U.S. Department of Transportation

STATE OF THE ITS INDUSTRY

TRANSPORTATION RESEARCH BOARD 2019

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ITS JPO Strategic Approach

1: Identify and assess emerging, priority technologies for their feasibility, applicability, opportunities, and impacts to the transportation system.

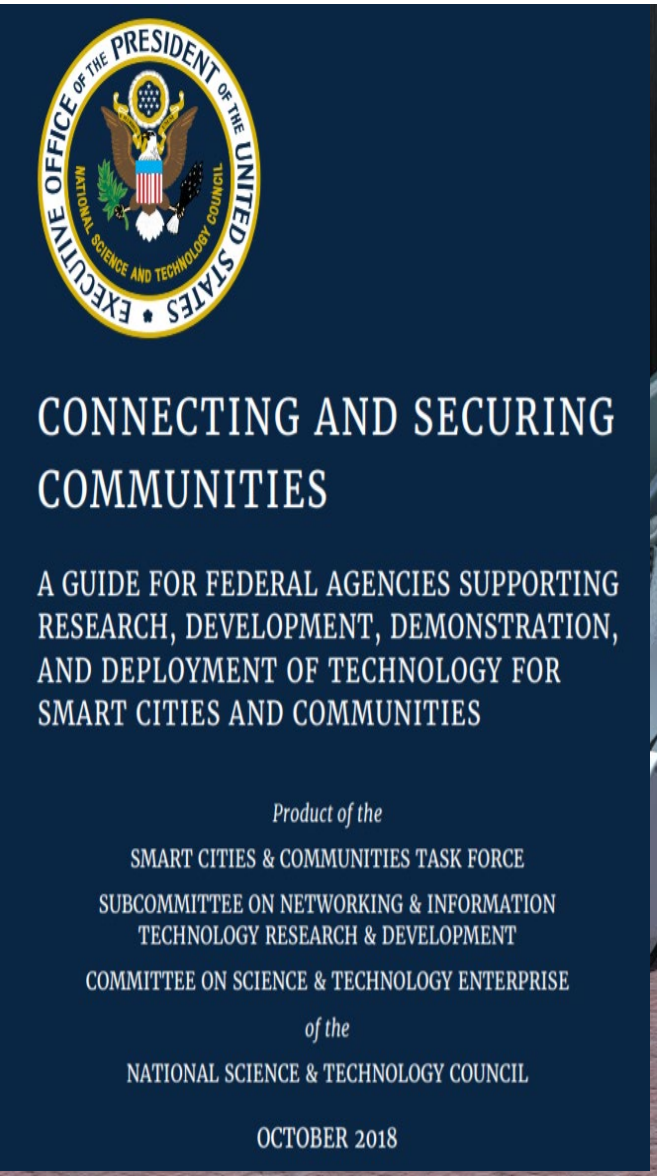
2: Coordinate and lead ITS research and development in the public interest.

3: Demonstrate the benefits of proven ITS technologies for improving the transportation system.

4: Promote widespread adoption of ITS technologies throughout the transportation system.

5: Sustain the adoption of ITS technologies to realize the full potential of benefits across all surface transportation modes.

