ITE Connected Intersections Project

As the systems engineer and as subject matter experts, ConSysTec has been working on the Institute of Transportation Engineer's (ITE's) Connected Intersections project to develop and publish a Connected Intersection (CI) Implementation Guide. The CI Implementation Guide defines the key capabilities and interfaces a connected signalized intersection must support to ensure interoperability with production vehicles for state and local infrastructure owner/operators (IOO).

Early deployments of Connected Intersections (CI) have demonstrated that a common understanding and agreement on interpreting and implementing existing standards is needed between the IOOs and automotive original equipment manufacturers (OEMs). These differences have led to a lack of interoperability that prevents vehicles from using data at Connected Signalized Intersections across different jurisdictions to fully realize the safety benefits of vehicle applications.

The ITE CI effort has established an open dialogue between the IOOs, OEMs and the signal controller

Typical New York City Intersection

New York City traffic signal

industry to develop a CI Implementation Guide. The result: interoperable connected intersections that enable safety applications to be developed for production vehicles.

As the lead systems engineer, ConSysTec is leading the effort to assemble the CI Implementation Guide, guiding the five task forces that are developing guidance for specific standards areas with interoperability issues. Following the systems engineering process, the CI Implementation Guide contains a Concept of Operations, a Systems Requirements section, and a system design details section that provides the guidance.

ConSysTec staff are also the subject matter experts for two standards areas: SPaT/MAP messages; and Testing/Conformity.

For SPaT/MAP messages, ConSysTec helped define mandatory data elements to enable interoperable Red-Light Violation Warning (RLVW) vehicle applications. In addition, guidance was provided on how to construct SPaT and MAP messages to represent different intersection configurations.

For Testing and Conformity, ConSysTec's expertise helped to define a framework to verify an implementation's conformance with the CI Implementation Guide.

ConSysTec also supported the validation phase

Example of a connected intersection

of this project, where 15 implementation sites have volunteered to collect and provide field data; and to provide feedback on the draft CI Implementation Guide. The field data, consisting of broadcasted SPaT and MAP messages, was analyzed for conformance. From the IOO's perspective, the validation phase provided insight on how to perform future testing. Observations from these analyses, lessons learned and the feedback will be documented by ConSysTec in a separate validation report.

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