USDOT Activities in Automation

Carl Andersen
Federal Highway Administration, USDOT

SIS49: National Road Authorities Strategies to Support the Development towards Automation

22nd ITS World Congress
Bordeaux, France
5 to 9 October
2015

TOWARDS INTELLIGENT MOBILITY
Better use of space

Organised by Co-organised by Hosted by On behalf of Supported by

Federal Policy

- NHTSA released a ***Preliminary Statement of Policy Concerning Automated Vehicles*** representing recommended principles for states to consider in developing legislation and regulations pertaining to automated vehicles.
- In general, NHTSA advises states to avoid stifling innovation through premature regulations but urges restraint in authorizing the operation of self-driving vehicles for non-testing purposes until the technology reaches a higher level of sophistication.

Automation Offers the Potential to Address Our Nation's Transportation Problems

- **Improving safety**
  - Reduce and mitigate crashes
- **Increasing mobility and accessibility**
  - Expand capacity of roadway infrastructure
  - Enhance traffic flow dynamics
  - More personal mobility options for disabled and aging population
- **Reducing energy use and emissions**
  - Aerodynamic "drafting"
  - Improve traffic flow dynamics

…but connectivity is critical to achieving the greatest benefits

Connected Automation for Greatest Benefits

Autonomous Vehicle

Operates in isolation from other vehicles using internal sensors

Connected Automated Vehicle

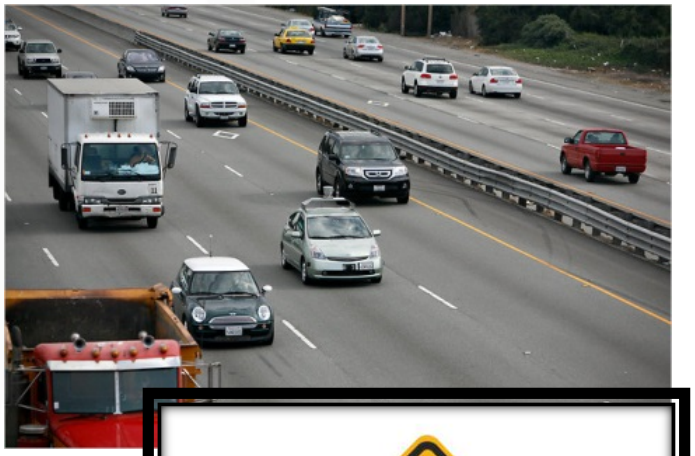
Leverages autonomous and connected vehicle capabilities

Communicates with nearby vehicles and infrastructure

Connected Vehicle

Emerging Technical and Policy Considerations

- Complexity of testing, certifying and assuring the safety of the technology
- Data privacy concerns and implications for public agencies
- Addressing role of road owners, operators and infrastructure providers to enable AVs
- Impacts of AVs on infrastructure, planning and the overall transportation system
- Challenges of varying state regulations and need for greater consistency
- Human factors issues and driver transitions



U.S. Department of Transportation Role in Vehicle Automation

Program Goal:

Enable safe, efficient, and equitable integration of automation into the transportation system

USDOT Automation Program is Led Through Multi-Modal Coordination

The ITS JPO is responsible for coordinating the ITS program and initiatives among the following DOT offices:

- Federal Highway Administration (FHWA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Transit Administration (FTA)
- Federal Railroad Administration (FRA)
- National Highway Traffic Safety Administration (NHTSA)
- Maritime Administration (MARAD)

U.S. DOT Automation Program Research Tracks

Enabling Technologies		
Digital Infrastructure	Communications	Technology Research

Safety Assurance			
Electronic Control Systems	Functional Safety and Electronics Reliability	Cybersecurity	Human Factors

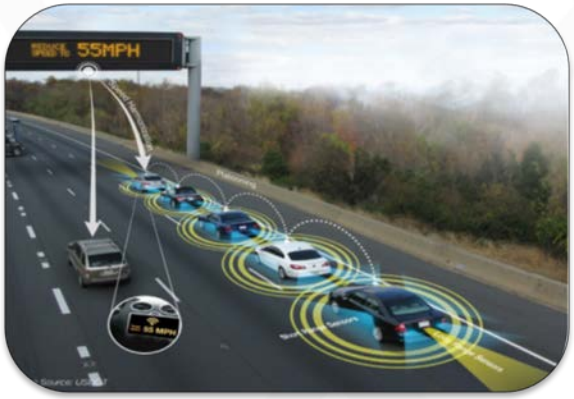
Transportation System Performance		
CACC, Speed Harmonization, and Platooning	Lateral Control	First/Last Mile and Transit Operations