Emerging Technology



Mobility on Demand

Artificial Intelligence

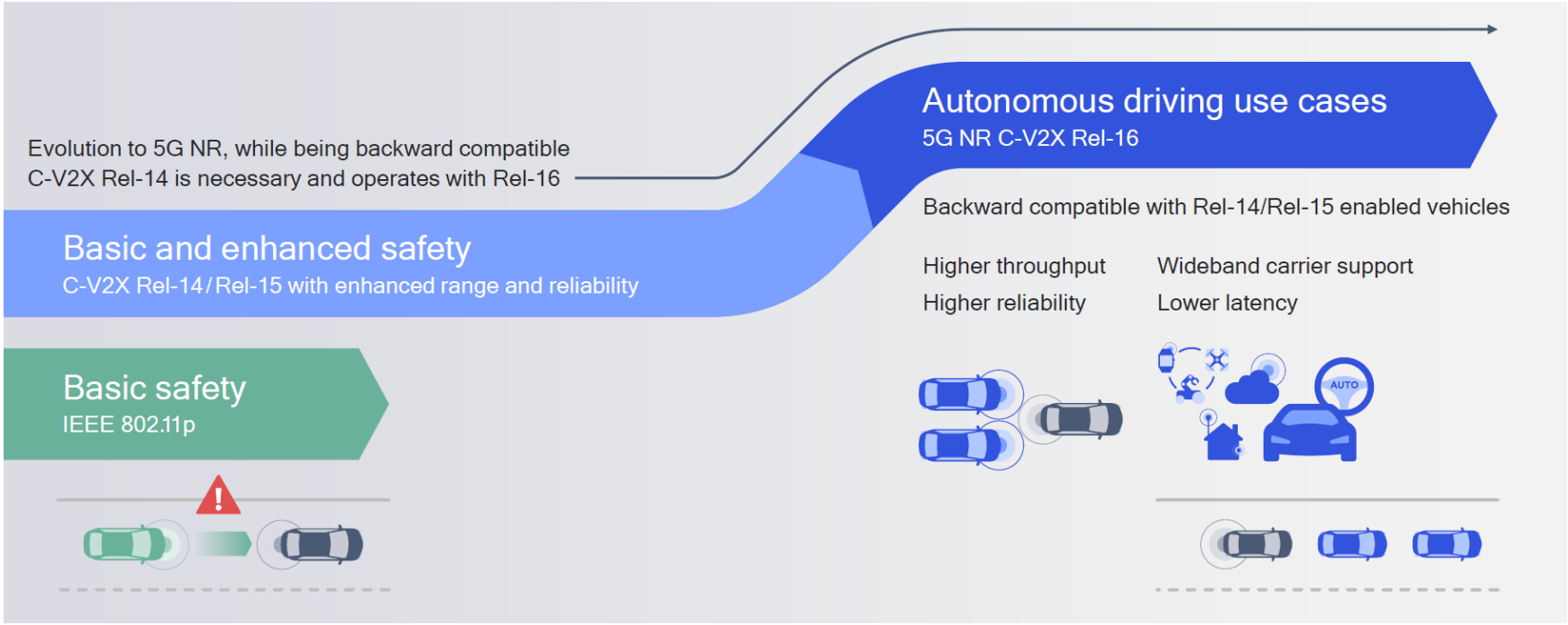
Smart Cities and Communities

Next Generation Communications for Transportation

Innovative Practices

Next Generation Communications – 5G

- Collaborate with public and private sector organizations to identify transportation use cases for 5G communications
- Develop evolutionary scenarios from present day communications in the transportation system to 5G communications



Innovative Practices

ITS JPO proposes a multimodal effort to incubate and drive the adoption of modern technology best practices across the ITS portfolio. This will help government program managers effectively procure and manage projects that use innovative practices such as machine learning, agile development, and collaborative source code development that are foundational to the next generation of ITS projects.

