



UNITED STATES
DEPARTMENT OF TRANSPORTATION

ITS Georgia 20/20 Vision

Shelley Row
Director

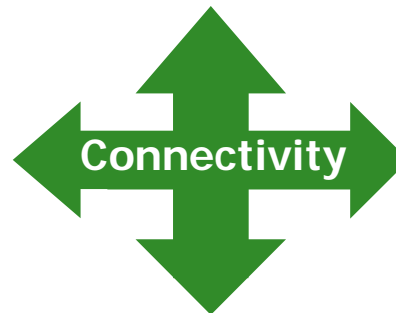
Intelligent Transportation Systems Joint Program Office
Research and Innovative Technology Administration, USDOT

ITS Research = Multimodal and Connected

Drivers/Operators



Vehicles and Fleets



Infrastructure



Wireless Devices

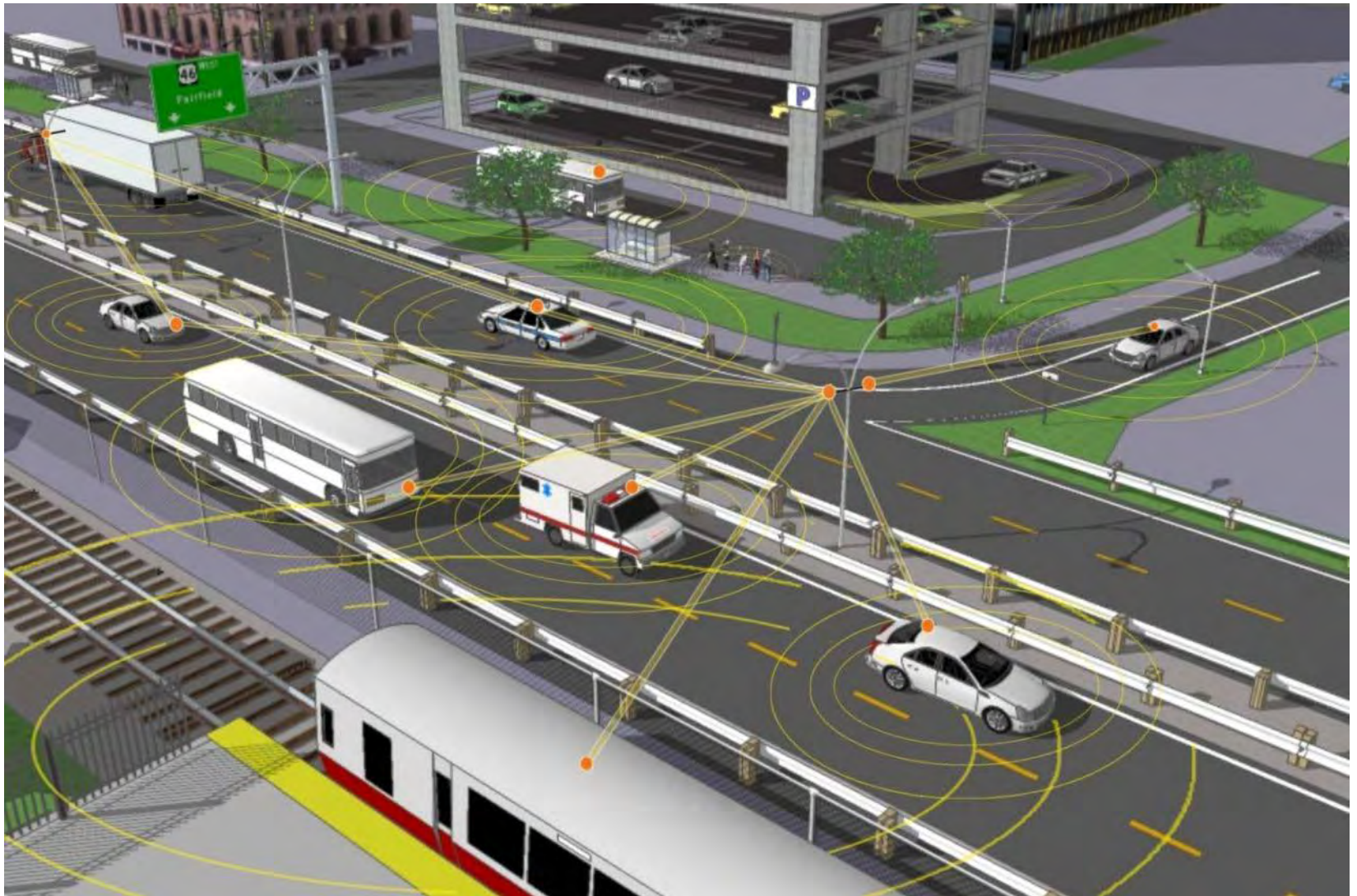


What is the Connected Vehicle Program

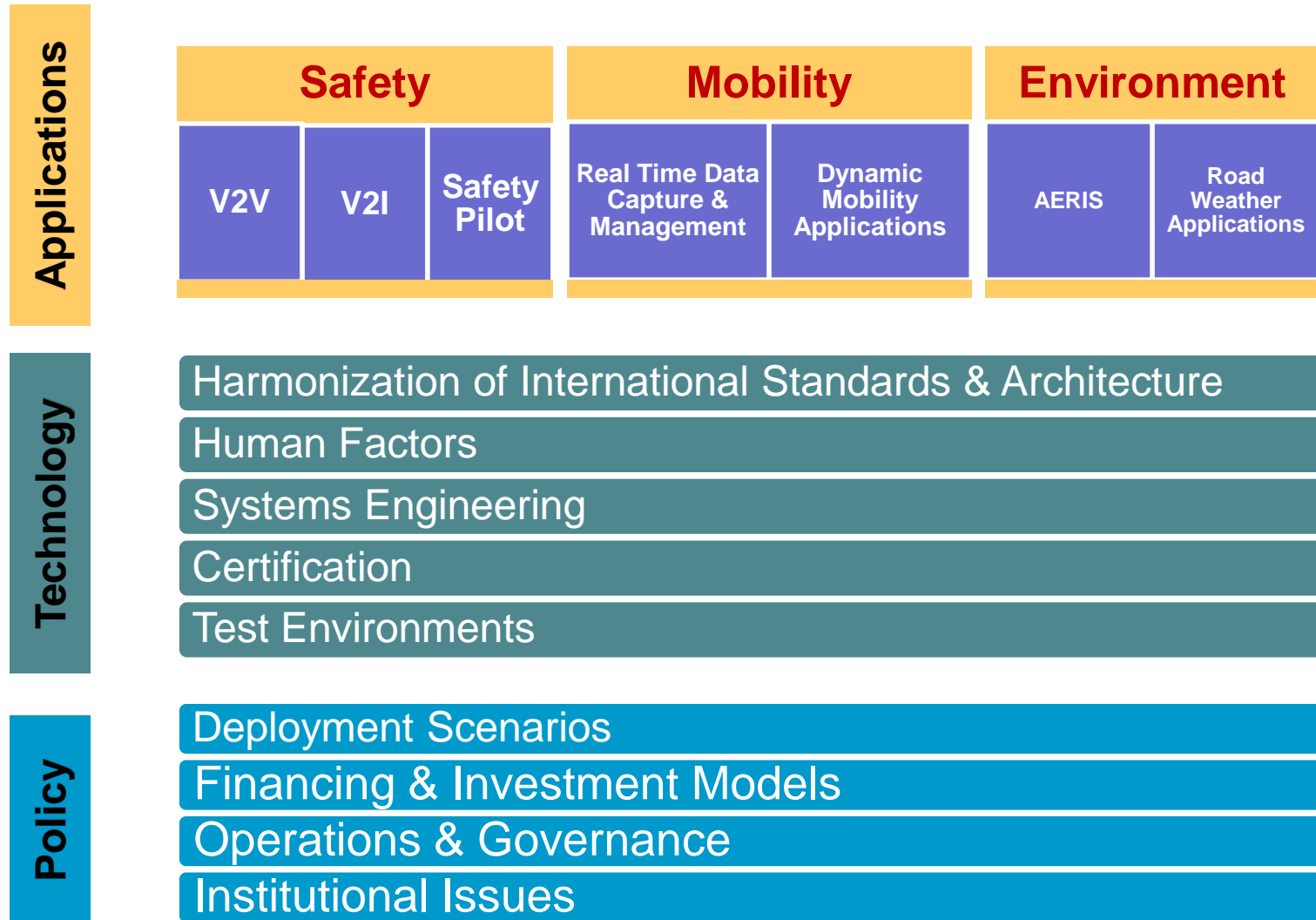
- Vehicle-to-vehicle and vehicle-to-infrastructure wireless communications for:
 - **Crash prevention**
 - **Improved mobility**
 - **Environmental sustainability**
- Over 80% of unimpaired crash scenarios addressed by connected vehicle capability
- Encompasses autos, buses, and trucks
 - Partnership among RITA, NHTSA, FHWA, FMCSA, and FTA
- 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



Connected Transportation



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)
- 2015 Infrastructure Implementation Guidance



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
- **Data will determine NHTSA's action for the 2013 decision point:**
 - Simulation and modeling efforts based upon previous field operational tests
 - Data collection from vehicle-to-vehicle 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)**



Safety Pilot Objectives