Testing and Evaluation		
Interoperability	Testing Methods	Benefits Assessment

Policy and Planning			
Standards	Federal Policy Analysis	Stakeholder Engagement	Transportation Planning

Enabling Technologies

POSITION, NAV & TIMING



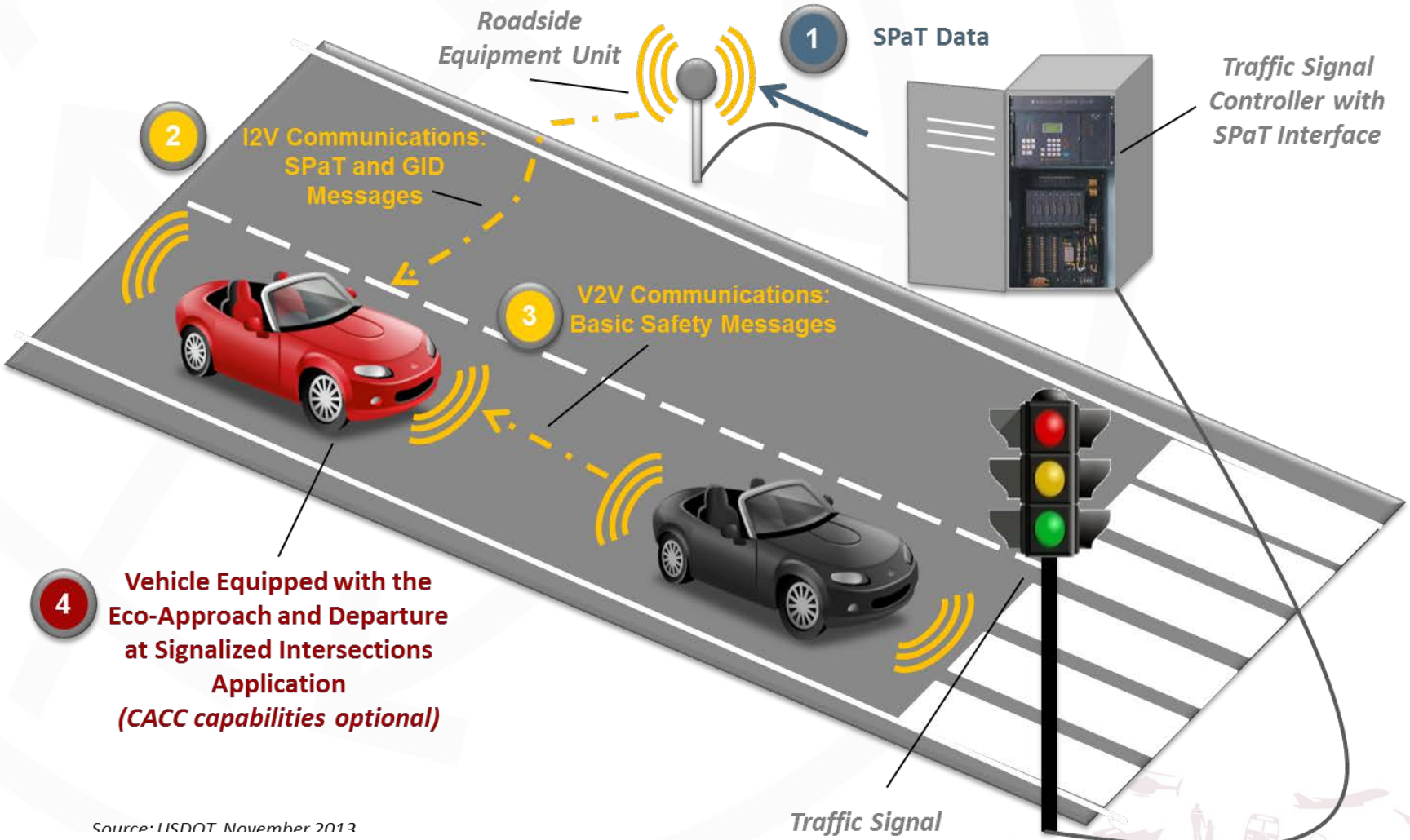
MAPPING

SENSORS

COMMUNICATIONS

