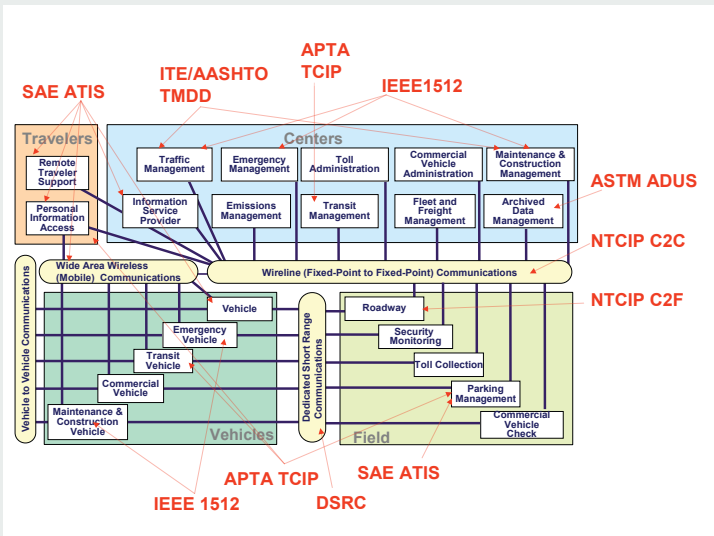


## ITS Standards Deployment

### What We Do



- Develop Regional Standards Deployment Plans
- Provide technical support for concept of operations, requirements specifications and test plans
- Develop software and equipment specifications for ITS deployments
- Develop and teach standards courses to the ITS industry:
  - Institute of Transportation Engineers
  - National Transit Institute
  - National Highway Institute

### Where We Have Done It

- Systems Engineering version of SAE J2735 (*SAE J3067 - Connected Vehicles*)
- Section 1201 Data Exchange Format Specification
- Traffic Management Data Dictionary (TMDD) v3.0x (*Center to Center*)
- NTCIP documents: NTCIP 1202 (*Actuated Signal Controllers*), NTCIP 1203 (*Dynamic Message Signs*), NTCIP 1204 (*Environmental Sensor Stations*), NTCIP 1210 (*Field Master Systems*), NTCIP 1213 (*Electrical and Lighting Management Systems*), NTCIP 9001 v4 (*the NTCIP Guide*), and NTCIP 2306 (*Center to Center XML*)
- Test Documentation and certification - Nevada DOT Statewide Center to Center and TRANSCOM Center to Center (NY-NJ-CT)
- Tools to manage, translate, and validate *transit feed specifications* including SIRI, TCIP and GTFS for real time status interfaces, schedule and performance data for NYSDOT and TRANSCOM
- ITS Standards Plans/Specification Development Guide for State DOTs (New York, Massachusetts, Vermont)

### Why ConSysTec?

- Active participants and working knowledge of the standards community (ISO, NTCIP, ITE, SAE)
- Ability to write specifications and test plans for deployments
- Link between current standards and the application of these standards in deployments

## **ITS Standards Support for the DCM Program**

ConSysTec is leading the effort to support USDOT's Dynamic Mobility Applications (DMA) research by reviewing mobility and environmental applications from the Data Capture Management (DCM), Applications for the Environment Real-Time Information Systems (AERIS), and the Road Weather Management Programs for requirements that may be candidates for standardization. ConSysTec is currently developing a proposed design to fulfill those standards gaps and participating in the appropriate Standards Development Organizations (SDOs) to advocate for the proposed changes.



## **J2735 SE Standard: Applying the Systems Engineering Process**

For USDOT, ConSysTec led the technical effort to revise the 2009 version of SAE J2735 to create a new systems engineering-based version to meet the needs of the user community, including transit and commercial vehicles. Efforts under this project focused on creating a complete standard including a verifiable set of requirements. This effort was published as *SAE J3067, Candidate Improvements to Dedicated Short Range Communications (DSRC) Message Set Dictionary [SAE J2735] Using Systems Engineering Methods*.

## **Transit Applications**

ConSysTec has an extensive practice in providing consulting services to public transit agencies, supporting both transit technology planning and project deployment using industry standards where applicable. We develop system engineering processes and oversee implementation and testing of complex technology programs, including TRANSCOM's Regional Real Time Transit Data Feed (New York - New Jersey - Connecticut), and the New York State Transit Schedule Data Exchange Architecture, among others. Both projects benefitted from ConSysTec's expertise and experience in specification development and testing based on the GTFS (General Transit Feed Specification), GTFS-realtime, and SIRI (Service Interface for Real Time Information) standards.

## **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 or will witness the verification and validation tests, and reviewed the test documentation reports.