UNITED STATES
DEPARTMENT OF TRANSPORTATION

Establishing Connectivity in Transportation: Connected Vehicle research in the U.S.

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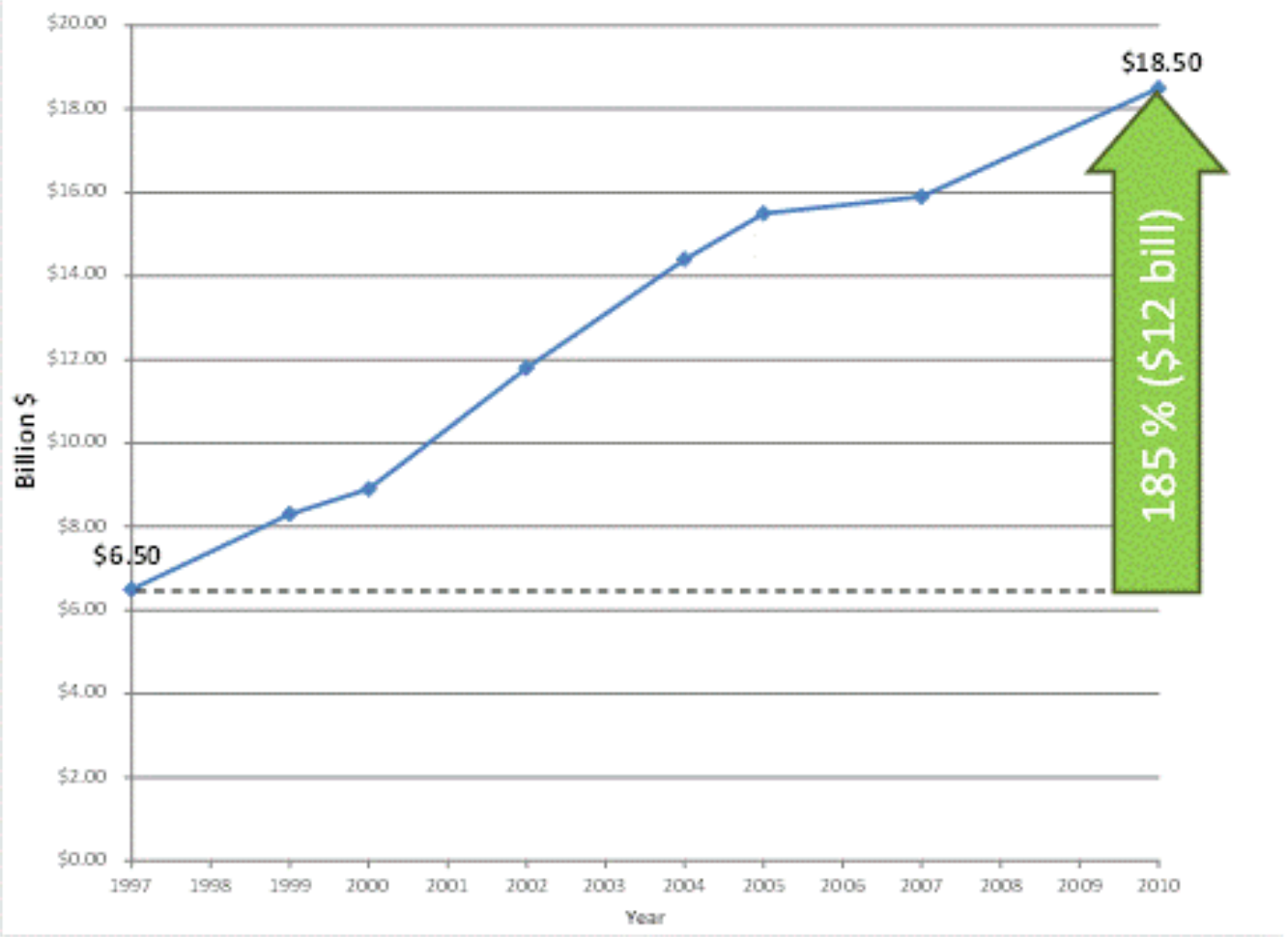