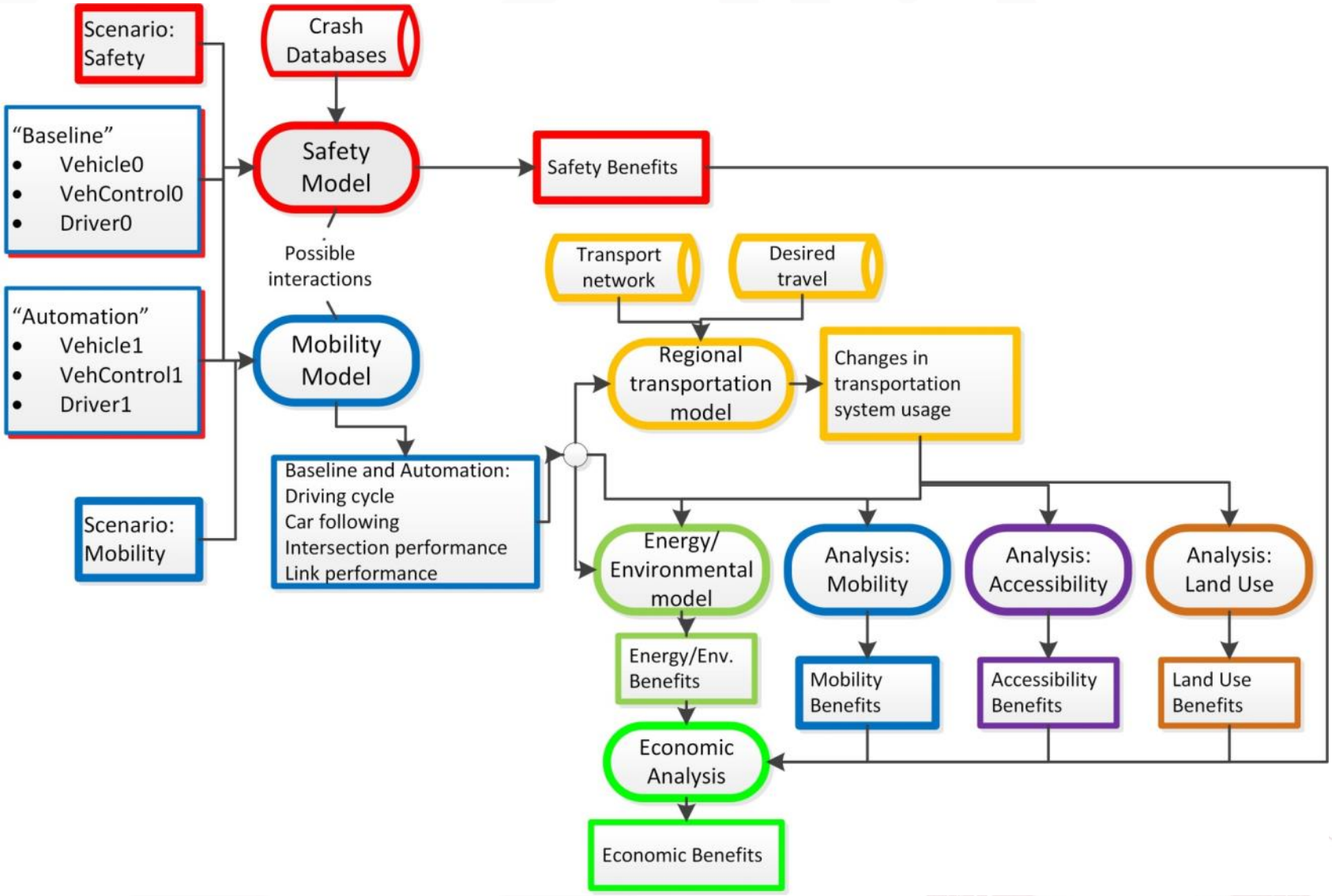
HUMAN FACTORS

Eco-Signal Operations



Source: USDOT, November 2013

Benefits Evaluation Framework



Review of Federal Motor Vehicle Safety Standards

How could highly automated vehicles impact or change the nature of existing Federal Motor Vehicle Safety Standards (FMVSS)?

