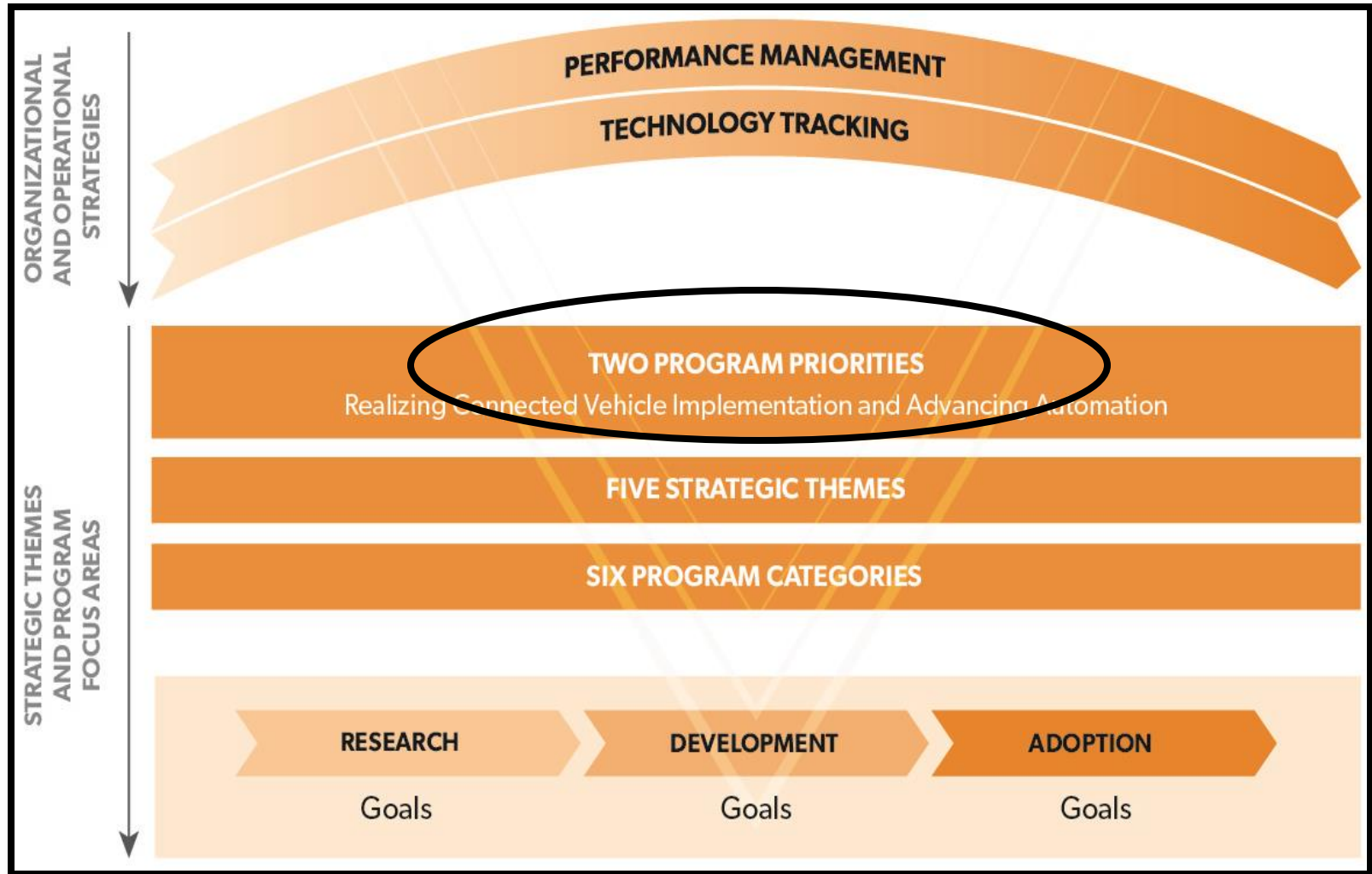# Connected Vehicles in the United States

Workshop on Connected and Automated Driving Systems

Kevin Dopart, U.S. Department of Transportation

# ITS Strategic Plan's Framework

Strategic Priorities

- The Two Strategic Priorities reflect where much of our transportation research and innovation is heading. These priorities are not exclusive of other technologies or research areas.

  - ❑ ***Realizing Connected Vehicle Implementation***
    - builds on the substantial progress made in recent years on design, testing, and planning for connected vehicles to be deployed across the nation.