- **Generate empirical data for supporting 2013 & 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
- 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



Safety Pilot Sites

- **Driver clinics**
 - Assess user acceptance



Six Driver Clinic Sites

- **Large-scale model deployment**
 - Obtain empirical safety data for estimating safety benefits



One Model Deployment Site

User Acceptance - Driver Clinics

- 6 locations across the US beginning in August 2011
- 100 drivers per locations
- Experience Crash Warnings
 - Forward Crash Warning
 - Emergency Brake Light
 - Blind Spot Warning
 - Lane Change Warning
 - Intersection Assist
 - Do Not Pass Warning



User Acceptance - Driver Clinics

1. Aug'11 - Brooklyn, MI
2. Sep'11 - Brainerd, MN
3. Oct'11 - Orlando FL (ITS World Congress)
4. Nov' 11 - Blacksburg, VA for DAC and Washington DC for the showcase
5. Dec'11 – Fort Worth, TX
6. Jan'11 – San Francisco, CA

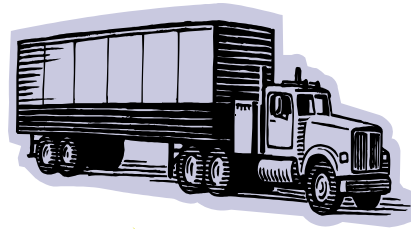


Model Deployment

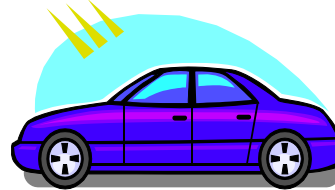
- Major road test and real world implementation taking place 2011 thru 2013, involving:
 - Approximately 3000 vehicles
 - Multiple vehicle types
 - Fully integrated systems and aftermarket devices
 - Roadside infrastructure
 - System wide interoperability testing
- Also to test
 - Prototype security mechanisms
 - Device certification processes



