Intelligent Transportation Systems (ITS) & Data

How the Future Transportation System will Enhance and Depend on Weather Capabilities

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Overview

- Intro to the USDOT Intelligent Transportation Systems (ITS) Joint Program Office

- Intro to the next generation ITS technologies and data

- Weather-related use cases

Intelligent Transportation Systems Joint Program Office (ITS JPO)

- **Vision:** Transform the way society moves
- **Mission:** Conduct research, development and education activates to facilitate the adoption of information and communication technology to enable society to move safely and efficiently
- **Strategic Priorities:**
  - Realizing connected vehicle implementation
  - Advancing vehicle automation
- **ITS JPO website and strategic plan:** www.its.dot.gov

About the ITS JPO Data Program

The ITS JPO Data Program is a multimodal effort to enhance how data is managed and used throughout the transportation ecosystem to support the next generation of ITS technologies.

We aim to establish a foundation for agility, data sharing, and privacy protection in the future transportation system, including connected and automated vehicles and smart communities, to maximize the societal benefits of these technologies.

https://www.its.dot.gov/factsheets/pdf/FactSheet_EnterpriseData.pdf

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Today's Transportation Challenges

Safety
- 35,092 highway deaths in 2015
- 6.3 million crashes in 2015
- Leading cause of death for ages 5-24

Mobility
- 6.9 billion hours of travel delay
- $160 billion cost of urban congestion

Environment
- 3.1 billion gallons of wasted fuel
- 56 billion lbs of additional CO_2

Data Sources:
2015 Motor Vehicle Crashes: Overview, National Highway Traffic Safety Administration (August 2016); 2015 Annual Urban Mobility Report, Texas Transportation Institute (Aug 2015); Centers for Disease Control

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Connected Vehicles & Infrastructure

- Vehicle-to-Vehicle (V2V)
- Vehicle-to-Infrastructure (V2I)
- Multiple types of vehicles and use cases

The Bigger Picture of Emerging ITS

- Connected Everything
- Shared Mobility
- Automation & Machine Learning
- Smart Communities

And more…

The Role of Data & Information Technology in Emerging ITS

Emerging ITS technologies are increasingly:

- Data-intensive
- Internet-connected
- Developed iteratively
- Developed collaboratively
- Fundamentally changing consumer/citizen expectations

*In this new paradigm, data is available **on-demand** for authorized users, new capabilities come faster (at lower cost), and services interconnect and interoperate dynamically via web services*

Use Case: Transportation Managers Need Real-Time Roadway Information

Improve Snow Removal
- Enhanced Maintenance Decision Support System

Improve Management of Work Zones
- Work Zone Traveler Information

Improve Situational Awareness
- Probe-based Pavement Maintenance - black ice ahead!

Use Case: Travelers Need Accurate & Actionable Road Weather Information

Use Case: How Do We Deploy Safe, All-Weather Autonomous Vehicles?

A Wealth of Data and Code Already Available – With More to Come

Weather Data Environment: https://wxde.fhwa.dot.gov
Research Data Exchange: https://www.its-rde.net
Situation Data Clearinghouse: https://cvcs.samanage.com
Operational Data Environment: https://github.com/usdot-jpo-ode/jpo-ode
Open Source Data Applications Portal: https://www.itsforge.net/about

For More Information

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