



ITS/Connected Vehicle Standards

ITS and Connected Vehicle (CV) standards are based on open, non-proprietary interfaces that can be used to facilitate the deployment of interoperable ITS systems. ITS/CV Standards make it easier for state and local ITS deployers to develop and deploy integrated transportation systems. Deploying open standards reduces risk and costs in ITS projects, by supporting competition for ITS systems while providing a path for future expansion and upgrades.

ConSysTec plays an active role and is a recognized industry leader in developing ITS/CV Standards. We have led the development, or, played an integral role in the development of most of the key ITS Standards in the past decade, including for Connected Vehicles.

We actively participate in many of the working groups of Standards Development Organizations (SDOs) related to ITS standards, including the NTCIP Joint Committee, NTCIP working groups, ISO TC 204, and the SAE V2X Technical Committees.



Vehicle to vehicle and vehicle to infrastructure

As experts and developers of ITS Standards, ConSysTec provides technical support in the deployment of ITS Standards, including standards-based procurement specifications, creating test plans, and providing training and workshop support.

Services we offer include:

- Developing standards-based specifications and ITS standards deployment plans
- Offering technical and non-technical training on ITS standards
- Performing independent validation and verification (IV&V)

Here are a few projects where ConSysTec has played a key role in the deployment of standards.

Connected Intersections

As systems engineer and as subject matter experts, ConSysTec supported this project to develop and publish Connected Transportation Interoperability (CTI) 4501 - Connected Intersection (CI) Implementation Guide. CTI 4501 defines the key capabilities and





interfaces a connected signalized intersection must support to ensure national interoperability with production vehicles for state and local infrastructure owner/operators (IOO). For example, CTI 4501 defines the mandatory data elements for SPaT and MAP messages to enable interoperable Red-Light Violation Warning (RLVW) vehicle applications.

NTCIP 1202 v03B - Object Definitions for Actuated Signalized Controllers

ConSysTec was the lead systems engineer to update this key ITS standard to manage traffic signal controllers. The update addressed a need to fix errors, clarify definitions, and provide additional guidance for traffic signal controllers to support the SAE J2735 SPaT Message in response to guidance detailed in CTI 4501.

NTCIP Standards Testing

Compliance to a standard does not in itself guarantee interoperability across all devices. ConSysTec is developing standardized test procedures and leading the development of a NTCIP device communications standards testing software that will evaluate the object definitions defined in NTCIP 1202 (Traffic Signal Controllers) and NTCIP 1218 (Roadside Units). The primary goal of this project is to identify gaps and ambiguities in the NTCIP device standards so they can be addressed by the standards development organizations.

Independent Verification and Validation

ConSysTec has developed Verification and Validation Plans to test center-to-center implementations for TRANSCOM's Middleware Data Exchange Specification, Nevada DOT's Center-to-Center ITS Data Sharing System and San Diego Association of Government's (SANDAG) Integrated Corridor Management Systems (ICMS) C2C Interface. ConSysTec has provided training for each implementation, witnessed the verification and validation tests, and reviewed the test documentation reports.

USDOT's Professional Capacity Building (PCB) Program - ITS Standards

ConSysTec staff has been the instructors and developers of over 25 ITS Standards and ITS Transit Standards training modules for this USDOT program. The training modules, which are free and available on-line, address standards used in ITS highway applications and ITS transit deployments, including crosscutting information about testing and requirements specification.

For more information about how ConSysTec can help your organization, visit us at www.consystem.com or scan the QR Code below.



Typical Traffic Signal