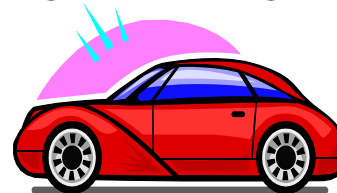
Integrated Vehicles



Integrated Trucks



Aftermarket Devices



Basic Safety Devices



Roadside Infrastructure



Aftermarket Safety Devices

- Devices that transmit and receive Basic Safety Message
 - Driver interface for safety warnings
 - No integration with vehicle
- 4 vendors currently underway
- Applications include:
 - CICAS-V (red light warning) (V2I)
 - Curve overspeed warning (V2I)
 - Emergency electronic brake light (V2V)
 - Forward collision warning (V2V)
- QPL projected for March 2012
- **Safety devices must comply with NHTSA driver interface criteria before being released to drivers for model deployment**



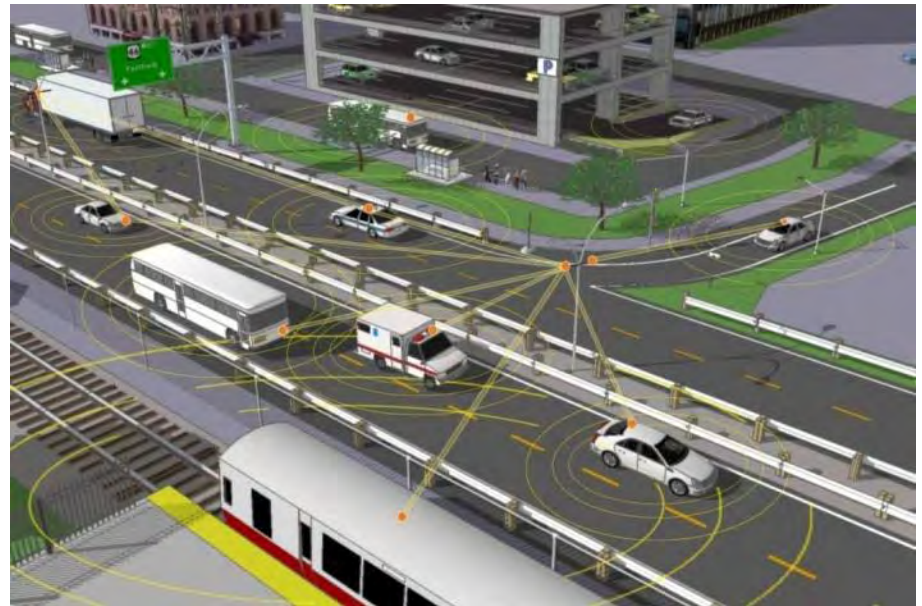
Basic Communication Devices

- Devices that only transmit Basic Safety Message
 - No driver interface
- Initial procurement resulted in 8 awards
 - 6 vendors made it to acceptance testing
 - No vendors fully complied with the tests
 - Specification was considered by DOT as still weak
 - Updated specification and issued 2nd procurement
- 2nd procurement resulted in 4 awards
 - Currently underway
- Qualified Products List (QPL) estimated to be established later this year



