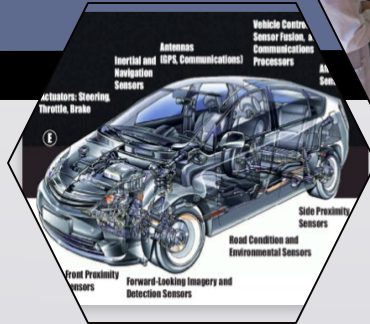
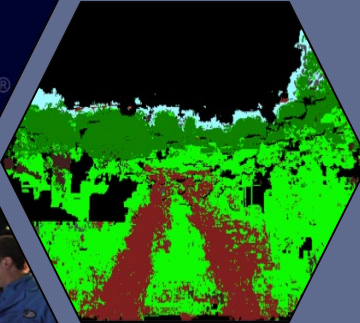
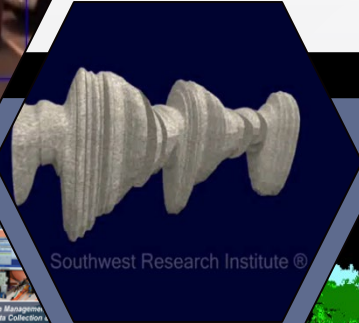
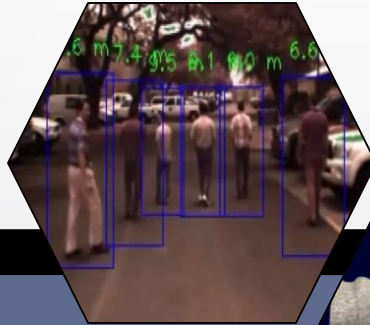
- States / IOOs
  - 3<sup>rd</sup> Party Providers
  - ATMS Vendors / System Integrators
  - OEMs
- 
- **Status: Draft document developed**

| States, IOOs           | Third Parties            | System Integrators               | OEMs   |
|------------------------|--------------------------|----------------------------------|--------|
| Ohio DOT               | TTS                      | eTrans Systems (Owned by Kapsch) | GM     |
| Texas DOT              | ConnectedSignals         | Intelight (MaxView)              | Audi   |
| Utah DOT               | HERE                     | Econolite                        | Nissan |
| Virginia DOT           | TomTom                   | Siemens                          | Ford   |
| University of Virginia | DeepMap                  | Panasonic                        | Toyota |
| Minnesota DOT          | Uber                     | Bosch                            | BMW    |
| Maricopa County DOT    | Google                   |                                  |        |
| Arizona DOT            | Inrix                    |                                  |        |
| California DOT         | DENSO                    |                                  |        |
| Florida DOT            | HNTB                     |                                  |        |
| TRF                    | IBI                      |                                  |        |
| FHWA                   | MioVision                |                                  |        |
| NRC Canada             | AI (Applied Information) |                                  |        |
| USDOT                  | Qualcomm                 |                                  |        |
|                        | SiriusXM                 |                                  |        |
|                        | Voyage (ADS)             |                                  |        |
|                        | Waze                     |                                  |        |




## Tasks 3 and 4

- Task 3 – Development of Common Interfaces and Data Approaches
  - System Engineering Documents **Expected Completion Spring 2020**
    - Concept of Operations **Status – Walkthrough of Draft September 11**
    - System Requirements
    - Interface Control Document
- Task 4 – Submission of Recommendations to Standard Development Organization **Expected Completion Summer/Fall 2020**



