Connected Vehicle (CV) Technology Overview

List of Terms
- DSRC – Dedicated Short-Range Communication
- V2V – Vehicle-to-Vehicle
- V2I – Vehicle-to-Infrastructure
- OBE/OBU – Onboard Equipment/Onboard Unit
- RSE/RSU – Roadside Equipment/Roadside Unit
- SPaT – Signal Phase and Timing
- BSM – Basic Safety Message

Vehicle (V) and Infrastructure (I) Equipment To Deploy

Onboard Equipment (OBE)

Roadside Equipment (RSE)

Partners

Savari Radios for V2I Communications

Savari’s DSRC-based RSE have been used in ITS test beds and commercial applications nationwide. The Savari StreetWAVE has been deployed in both the Michigan mCity pilot program and in Arizona. It offers multiple configuration options for DSRC radios, Wi-Fi and GPS, and is compliant with the United States Department of Transportation (USDOT) RSE v4.1 specification. The MobiWAVE OBU allows for the retrofitting of CV technology in older or non-instrumented vehicles. It has a GPS receiver and contains radios capable of communicating DSRC, WiFi, Bluetooth, and cellular channels.

List of Data Elements in J2735

- BasicSafetyMessage
- MapData
- SPaT
- CommonSafetyRequest
- EmergencyVehicleAlert
- IntersectionCollision
- NMEACorrections
- ProbeDataManagement
- RoadSideAlert
- RTCMcorrections
- SignalRequestMessage
- TravelerInformation
- PersonalSafetyMessage

US-231 at Airport Road, West Lafayette

This intersection will be a pilot site for the CV deployment

Cellular Antenna atop of Cabinet to connect to the TMC

Push buttons may eventually be replaced by personal multi-modal DSRC devices

Can include other modes such as rail pre-emption

Standards

- Transmission Standards
  - Aptom 2733.03
  - IEEE 802.11-2012
  - IEEE 1609 Family
  - SAE J2945 Family
  - ISO 14901 Family
- Interface Standard
  - SAE J2735
- Data Standard
  - SAE J2735

Source: University of Arizona

Source: Crash Avoidance Metrics Partnership and GAO

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Source: Energy Department of Transportation

Source: USDOT