Roadside Equipment for Safety

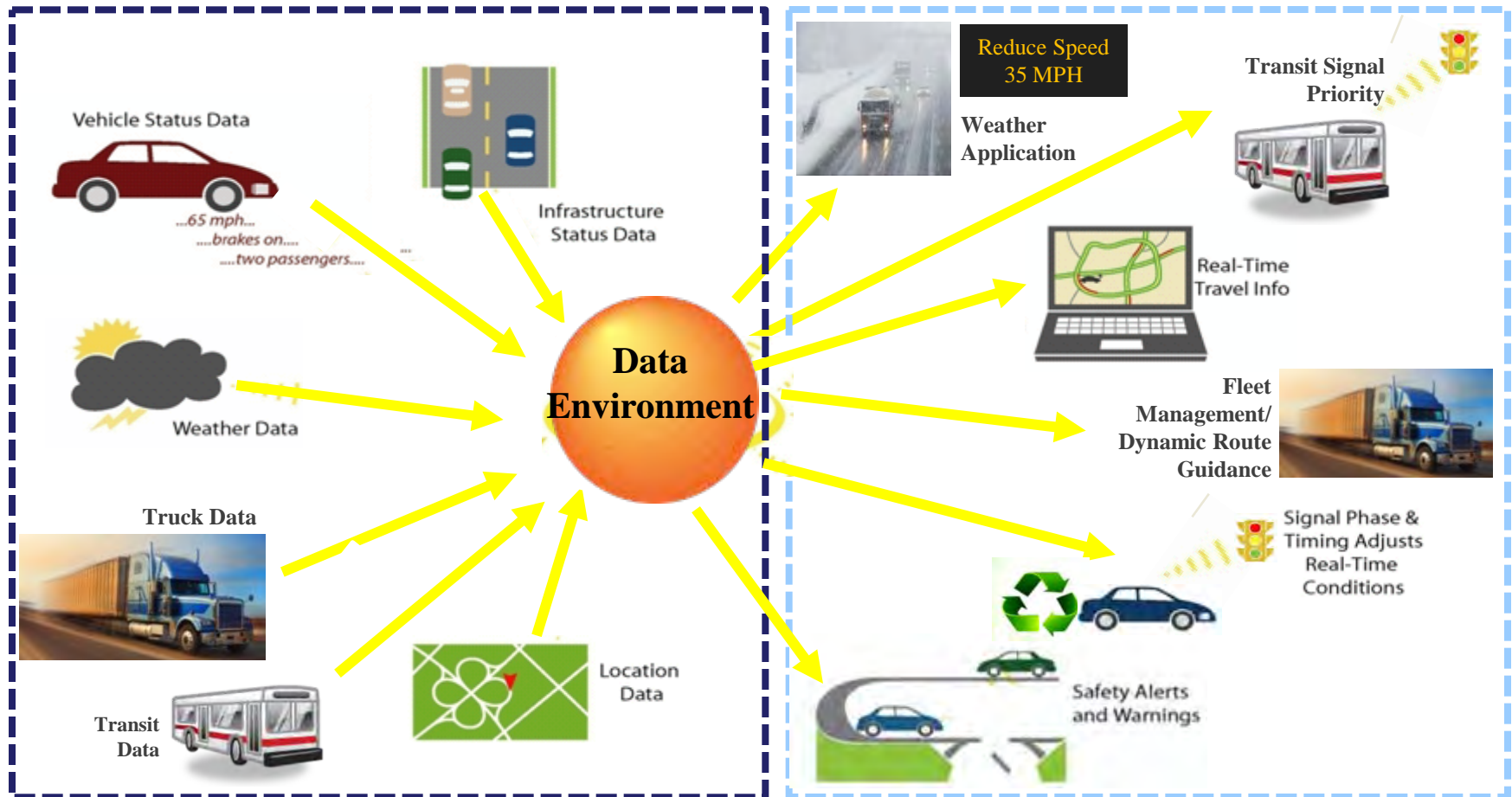
- Transmission and receipt of V2I messages
 - Interfaces with signal controller (at intersections)
 - Supports other dangerous road segment applications
- Applications supported
 - CICAS-V (red light warning)
 - Curve overspeed warning
 - Collection of probe data transmissions
 - Other (tbd)
- 4 vendors currently underway
- QPL projected for January 2012