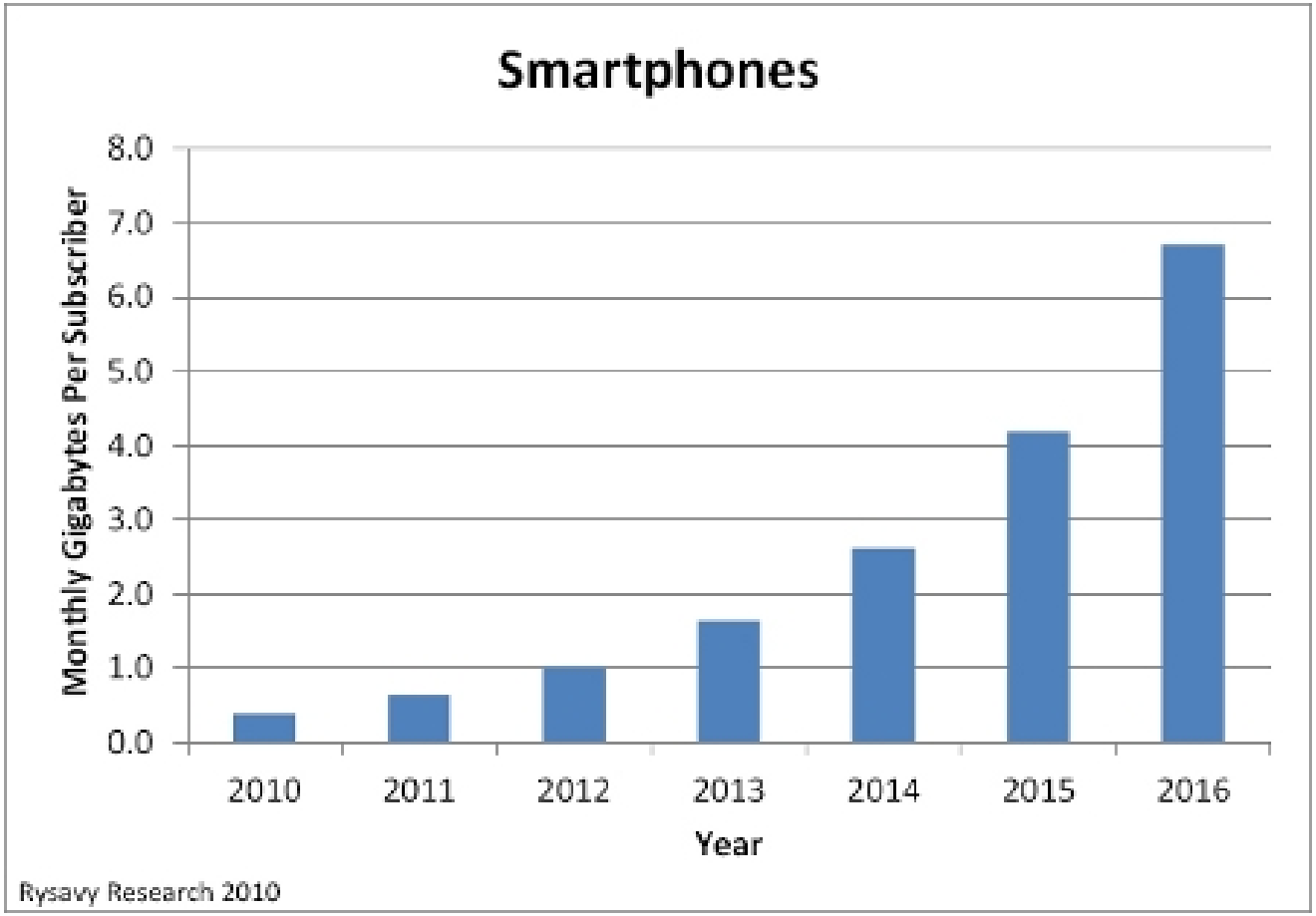
James Pol, PE, PMP
Team Leader, Program Management and Evaluation
USDOT Intelligent Transportation Systems (ITS) Joint Program Office

