RESEARCH DATA EXCHANGE

The Research Data Exchange (RDE) is a web-based resource that collects, manages, and provides access to multi-source and multi-modal transportation data to support the development and testing of intelligent transportation system (ITS) and connected vehicle applications. This data-sharing capability allows researchers, application developers, and others to significantly reduce the cost and time required to collect and compile data for analysis or research related to connected vehicle and ITS applications.

The RDE currently has ITS and connected vehicle data from 13 locations to support the analysis and development of connected vehicle applications. The RDE is continuously evolving, and has recently launched Release 2.2 with new features and data. Data accessible through the RDE is quality-checked, well-documented, and freely available to the public.

The RDE provides access to connected vehicle and passenger-related data involving transit vehicles, maintenance vehicles, probe vehicles, traffic monitoring and reporting devices, incident detection systems, traffic signals, and weather and other types of ITS sensors. These types of data enable the analysis and research of a wide range of issues and factors.

Photo Source: USDOT

The RDE's data sets contain various types of information, such as highway detector data, travel times, traffic signal timing data, incident data, and weather data. Collections of data sets from the same location and time period are called data environments. Data may be searched by location or data type. Registered users can download individual data files or groups of files.

ITS researchers are invited to recommend or submit data for potential inclusion. The U.S. Department of Transportation (USDOT) has developed procedures for assessing the value and quality of potential data for inclusion in the RDE. When submitted data passes these criteria, RDE management adds the data to the RDE.

www.its-rde.net

Purpose:

The purpose of the RDE is to provide a variety of data-related services that support the development, testing, and demonstration of multimodal transportation mobility, weather, and environmental applications.

Objectives:

- Enables systematic data capture from connected vehicles (automobiles, transit vehicles, and trucks), mobile devices, and infrastructure
- Integrates data from multiple sources into data environments to be used by multiple applications for transportation management and performance measurement
- Performs data quality checks and provides clean, well-documented data relevant to research

Photo Source: USDOT

U.S. Department of Transportation

Data Available for Research

- **Probe Message Data:** Actual and simulated vehicle trajectories and probe snapshot messages in SAE J2735 format from three tests at the Connected Vehicle Test Bed in Novi, MI.

- **Vehicle and Roadside Device Data:** Integrated multimodal data from vehicles and roadside sensors from four test sites (Seattle, Portland, Pasadena, and San Diego). Data includes light and transit vehicles, incidents, weather, freeway and arterial travel times, and traffic signal data.

- **Connected Maintenance Vehicles:** Real-time and archived data from wirelessly-connected snowplows and maintenance trucks operated by the Minnesota Department of Transportation.

- **Basic Safety Message (BSM) Data - Orlando:** BSM data collected every 0.1 second from transit vehicles at the 2011 World Congress Demonstration in Orlando, FL.

- **BSM Data - Leesburg:** BSM data collected every 0.1 second over a two-month period from a vehicle in the vicinity of Leesburg, VA.

- **Connected Vehicles and Roadside Device Data:** One day of connected vehicle, roadside equipment, and contextual data (weather, traffic signal data, and traffic volumes) from the Safety Pilot Model Deployment in Ann Arbor, MI.

Other RDE Resources

- An advanced tool to search for ITS and connected vehicle data by keyword (arterial, incident, collection frequency, etc.) or by use of a map
- Standard metadata documentation
- Frequently Asked Questions (FAQs)
- Related external links
- Feedback to the USDOT
- Research project feature, enabling registered users to share and collaborate.

Most recent data additions from the 2014 ITS World Congress in Detroit, MI

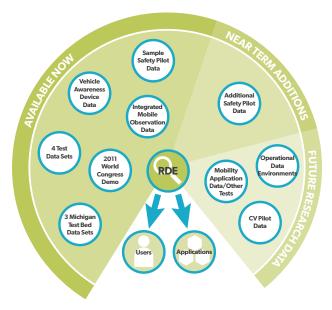Situation data based on J2735 messages:
- Vehicle situation data from nine instrumented vehicles
- Intersection situation data from roadside units
- Traveler situation data from roadside units

Intersection queueing data:
- Queue counts by lane for the intersection of Larned and Shelby Streets, including counts of instrumented vehicles in queue each signal cycle
- Videos of queues at the Larned and Selby intersection

Data from a demonstration on Belle Isle:
- Road weather-related observation data
- Road weather-related advisory warnings

Current and Anticipated Data Environments in the RDE

For more information about this initiative, please visit www.its.dot.gov/data_capture/data_capture.htm or contact:

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