



Select Published Resources: Connected Vehicle & DSRC Deployment August 2017

Prepared by SCOWCT Technical Working Group 4:
Future and Emerging Technology

USDOT ITS Joint Program Office web pages:

- Vehicle-to-Infrastructure (V2I Resources): <https://www.its.dot.gov/v2i>
- CV Pilots Deployment Project: <https://www.its.dot.gov/pilots/index.htm>
- Research Archive: https://www.its.dot.gov/research_archive.htm

Deployment Guidance

- [Vehicle to Infrastructure Deployment Guidance and Products](#) (FHWA, Sept 2014)
 - DSRC licensing is addressed on pages 16-17. Page 17: “Although safety communication has precedence, identification and removal of interfering non-safety signals could be problematic, particularly if the interfering deployment was licensed and sited first. FHWA recommends that once an application deployment is identified in the planning process, site licensing should be undertaken.”
- [Recommended Practices for DSRC Licensing and Spectrum Management](#) (FHWA, Dec 2015)
 - Carefully read entire document
 - Flowcharts for obtaining a license begin on p. 27
- [V2I Deployment Coalition Resources](#)
 - Resources include a Final Report, Webinars, and Technical Memorandums on various issues related to deployment guidance, standards, and initiatives.
- [SPaT Challenge Resource: Implementation Guide](#) (AASHTO, 2016)
 - A high-level summary of the deployment process for Signal Phase and Timing (SPaT) messages and supporting messages and applications.

Prioritizing Connected Vehicle Application and Deployment

- [National Connected Vehicle Field Infrastructure Footprint Analysis](#) (FHWA, June 2014)
 - Pages 24-26 provide a list of applications identified from a greater analysis of potential CV applications. The remainder of this section of the document talks in greater detail about the communications process and assumptions.
- [Connected Vehicle Reference Implementation Architecture \(CVRIA\)](#) (USDOT, 2016)
 - The applications tab of this web site provides links to more detailed information about each of the CV applications – most of which align with the apps noted in the Footprint Analysis.
- [SPaT Challenge Resource: Guidelines for Selecting Corridors](#) (AASHTO, 2016)
 - This document helps agencies identify intersections and corridors based on needs and available infrastructure to maximize benefit and reduce costs.

Select Connected Vehicle Standards

- [SAE J2735 DSRC Messaging Standard](#) (SAE, 2016)
 - Provides guidelines regarding the structure and data elements required for DSRC messages, e.g., Basic Safety Message (BSM)
- [DSRC Roadside Unit \(RSU\) Specifications Document v4.1](#) (FHWA, 2016)
 - Provides minimum requirements for roadside units to support DSRC for connected vehicles
- [Security Credential Management System Proof-of-Concept Implementation](#) (CAMP, 2016)
 - Requirements and Specifications Supporting Security Credential Management System (SCMS) Software Release 1.2. This is not finalized or ready for widespread deployment, but can give practitioners an idea of what to expect.
- SPaT Challenge Resource: The Security Credential Management System and SPaT Broadcasts
 - Forthcoming document expected to provide high-level overview of security concerns and using SCMS to support SPaT message broadcasts for connected vehicle applications.
- SPaT Challenge Resource: Standards Versioning Management for SPaT Broadcasts
 - Forthcoming document expected to provide high-level overview of the various standards that are relevant for deploying infrastructure and supporting SPaT message broadcasts for connected vehicle applications.

Systems Engineering Resources for Specific Applications

- *Dynamic Mobility Application Resources:* [web link](#)
Concept of Operations, Requirements, System Design, Architecture, Prototype Demonstration, and/or Impact Assessment documentation developed by USDOT ITS JPO between 2012-2016 available at this [web site](#) for the following bundles and applications:
 - Enable Advanced Traveler Information System (EnableATIS) and [Next Generation Advanced Traveler Information System \(ATIS 2.0\) Concept of Operations](#) (FHWA publication)
 - Response, Emergency Staging, Communications, Uniform Management, and Evacuation (R.E.S.C.U.M.E.)
 - Response Staging (RESP-STG)
 - Incident Zone (INC-ZONE)
 - Intelligent Network Flow Optimization (INFLO)
 - Queue Warning (Q-WARN)
 - Dynamic Speed Harmonization (SPD-HARM)
 - Cooperative Adaptive Cruise Control (CACC)
 - Freight Advanced Traveler Information System (FRATIS)
 - Freight Specific Dynamic Travel Planning and Performance
 - Drayage Optimization
 - Integrated Dynamic Transit Operation (IDTO)
 - Connection Protection (TCONNECT)
 - Dynamic Transit Operations (T-DISP)
 - Dynamic Ridesharing (D-RIDE)

- Multi-Modal Intelligent Traffic Signal Systems (MMITSS)
 - Intelligent Traffic Signal System (ISIG)
 - Transit Signal Priority (TSP)
 - Pedestrian Mobility
 - Freight Signal Priority (FSP)
 - Emergency Vehicle Priority (EVP)
- Safety Application Resources:
 - Accelerated V2I Safety Applications [Concept of Operations](#) (FHWA, May 2012) and [System Requirements](#) (FHWA, July 2012)
 - Red-Light Violation Warning (RLVW)
 - Stop Sign Gap Assist (SSGA)
 - Curve Speed Warning (CSW)
 - V2I Safety Applications [Concept of Operations](#) (FHWA, March 2013) and [System Requirements](#) (FHWA, March 2013)
 - Spot Weather Information Warning (SWIW)
 - Reduced Speed Zone Warning (RSZW)
 - V2I Safety Application Performance Requirements (FHWA, August 2015; 7 volumes)
 - [Introduction and Common Requirements](#)
 - Red-Light Violation Warning (RLVW) (not posted online)
 - [Stop Sign Gap Assist \(SSGA\)](#)
 - [Curve Speed Warning \(CSW\)](#)
 - [Spot Weather Information Warning with Reduced Speed \(SWIW-RS\)](#)
 - [Spot Weather Information Warning - Diversion \(SWIW-D\)](#)
 - [Reduced Speed Zone Warning with Lane Closure \(RSZW/LC\)](#)
 - Other V2I Safety Applications [Concept of Operations](#) (FHWA, March 2013)
 - Stop Sign Violation Warning (SSVW)
 - Railroad Crossing Violation Warning (RCVW)
 - Oversize Vehicle Warning (OVW)
- Weather Application Resources:
 - [Vision for Connected Vehicle Data in Weather Applications](#) (FHWA, April 2012)
 - [Concept of Operations for Road Weather Connected Vehicle Applications](#) (FHWA, May 2013)
 - [Road Weather Performance Management Tool Project Findings and Summary Report](#) (FHWA, September 2016)