  - ❑ ***Advancing Automation***
    - shapes the ITS Program around research, development, and adoption of automation related technologies as they emerge.

Connected Automation for Greatest Benefits

Autonomous Vehicle

Operates in isolation from other vehicles using internal sensors
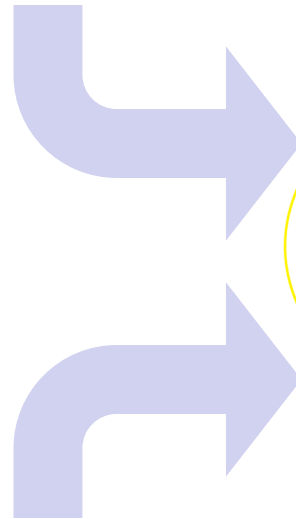
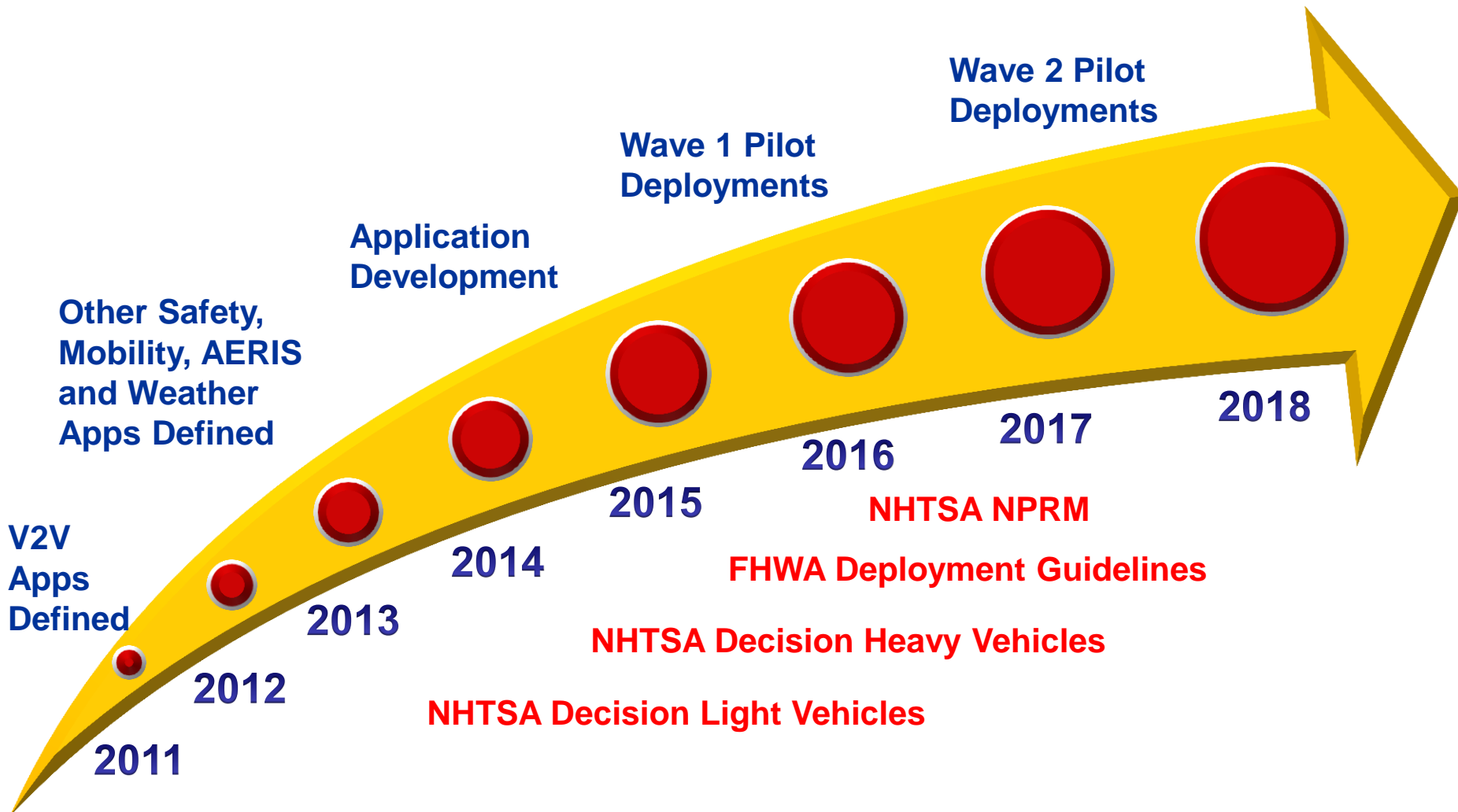**Connected Automated Vehicle**
Leverages autonomous and connected vehicle capabilities