Mobility Program

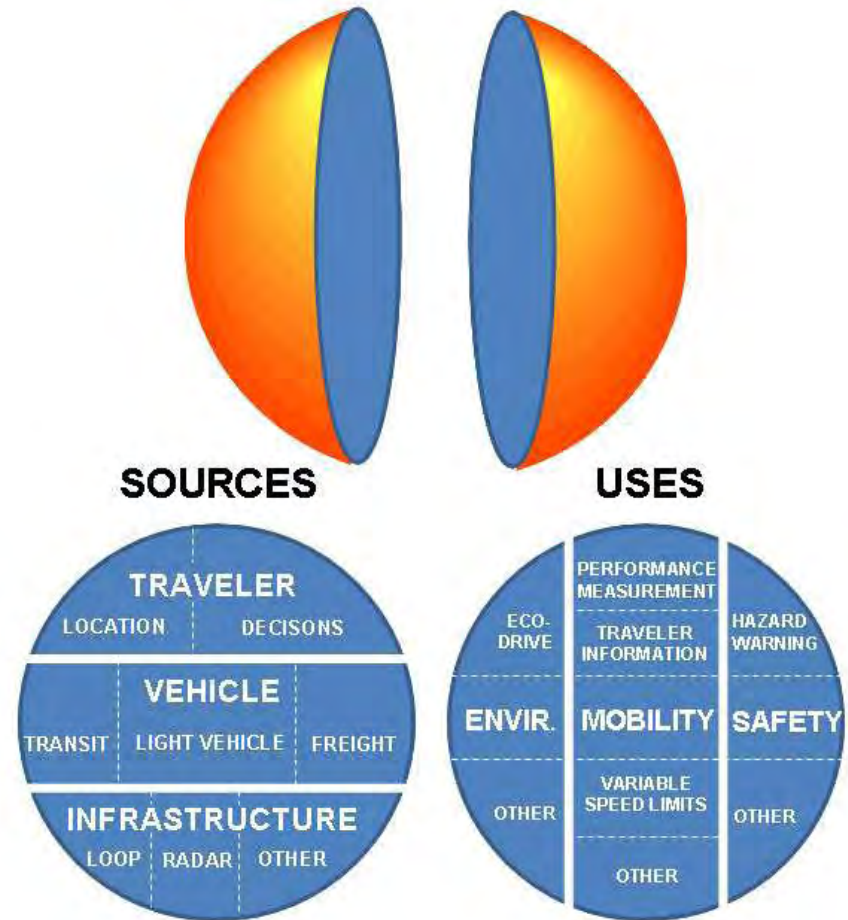
Real-time Data Capture and Management

Mobility Applications



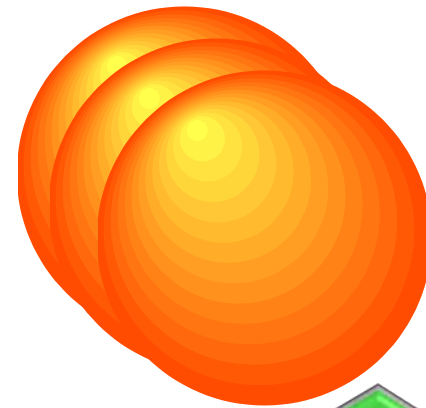
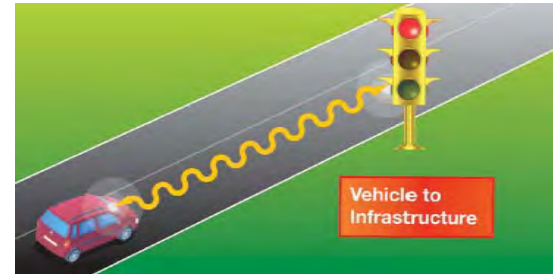
Data Capture and Management

- ITS JPO is developing and collecting well-documented, quality data sets available from recent or ongoing operations, field tests, or simulations of emerging technologies supporting mobility, environment, transit, freight, weather, and other surface transportation research, that can be made broadly available to support dynamic mobility applications development by researchers



Build V to I Safety, Mobility, and AERIS Data Environments and Applications

- V to I for Safety – Working on V to I Con Ops, Transit Con Ops, Smart Roadside Con Ops and on a SPAT Con Ops
- Prototype the Data Environment of the Future – Preparing for an Open Data Manager Contract
- Prototype, Field Test and Analyze Mobility Applications
 - Procurements underway for 6 concept of operations and data requirements
- Defined 7 Transformative AERIS Applications



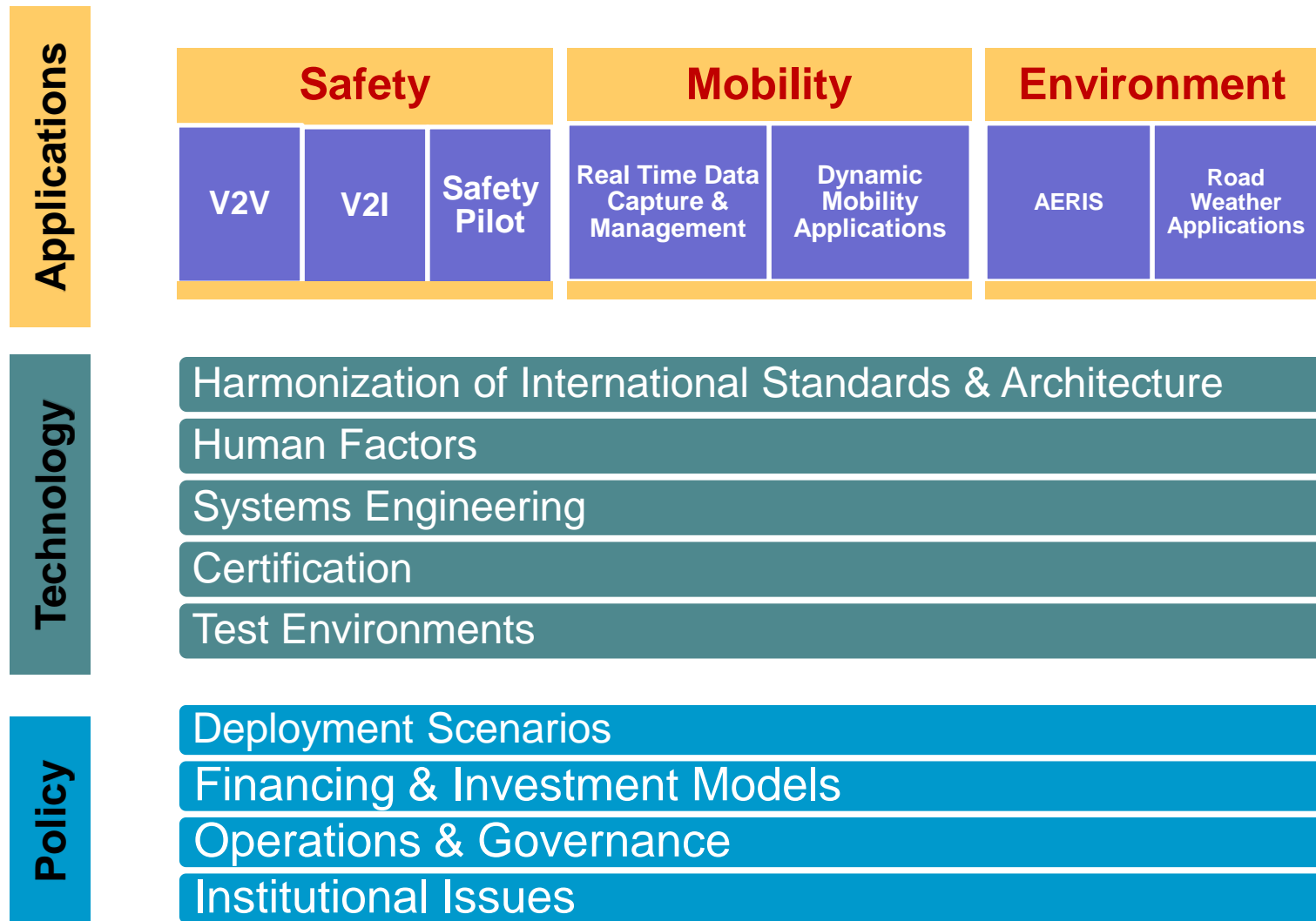
Signal Systems
Transit Management
Freight
R.E.S.C.U.E.M.E
ATIS
Speed Harmonization