Tracking Our Success

- Investment in ITS has nearly **tripled**

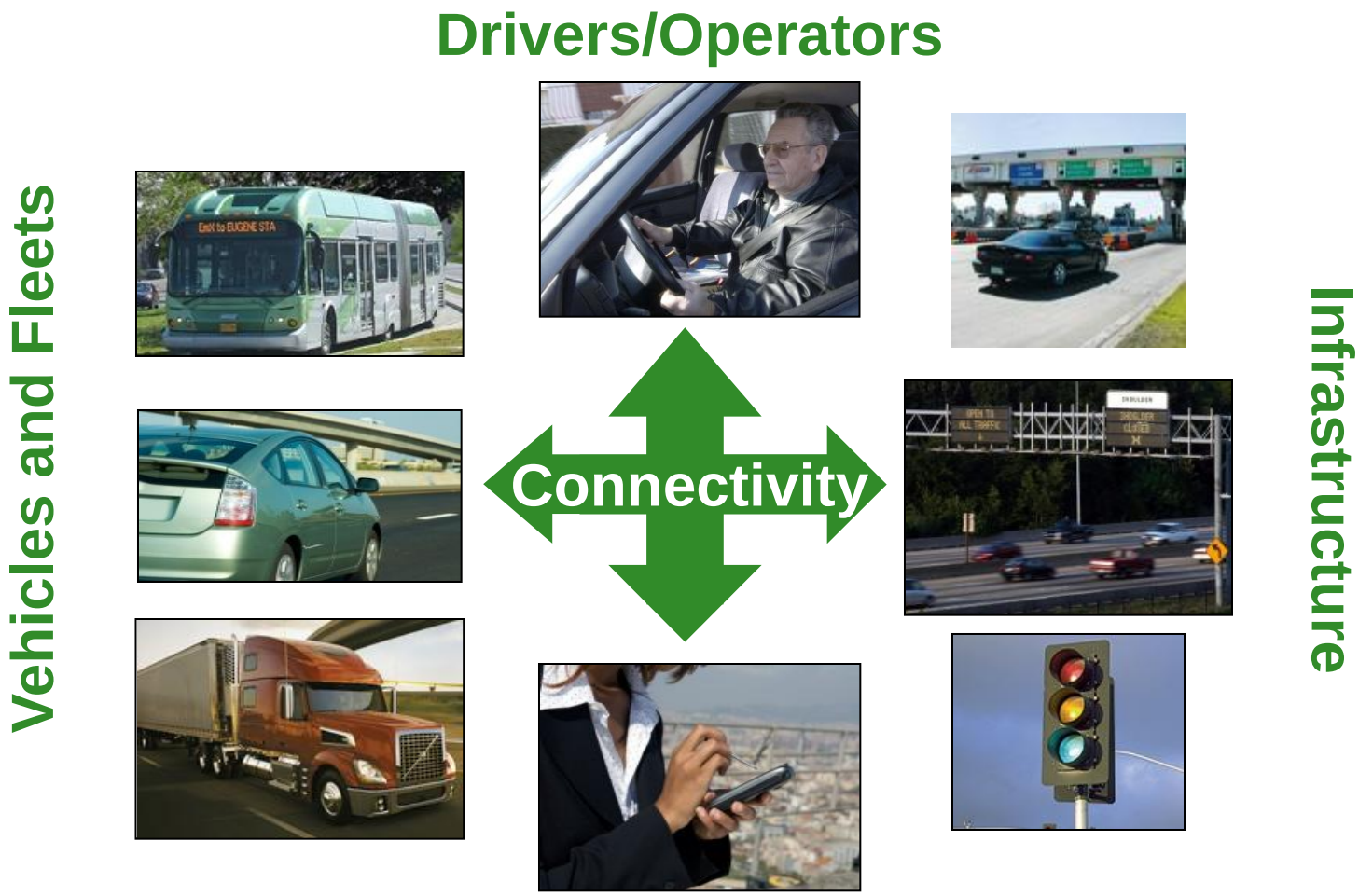


Consumer Forces on Communications and ITS



Blog entry dated March 16, 2011. http://reboot.fcc.gov/blog

ITS Research = Multimodal and Connected



What is the Connected Vehicle Program

- Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) wireless communications for:
  - **Crash prevention**
  - **Improved mobility**
  - **Environmental sustainability**

- Connected vehicle capability addresses over 80% of unimpaired crash scenarios
- Encompasses autos, buses, and trucks
  - Partnership among RITA, NHTSA, FHWA, FMCSA, and FTA