Connected Vehicle

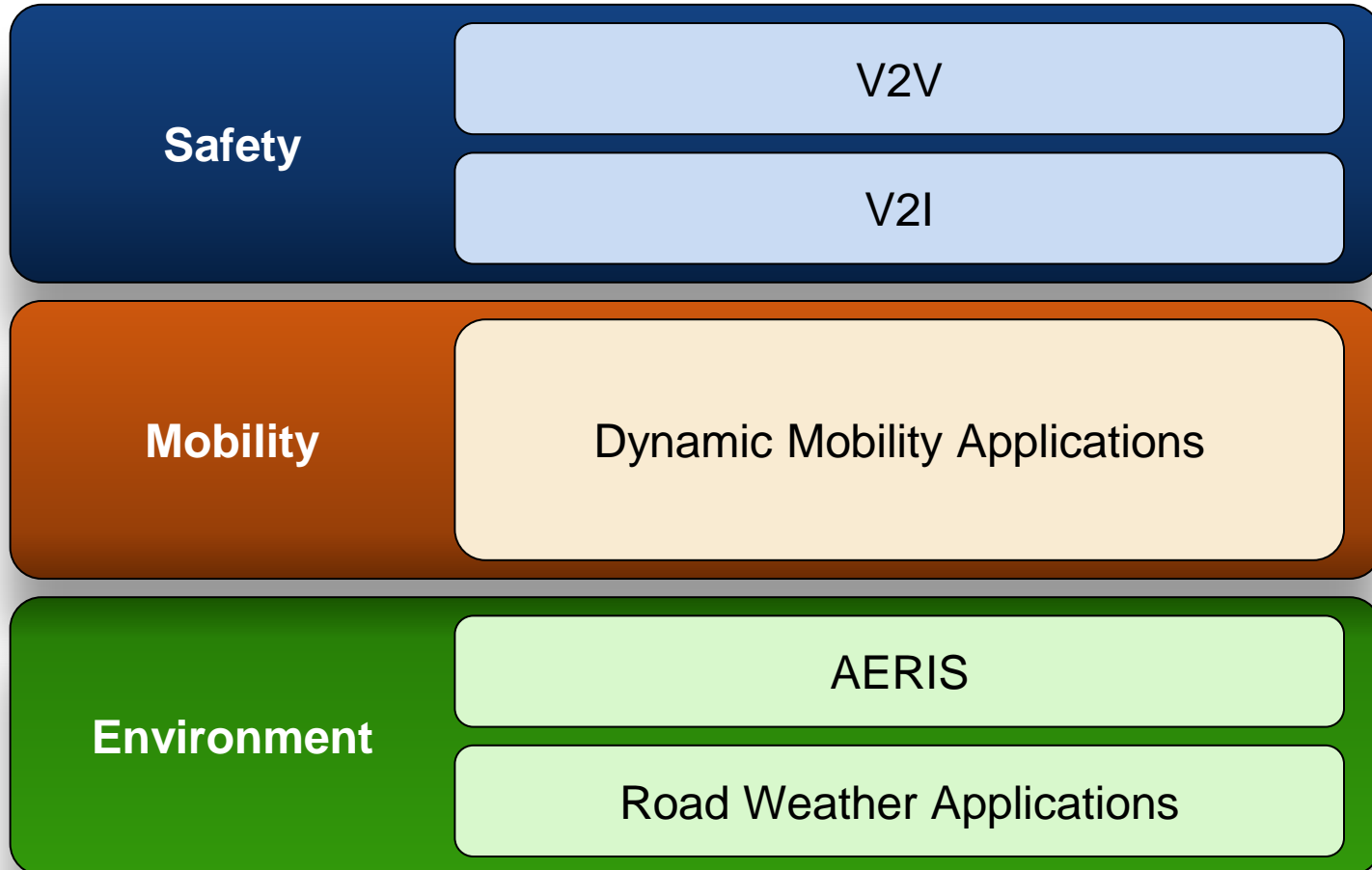Communicates with nearby vehicles and infrastructure