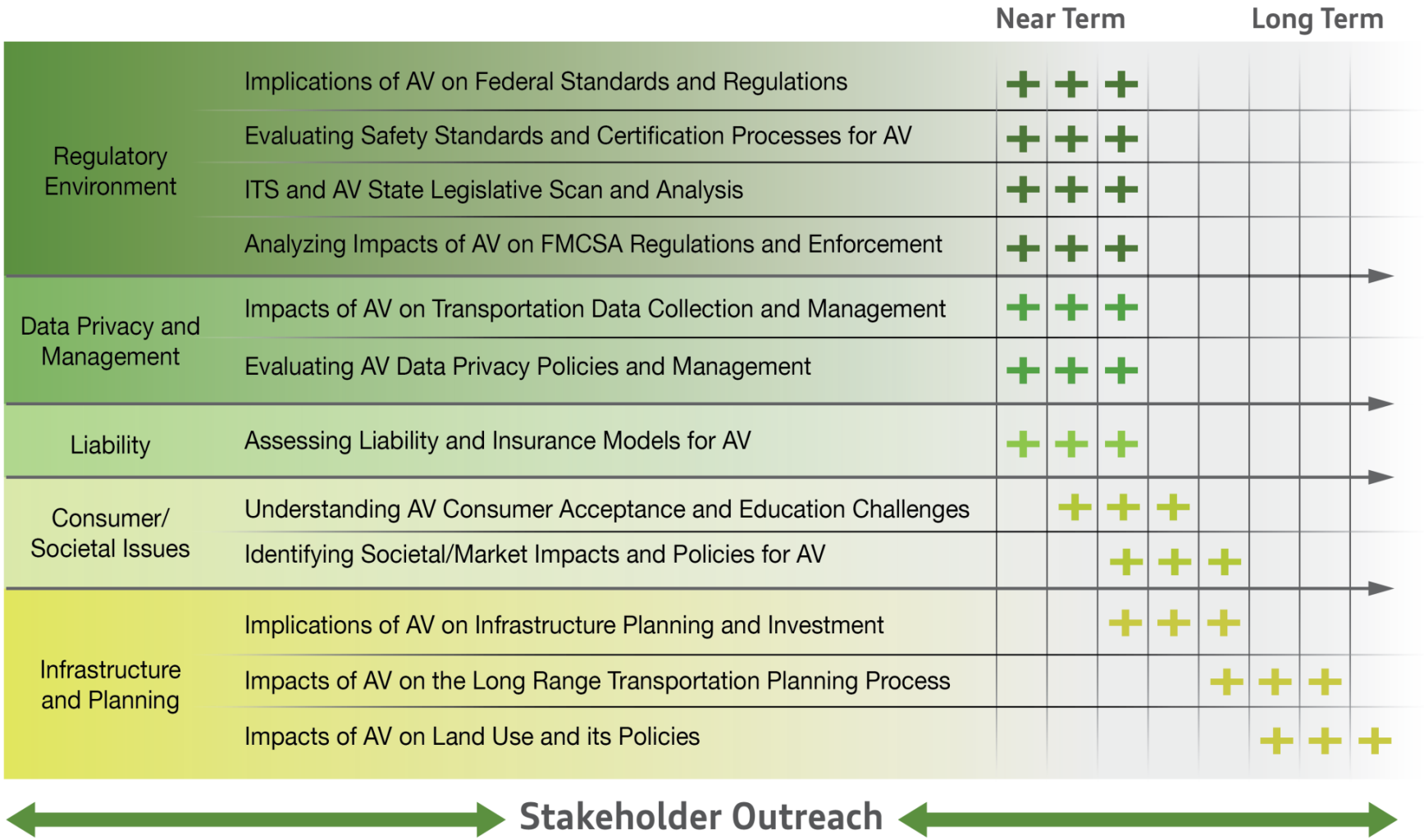
- Identifying where current FMVSS pose challenges to introduction of AVs – particularly as they move into concepts of '*human out of the loop'* or *'driverless'*
- Ensuring that existing Federal regulations do not stifle innovation and that AVs are performing their functions safely
- NHTSA and ITS JPO coordinated research

NHTSA

www.nhtsa.gov

Image Source: http://www.automotiveaddicts.com/wp-content/uploads/2012/08/IIHS-Crash-Test.jpg

DRAFT Automation Policy Research Roadmap



U.S. DOT Stakeholder Engagement

AUTOMATED VEHICLES SYMPOSIUM 2015

DRIVERS. VEHICLES. INFRASTRUCTURE.

ITS AMERICA

TRB

TRANSPORTATION RESEARCH BOARD

OF THE NATIONAL ACADEMIES

- **Automated Vehicle Symposium**
- **U.S. DOT State Roundtable on Automated Vehicles**
  - State DOTs and DMVs
- **Webinars**
  - ITS JPO and ITS America Webinar: Fundamental Issues for Road Transport Automation
- **Coordinating research efforts**
  - Tri-lateral Working Group on Automation in Road Transport

Looking Ahead

- Collaboration and information sharing will be key
- Stakeholder engagement is critical for understanding research needs
- Looking to better understand benefits and implications of technology
- Guidance and policies will be important in achieving highest possible benefits