# RSU Standardization (RSU Stdzn) Working Group & Project Scope

As of April 23, 2020



## 1 RSU Standardization

### 1.1. RSU Stdzn Group Scope

#### *1.1.1. Existing/Current*

*From [https://www.ite.org/technical-resources/standards/rsu-standardization/](https://www.ite.org/technical-resources/standards/rsu-standardization/)*

RSU Standardization
The Institute of Transportation Engineers is developing a non-proprietary, industry-based consensus RSU standard that supports interoperability for state and local infrastructure owner/operators and the ability to connect to OEM's and other users of RSU messages. This effort involves engaging with Stakeholders representing the industry at large including but not limited to Infrastructure, Original Equipment Manufacturers (OEM'S), RSU manufacturers and the end users of data and services and is supported by the USDOT ITS Joint Program Office (JPO). Several associations such as Society of Automobile Engineers (SAE), American Association of State Highway Transportation Officials (AASHTO), National Electrical Manufacturers Associations (NEMA) and Institute of Transportation Engineers (ITE) are involved in ensuring balanced and effective stakeholder representation and adherence to Standards Development Process as Standards Development Organizations (SDO)

The goal of this work is to support the overall ITS JPO effort to provide personnel/working group with the key experience relevant to either the development and/or deployment of RSUs. This would include infrastructure owner operators, and their vendors that have participated in RSU deployments such as Connected Vehicle Pilots projects and the Signal Phase and Timing Challenge.

For reference, NTCIP RSU WG Scope from [https://www.ntcip.org/roadside-unit-rsu/](https://www.ntcip.org/roadside-unit-rsu/)

ROADSIDE UNIT (RSU) WORKING GROUP
The Roadside Unit (RSU) WG is responsible for the development and maintenance of NTCIP standards addressing roadside units and monitoring technical issues.

DYNAMIC MESSAGE SIGN (DMS) WORKING GROUP
The Dynamic Message Sign (DMS) WG is responsible for the development and maintenance of NTCIP standards addressing dynamic message signs and monitoring technical issues.

#### 1.1.2. RSU Stdzn Group Scope

The scope of the RSU Standardization Group is to develop and publish a document that more clearly defines the key capabilities and interfaces an RSU supports to optimize interoperability among traffic

management systems, RSUs, and road users (including vehicles, pedestrians, and other vulnerable road users).

Following the Systems Engineering Process (SEP), project development will include a Concept of Operations (ConOps), System Requirements (SyRS or Functional Requirements), System Design Details, and associated walkthroughs, as well as an optional hardware and application software reference implementation.

Stakeholders with the following areas of expertise or interest are invited to participate:

- RSU hardware and/or software design, manufacture, integration, operation.
- Transportation Infrastructure hardware and/or software design, manufacture, integration,
- operation (since infrastructure and RSUs are expected to communicate).
- Vehicle communication hardware and/or software design, manufacture, integration, and
- operation (since vehicles and RSUs are expected to communicate).
- Software and/or hardware design manufacture, integration, and operation for pedestrian
- and other vulnerable road users.
- Participants in RSU deployments including Connected Vehicle Pilots and the Signal Phase and
- Timing (SPaT) Challenge.

The RSU Standardization project is supported by the USDOT ITS Joint Program Office (JPO), and several associations are involved, including Society of Automobile Engineers (SAE), American Association of State Highway Transportation Officials (AASHTO), National Electrical Manufacturers Associations (NEMA), IEEE and Institute of Transportation Engineers (ITE).

## 1.2. Project Scope

### 1.1.1. Existing/Current

From invitation to participate:
The project purpose is to develop and publish an RSU standard that defines the key capabilities and interfaces an RSU must-support to ensure interoperability for state and local infrastructure owner/operators (IOO). The first version of this standard should focus on leveraging existing U.S. DOT investments to more rapidly develop and publish the standard utilizing the Systems Engineering Process (SEP) and ensuring the standard supports future evolutionary updates.

This proposed standard incorporates relevant user needs, requirements and design elements of the RSUs defined in the RSU Specification 4.1, and NTCIP 1218 Object Definitions for RSUs, and validates it through outreach to the real-world RSU deployments such as the Connected Vehicle (CV) Pilots programs, and the Signal Phase, and Timing (SPaT) Challenge.

From TOPR (background):
USDOT and ITE have worked on ITS standards since the inception of the ITS Standards Program over 20 years ago. The USDOT has made significant previous investments in defining the user needs, requirements and design elements of RSUs through the RSU Specification 4.1 and the development of NTCIP 1218 Object Definitions for Roadside Units(RSUs). Additionally, there are multiple deployment efforts where real-world experience with RSUs are being gained, such as the Connected Vehicle (CV) Pilots programs and the Signal Phase and Timing (SPaT) Challenge. With the collective knowledge and experience gained form these efforts, it is the ideal time to standardize the key capabilities and interfaces that IOOs expect in an RSU and develop a hardware (HW) Reference Implementation (RI) of that standard. The first version of this standard should focus on utilizing the existing USDOT investments to more rapidly develop and publish the existing standard, utilizing the systems engineering (SE) process and ensuring the standard supports future evolutionary updates. The following work statement will identify the steps necessary for developing a non-proprietary, industry-based consensus RSU standard.

From PMP Sec. 1.2 Project Background

The USDOT has made significant previous investments in defining the user needs, requirements and design elements of RSUs through the RSU Specification v4.1 and the development of National Transportation Communications for ITS Protocol (NTCIP) 1218 Object Definitions for Roadside Units. Additionally, there are multiple deployment efforts where real-world experience with RSUs is being gained, such as the Connected Vehicle (CV) Pilot programs and the Signal Phase and Timing (SPaT) Challenge. With the collective knowledge and experience gained from these efforts, it is the ideal time to standardize the key capabilities and interfaces that infrastructure owner operators (IOOs) expect in an RSU. The RSU Standard will focus on utilizing the existing USDOT investments to more rapidly develop and publish the standard utilizing a systems engineering (SE) process and ensuring the standard support future evolutionary updates.

The primary objectives of this project are to: a) deliver, approve and publish a non-proprietary, industry-based consensus driven RSU Standard and b) provide manufacturer input based on actual product development.

### 1.1.2. Proposed Project Scope

The USDOT has made significant previous investments in defining the user needs, requirements and design elements of RSUs through the RSU Specification v4.1 and the development of National Transportation Communications for ITS Protocol (NTCIP) 1218 Object Definitions for Roadside Units. Additionally, there are multiple deployment efforts where real-world experience with RSUs is being gained, such as the Connected Vehicle (CV) Pilot programs and the Signal Phase and Timing (SPaT) Challenge. With the collective knowledge and experience gained from these efforts, it is the ideal time to standardize the key capabilities and interfaces that infrastructure owner operators (IOOs) expect in an RSU. The RSU Standard will focus on utilizing the existing USDOT investments to more rapidly develop and publish the standard utilizing a systems engineering (SE) process and ensuring the standard support future evolutionary updates.

The primary objectives of this project are to: a) deliver, approve and publish a non-proprietary, industry-based consensus driven RSU Standard and b) provide manufacturer input based on actual product development.