Path to Deployment

Wave 2 Pilot Deployments

Wave 1 Pilot Deployments

Application Development

Other Safety, Mobility, AERIS and Weather Apps Defined

V2V Apps Defined

2018

2017

2016

2015

2014

2013

2012

2011

NHTSA NPRM

FHWA Deployment Guidelines

NHTSA Decision Heavy Vehicles

NHTSA Decision Light Vehicles

Image Source: Thinkstock/USDOT

U.S. Department of Transportation
ITS Joint Program Office

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Connected Vehicle Applications

| Safety | V2V |
| | V2I |

| Mobility | Dynamic Mobility Applications |

| Environment | AERIS |
| | Road Weather Applications |

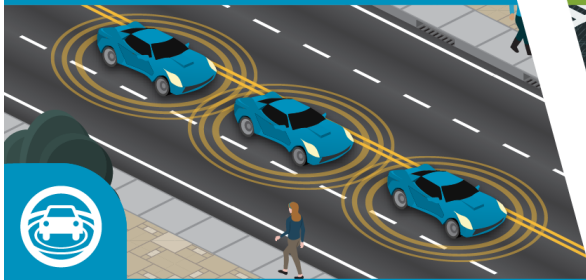# CONNECTED VEHICLE PILOT
Deployment Program

ITS Joint Program Office

PROGRAM GOALS

Spur Early CV Tech Deployment

Wirelessly Connected Vehicles
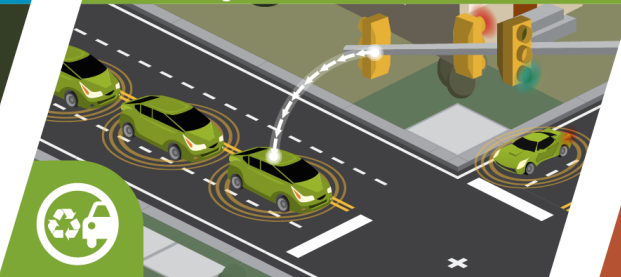
Mobile Devices

Infrastructure

Measure Deployment Benefits

Safety

Mobility

Environment

Resolve Deployment Issues

Technical

Institutional

Financial

Pilot Deployment Process

- **Pilot Deployment Concept Development Process**
  - Identify local needs
  - Set performance goals
  - Select connected vehicle applications that work together meet those goals

- **USDOT Sample Pilot Concepts from Hypothetical Locations**
  - Hypothetical, but realistic examples of localities applying the pilot deployment concept development process

SAMPLE DEPLOYMENT CONCEPT – DOWNTOWN SUNNYSIDE
~ Improving Congestion in an Urban Arterial Network ~

Improve Transit Reliability
- Connection Protection
- Transit Signal Priority

Improve Pedestrian Safety
- Mobile Accessible Pedestrian Signal System
- Pedestrian in Signalized Crosswalk Warning
- Intersection Movement Assist

Improve Air Quality
- Eco-Approach and Departure at Signalized Intersections
- Eco-Traffic Signal Timing

Synergies among applications increase benefits and reduce costs

Pilot Deployment Schedule and Resources

- Proposed Connected Vehicle Pilots Deployment Schedule

Schedule Item	Date
Request for Information (RFI) Issued	March 12, 2014
CV Pilot Program Stakeholder Workshop	April 30, 2014
Regional Pre-Deployment Workshop/Webinar Series	Summer-Fall 2014
Solicitation for Wave 1 Pilot Deployment Concepts	Early 2015
Wave 1 Pilot Deployments Award(s)	September 2015
Solicitation for Wave 2 Pilot Deployment Concepts	Early 2017
Wave 2 Pilot Deployments Award(s)	September 2017
Pilot Deployments Complete	September 2020

- Resources
  - ITS JPO Website: http://www.its.dot.gov/
  - CV Pilots Program Website: http://www.its.dot.gov/pilots

Automated Vehicles

Automated vehicles are those in which at least some aspect of a safety-critical control function (e.g., steering, throttle, or braking) occurs without direct driver input.