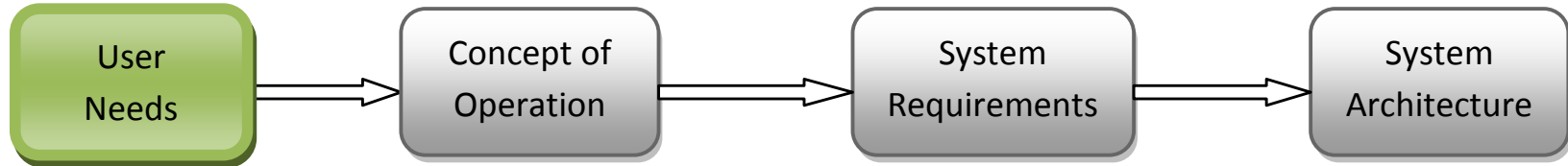
AERIS



ITS Research Program Components



Define the System and Establish a Testing Environment

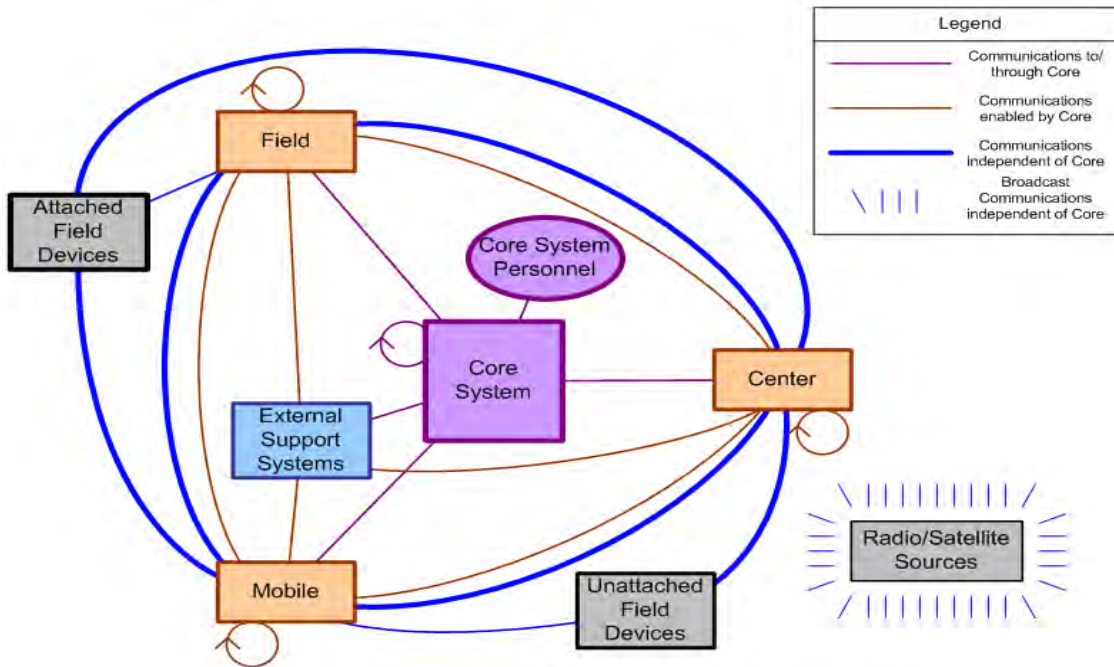


Aug./Sept. 2010

May 2011

September 2011

Oct 2011



connected vehicle environment

Open Workshops
 June 2011 (DC)
 Sep (San Jose, CA)