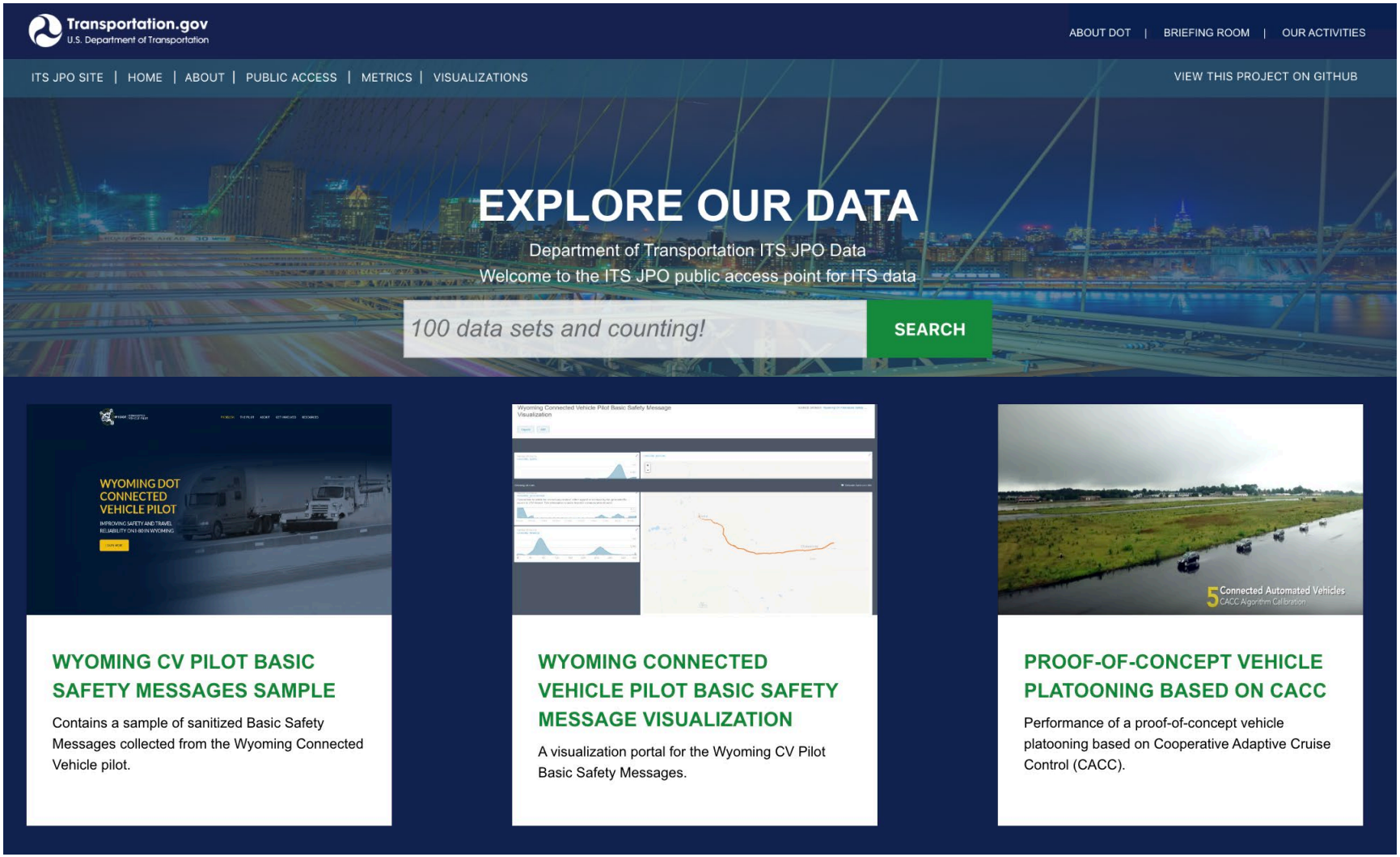
Initial focus areas:

- Agile Development
- Collaborative Source Code Development
- Machine Learning & Advanced Data Science

Bring **Innovative Practices and Methodologies** into the USDOT Enterprise and Transportation Sector

- Provides targeted workforce development activities
- Enables multi-modal sharing of code and peer exchanges
- Works with and feeds into the Digital Transformation Initiative and Professional Capability Building programs
- Works with partners in the national innovation community

Data Access and Exchanges



Cybersecurity for ITS

ITS JPO proposes establishing a cross-cutting, multi-modal effort to develop a customized profile of the NIST cybersecurity framework for ITS deployments.

- **Baseline** – Developing a comprehensive baseline of ITS cybersecurity activities across DOT and analyze this baseline to identify the needs within individual modes as well as across the range of ITS deployments.
- **Profile Development** – Apply the CSF across all deployments of intelligent transportation systems to develop a common ITS profile.
- **Technology Transfer** – Support the technology transfer from other sectors that accelerate adoption of cybersecurity technologies within ITS deployments.

Supports OCIO and OST-P activities regarding a multi-modal approach to transportation cybersecurity.

NIST Cybersecurity Framework

- Voluntary framework developed through a collaborative process by industry, academia, and government stakeholders
- Provides an approach to prioritize cybersecurity resources, make risk decisions, and take action to reduce risk.
- The Cybersecurity Framework consists of 3 components:
  1. **The Core:** provides an easy-to-understand set of desired cybersecurity outcomes.
  2. **Profiles:** portrays organizations' unique requirements, objectives, risk appetite, and resources.
  3. **Implementation Tiers:** indicates how an organization manages cybersecurity risks.