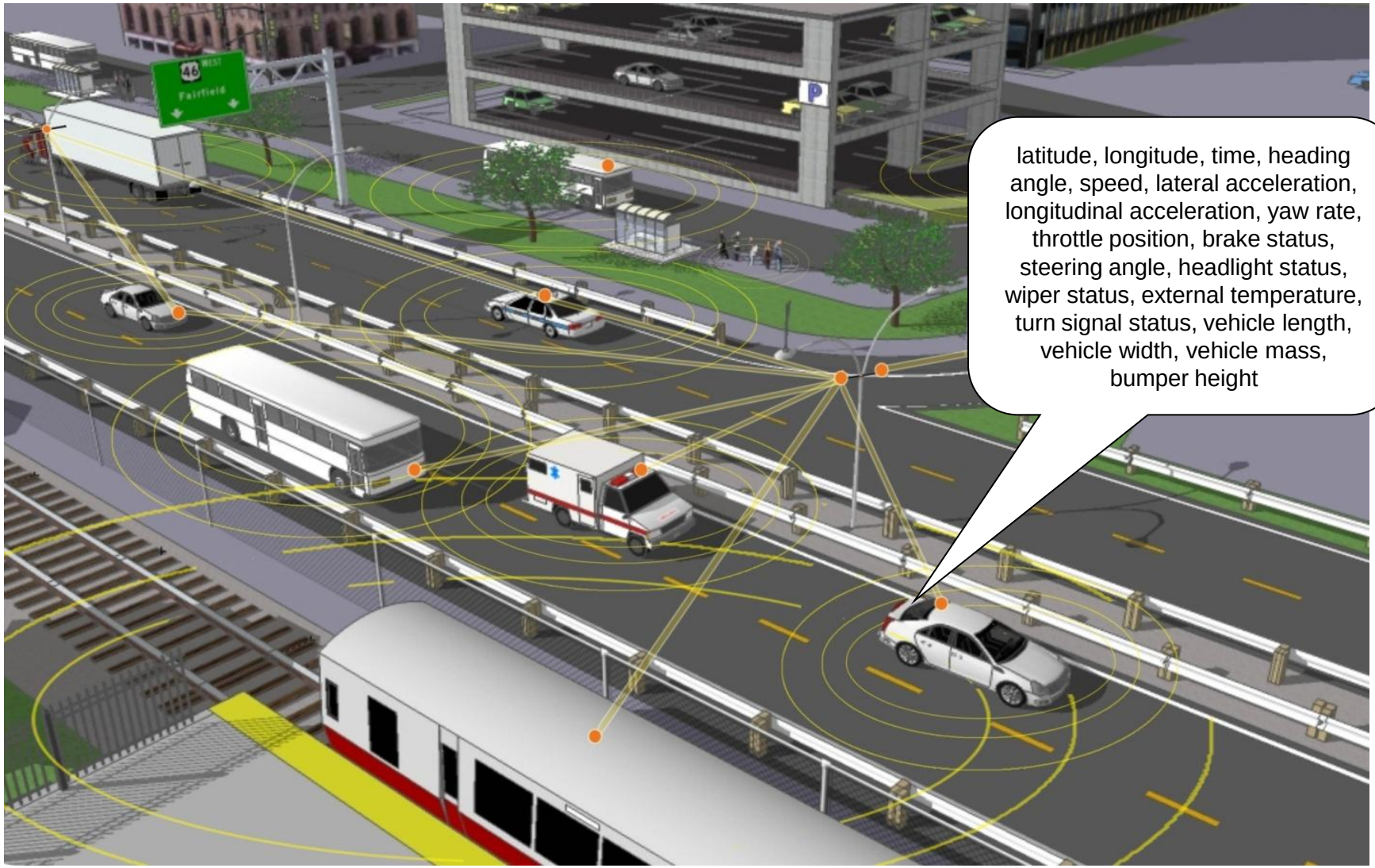
What is the Connected Vehicle Program

- Uses wireless communications
  - Dedicated short-range communications (DSRC) technology using FCC-dedicated spectrum that is essential for safety applications

  - Other communications types for non-safety applications

- Research is maturing such that NHTSA has committed to an agency decision regarding whether the safety technology is sufficiently developed to support rulemaking