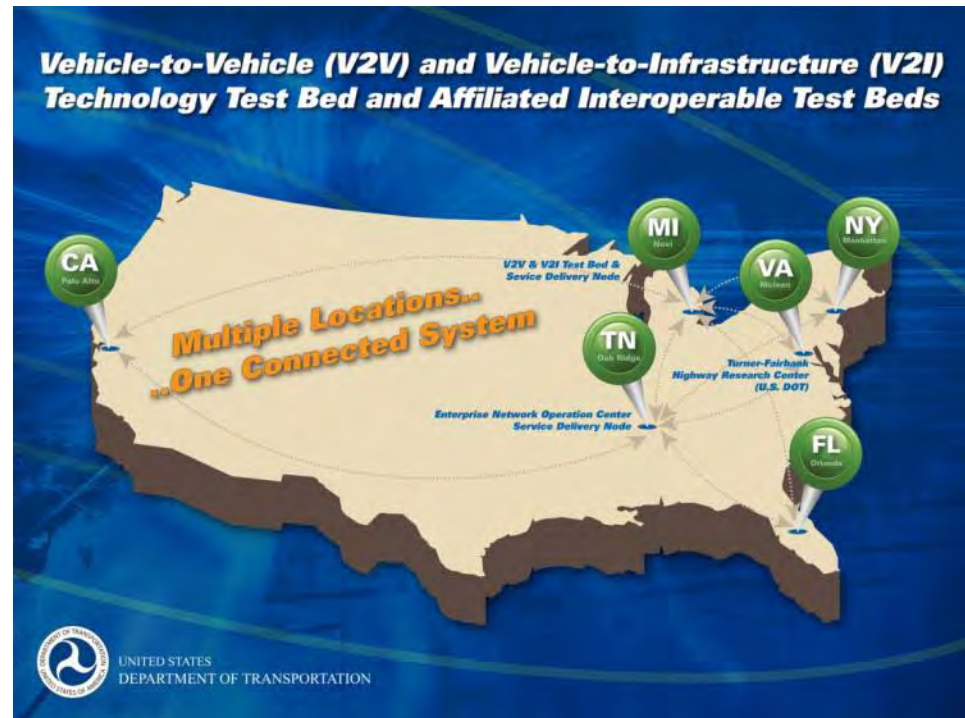
Build a Reference Implementation

2011

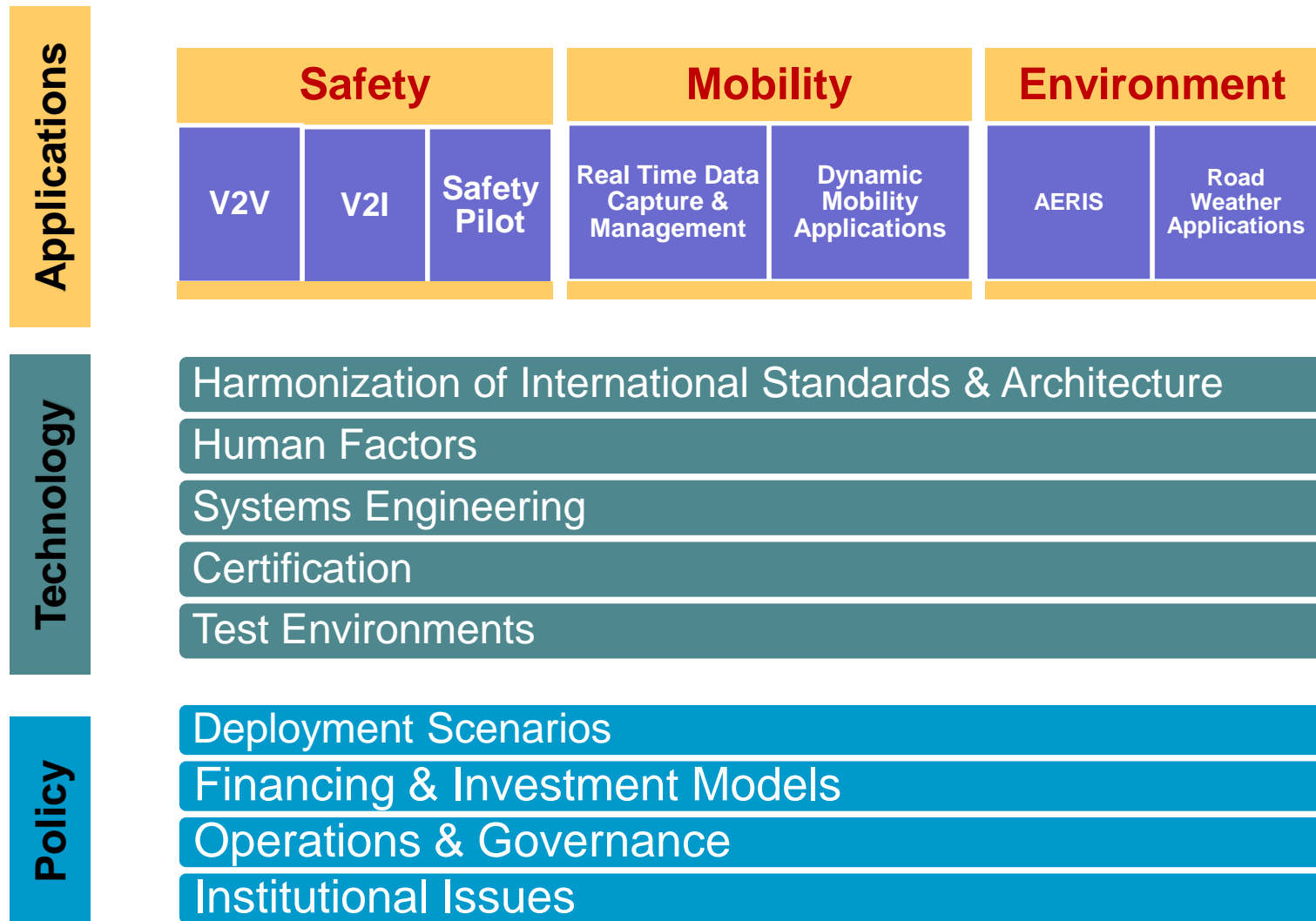
- Testbed is Up and Running. Interoperable equipment in California, Florida, New York, Michigan, Virginia, and Network Operations in Tennessee

2012 to 2013

- Reflect the System Architecture
- Utilize Harmonized International Standards
- Implement a Certification Process
- Implement a Governance Process
- Implement a Security Process



ITS Research Program Components



Deployment Scenarios

V2V Security Network

- DSRC for security: Estimated at 40,000 RSEs; not necessarily owned/operated by Federal/State/local governments
- Cellular or WiFi: Infrastructure exists; must address privacy
- No infrastructure: Unlikely to meet our needs but worthy of consideration