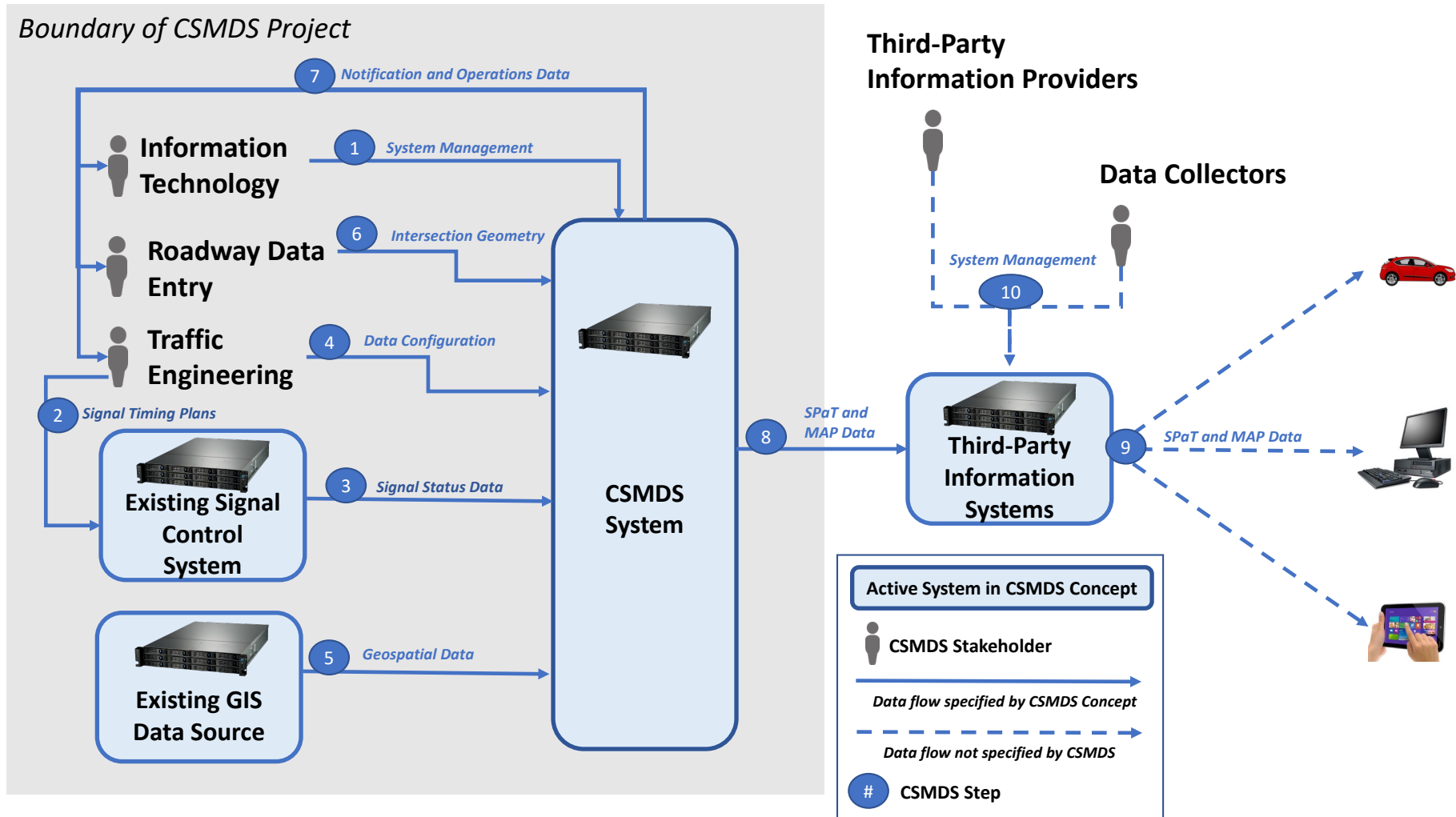
**Thank You!**

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# MnDOT Centralized SPaT and MAP Data Sharing

# CSMDS Concept







# Project Scope

- Develop SPaT and MAP data sharing concept of operations
  - Vendor demo
- Develop SPaT and MAP Data Sharing functional requirements
- Develop a test plan to test existing and prototype tools against the requirements
- Conduct tests to determine how well tools meet requirements and to determine feasibility of all requirements
- Document findings



## CSMDS Project Team

- **MnDOT** will manage and guide project
- **Intelight** is the provider of the central signal system, will demonstrate its SPaT and MAP tools and provide technical expertise
- **Experts** – Georgia, Oregon and Utah will participate and are current Intelight clients
- **Athey Creek Consultants** will document the project, develop the concept and requirements and test demonstration products.  
Dean Deeter, [deeter@acconsultants.org](mailto:deeter@acconsultants.org), (503) 709-2655



# Thank You!

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