Fully Connected Vehicle



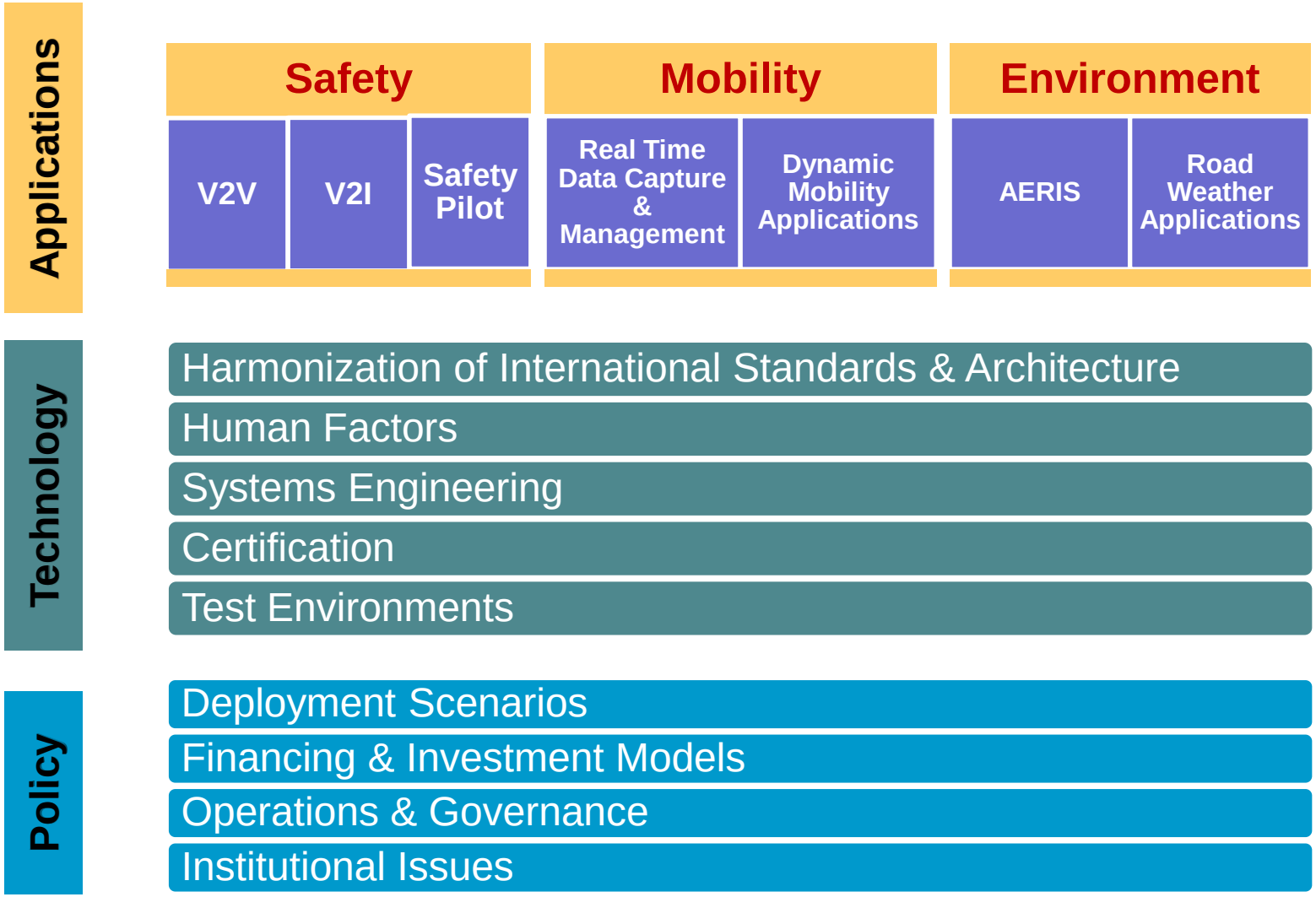
Why It Matters

Up to 80% of non-impaired crash types may be impacted by connected vehicle technology

Source: NHTSA

Based on initial estimates & studies. Actual benefits are not determined at this time.

ITS Research Program Components



Key Program Objectives

- 2013 Decision on Vehicle Communications for Safety (light vehicles)
- 2014 Decision on Vehicle Communications for Safety (heavy vehicles)
- Future Guidance on Infrastructure Implementation

NHTSA Agency Decision

- Possible decision options include:
  - **Rulemaking** on minimum performance requirements for vehicle communications for safety on new vehicles
  - Inclusion in NHTSA's **New Car Assessment Program** to give car makers credit for voluntary inclusion of safety capability in new vehicles
  - **More research** required

NHTSA Agency Decision (continued)

- **Data will determine NHTSA's action for the 2013 decision point**:
  - Simulation and modeling efforts based upon previous field operational tests
  - Data collection from V2V test track testing
  - Empirical data obtained from **Safety Pilot**
    - Driver clinics (user acceptance)
    - Model deployment activities (safety effectiveness)
- **A key factor for the NHTSA decision will be the need for, and timing of, necessary infrastructure for communication security (still undefined)**

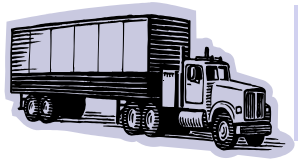
User Acceptance -- Driver Clinics

- 6 locations across the U.S.
- 100 drivers per location
- Experience crash warnings
  - Forward Crash Warning
  - Emergency Brake Light
  - Blind Spot Warning
  - Lane Change Warning
  - Intersection Assist
  - Do Not Pass Warning

Model Deployment

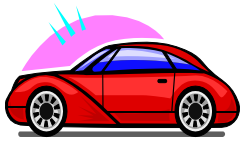
- Major road test and real-world implementation taking place from 2011 thru 2013, involving:
  - Approximately 3,000 vehicles
  - Multiple vehicle types
  - Fully integrated systems and aftermarket devices
  - Roadside infrastructure
  - System-wide interoperability testing
- Also to test
  - Prototype security mechanisms
  - Device certification processes