No easy option

All require a sustainable funding stream & governance structure

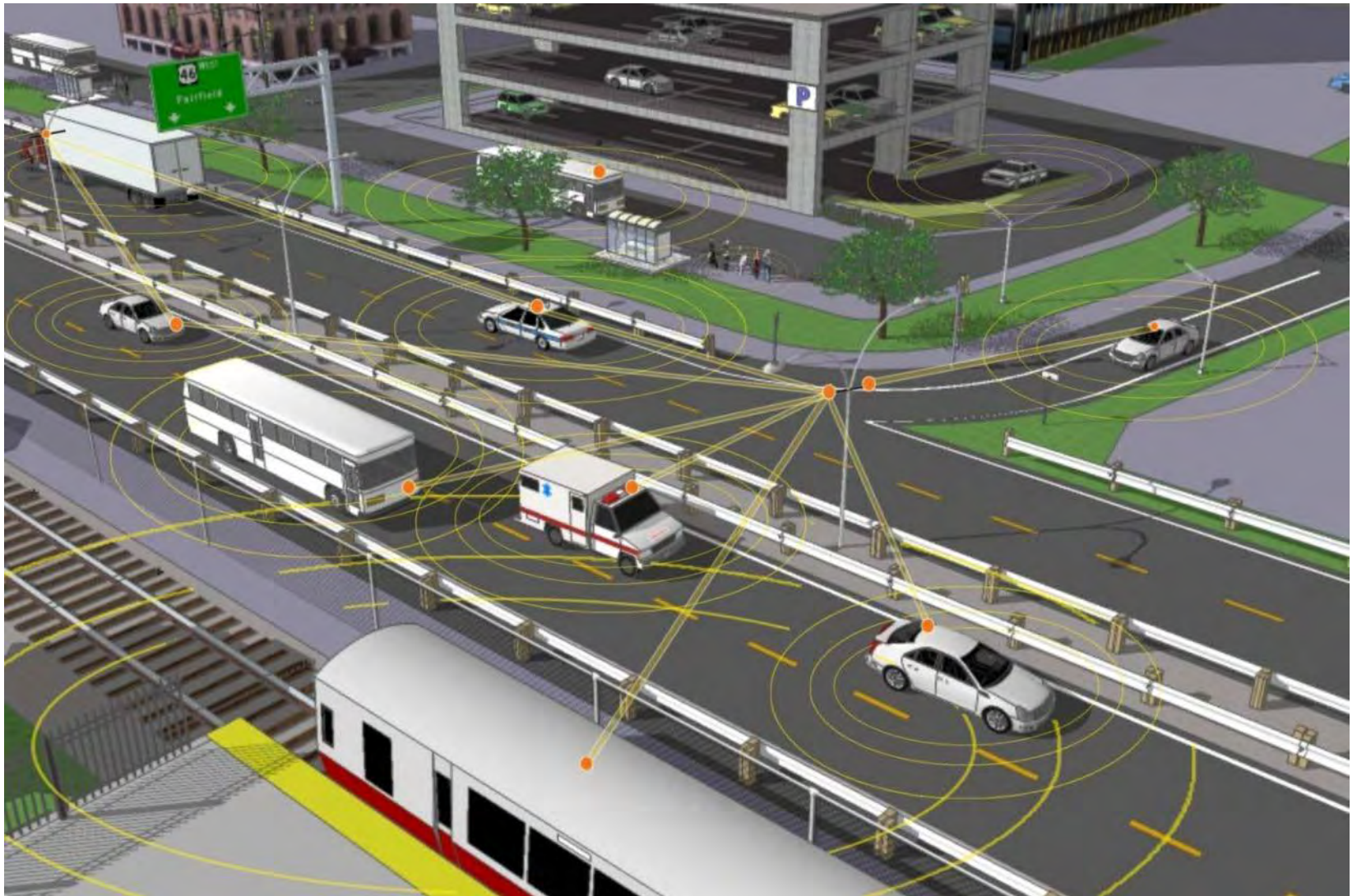
All under study

V2I Infrastructure could be implemented for spot locations

- Intersections
- Curves



Connected Transportation



Georgia 20/20 – Some Thoughts

- **Watch and accept what new technology brings**
 - Traffic data from cell phones
 - New data to add to traditional models
- **Take advantage of innovation**
 - Provide open data to enable application development
- **Be prepared to rethink the government role**
 - Provide equity
 - Enable applications



For More Information



ITS VIDEO CHALLENGE

Grab your camera and share with us the story of your community's ITS deployment!

Find the official rules and award information [here](#).

1 2 3 4 5 6 7 >

RITA Administrator Peter Appel Welcomes Shelley Row Back to the ITS JPO in an Open Letter to Stakeholders
U.S. Department of Transportation and RITA welcomes back Shelley Row. [Read more...](#)

Spotlight

- ITS JPO hosts Public Meeting and Webinar to Discuss New AERIS Applications 6/1/11
- U.S. DOT Seeks Comments on National ITS Architecture 5/24/11
- Dale Thompson Joins the Team at ITS JPO 5/24/11


[More News >>](#)

Our Current Research

Applications Mode-Specific Cross-Cutting

- ▶ Vehicle-to-Vehicle Safety
- ▶ Vehicle-to-Infrastructure Safety
- ▶ Real-Time Data Capture
- ▶ Dynamic Mobility Applications
- ▶ Environment
- ▶ Road Weather

[More >>](#)

 Like 13

Shelley J. Row, P.E., PTOE
Director
ITS Joint Program Office

[Biography](#)

Procurement Opportunities

As we implement the ITS Research Strategic Plan, open procurements may become available through a variety of solicitations. [More >>](#)

Public Meetings [View >>](#)



ITS Video Challenge

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