Photo Source: USDOT

Benefits of Automated Vehicles

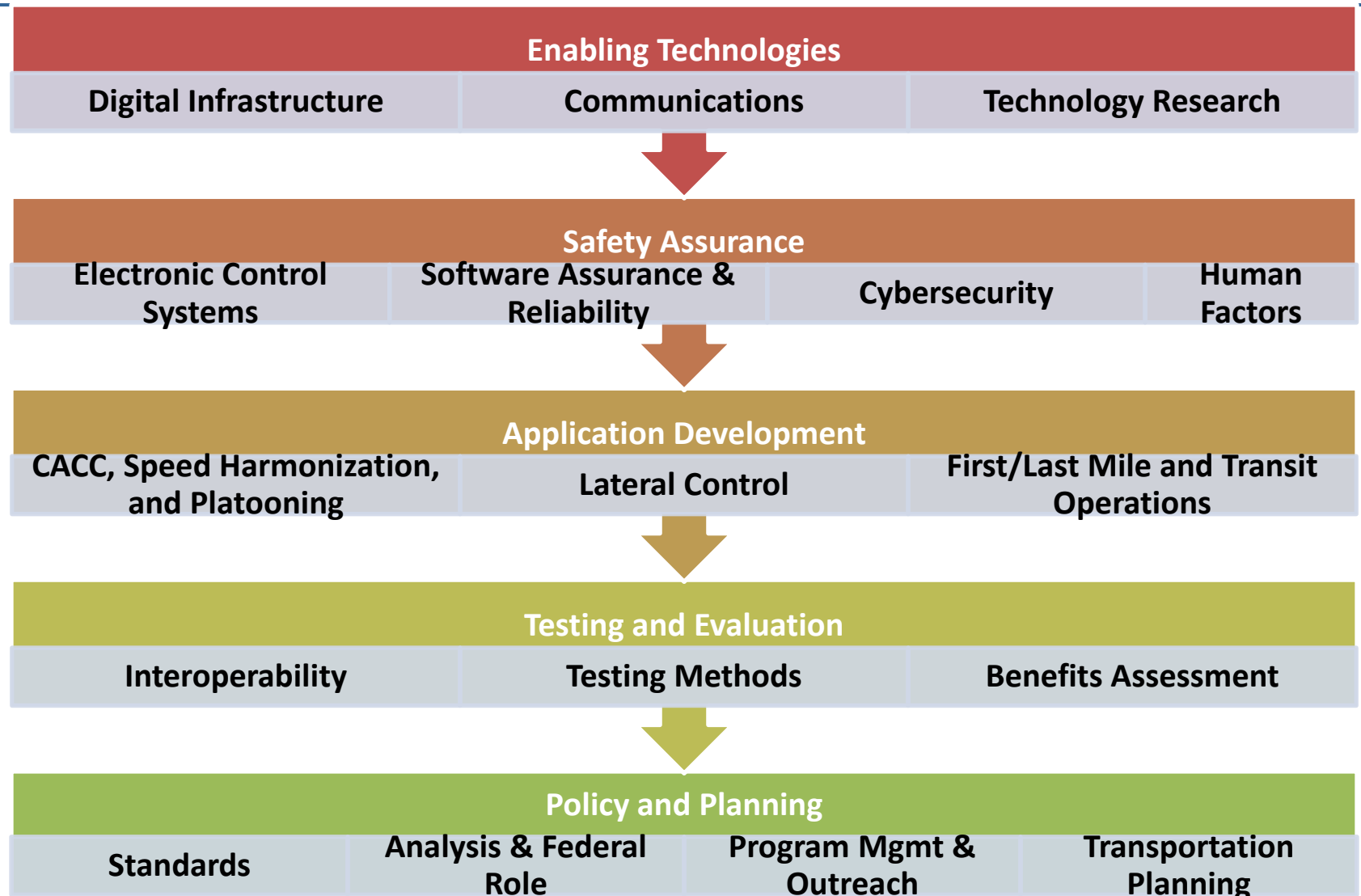Automated vehicles have the potential to transform our nation's surface transportation system.

Potential benefits include:

- Crash avoidance
- Reduced congestion
- Reduced energy consumption and vehicle emissions
- Improved efficiency and accessibility

SAFETY, MOBILITY, & ENVIRONMENTAL BENEFITS AHEAD

LIMIT 35

Research Tracks and Topics

Enabling Technologies

Digital Infrastructure	Communications	Technology Research

Safety Assurance

Electronic Control Systems	Software Assurance & Reliability	Cybersecurity	Human Factors

Application Development

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	Analysis & Federal Role	Program Mgmt & Outreach	Transportation Planning

For More Information

http://www.dot.gov/

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