Integrated Vehicles



Integrated Trucks

Aftermarket Devices



Basic Safety Devices

Roadside Infrastructure

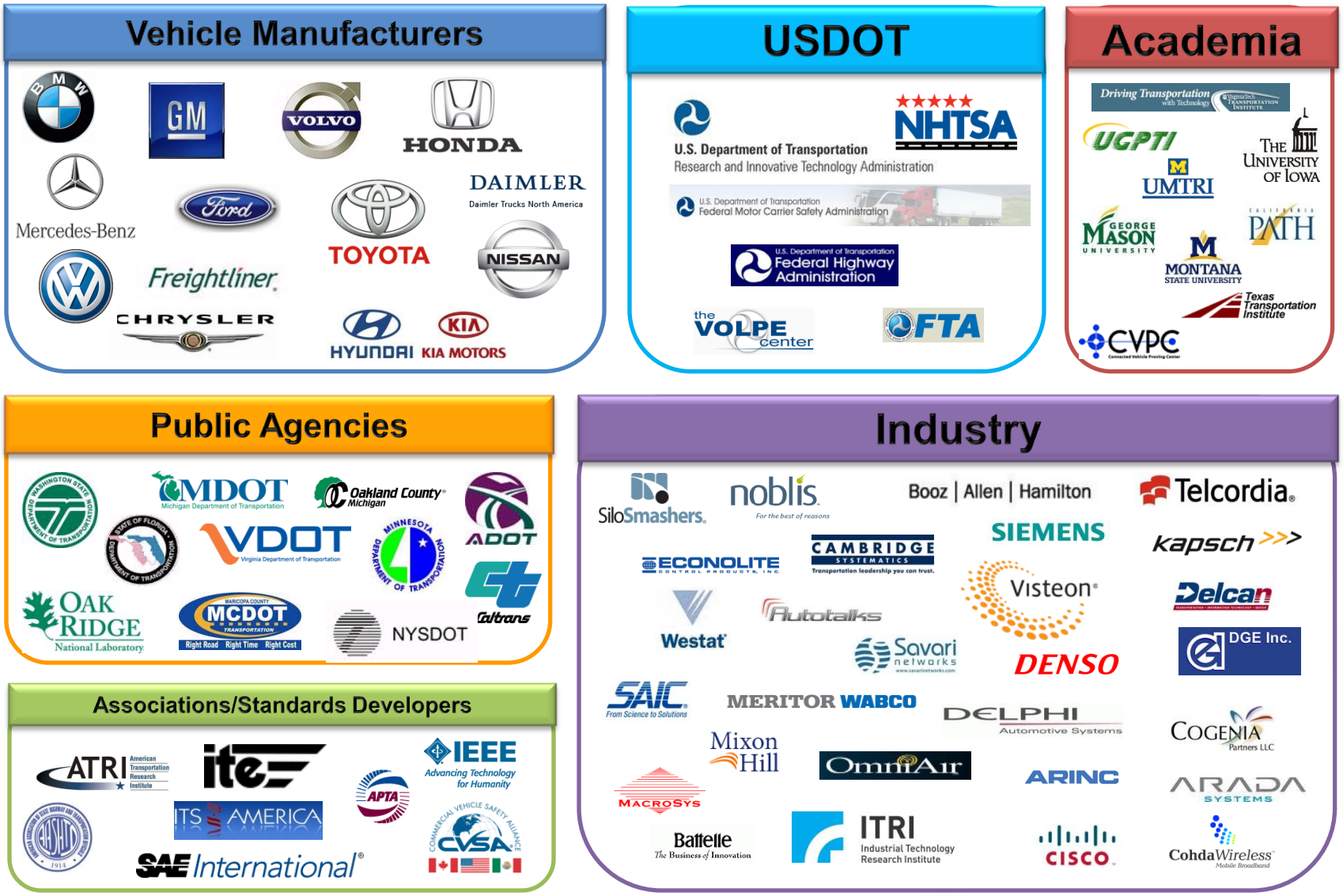
Safety Pilot Objectives

- **Generate empirical data for supporting 2013 and 2014 decisions**
- Show **capability of V2V and V2I applications** in a real-world operating environment using multiple vehicle types
- Determine **driver acceptance** of vehicle-based safety warning systems

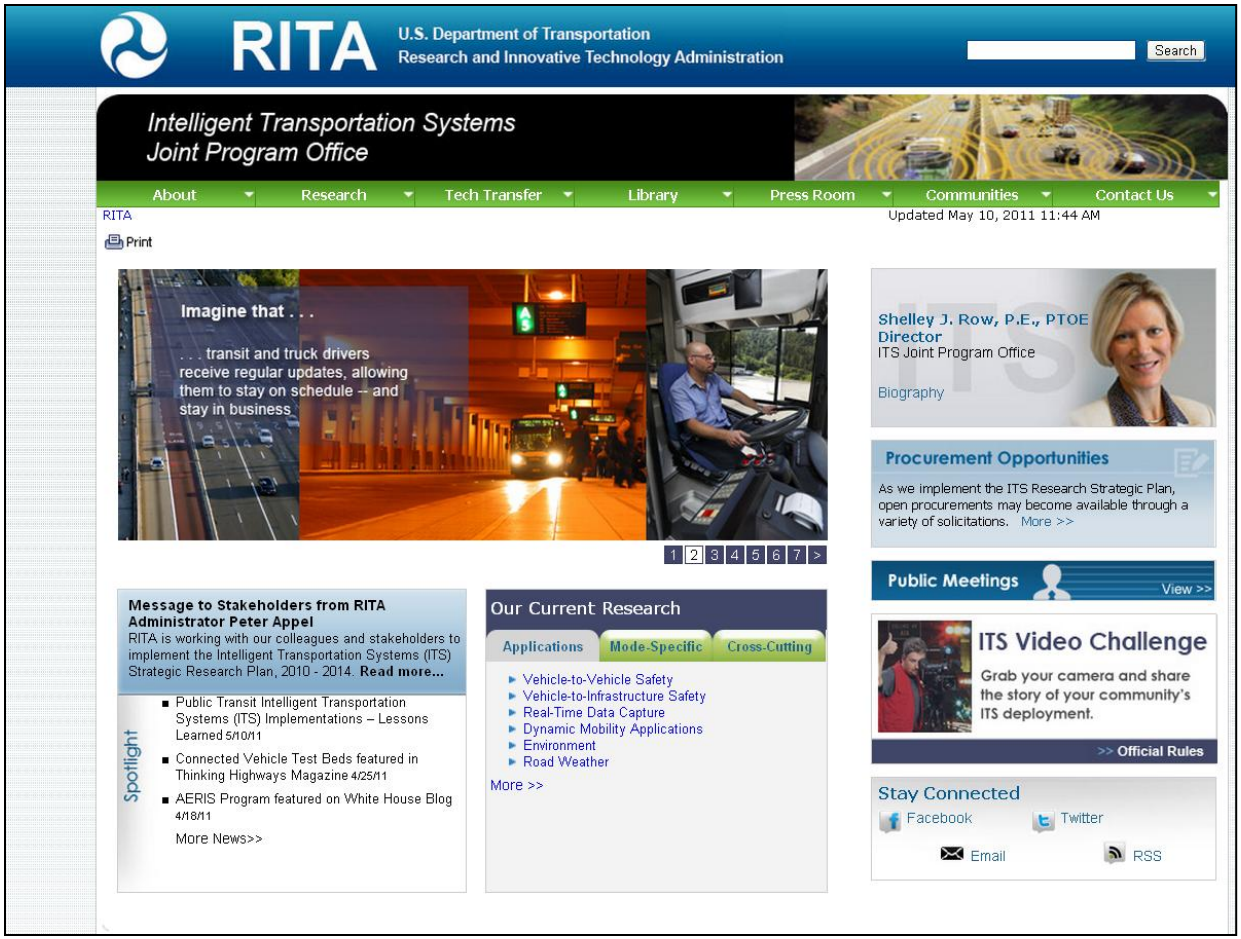
Safety Pilot Objectives (Continued)

- Assess options for accelerating the safety benefits through aftermarket and retrofit safety devices
- Extend the performance testing of the DSRC technology
- Collect lots of data and make it available for industry-wide use
- Let others leverage the live operating environment

Connected Vehicle Safety Program Partners and Contractors



For More Information



www.its.dot.gov

James Pol, PE, PMP

Team Leader

RITA, ITS Joint Program Office (JPO)

James.Pol@dot.gov

James Pol