IDENTIFY	PROTECT	DETECT	RESPOND	RECOVER
Asset management	Access control	Anomalies and events	Response planning	Recover planning
Business environment	Awareness and training	Security continuous monitoring	Communications	Improvements
Governance	Data security	Detection process	Analysis	Communications
Risk assessment	Information protection and procedures		Mitigation	
Risk management strategy	Maintenance		Improvements	
	Protective technology			

Automation

Planning & Infrastructure

Traffic Management

Community Access

Safety

Mobility

Operations

Inspection & Enforcement

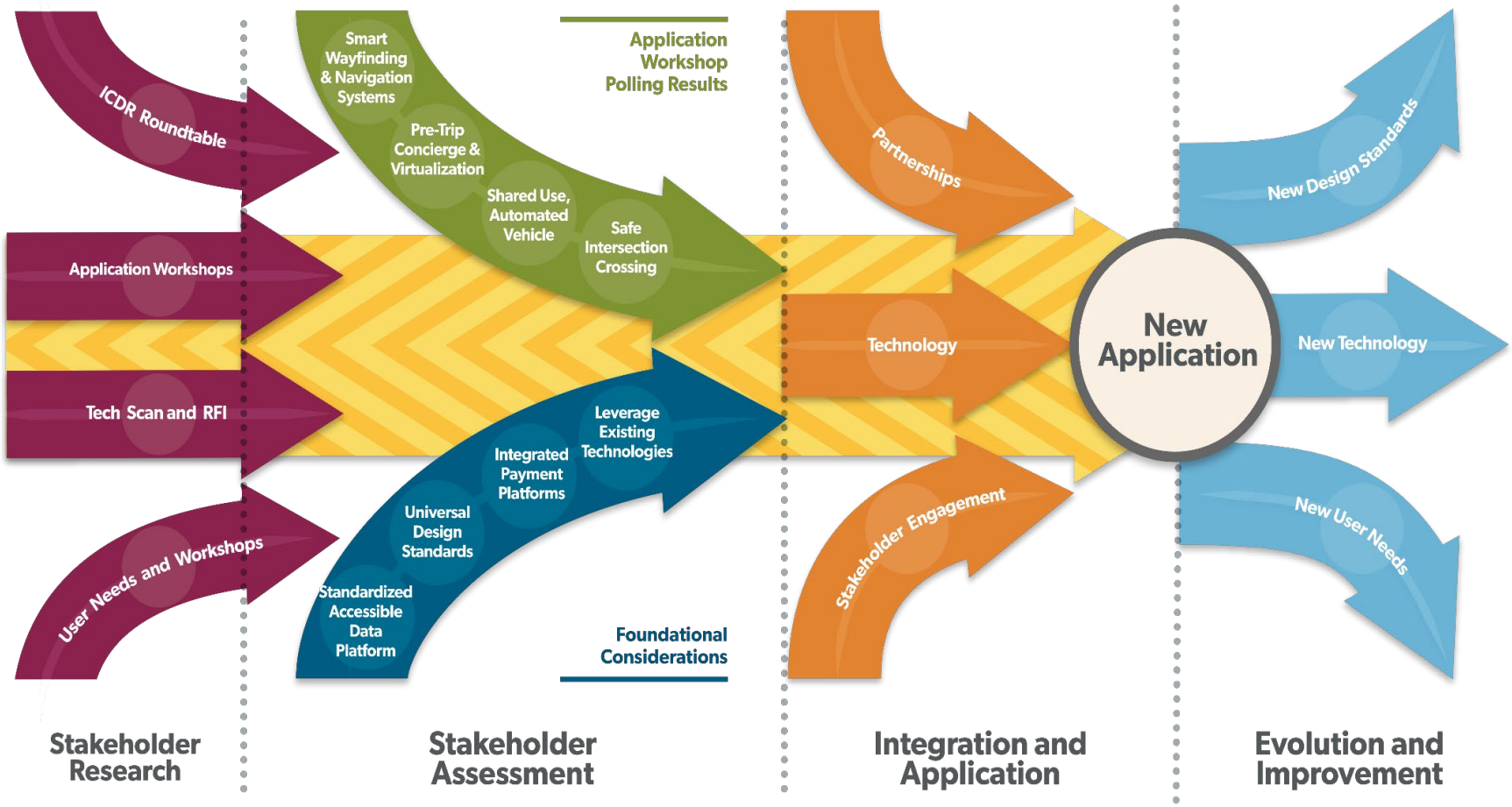
Research

USDOT Recent Automation Activities

- Automated Driving Systems 2.0
- Roundtable on Data for Automated Vehicle Safety
- Public Listening Summit on Automated Vehicle Policy
- Modal RFI and RFC Releases
- FHWA National Dialogue on Highway Automation Series
- FMCSA and NHTSA Listening
- OMNIBUS 2018
- Preparing for the Future of Transportation: Automated Vehicles 3.0

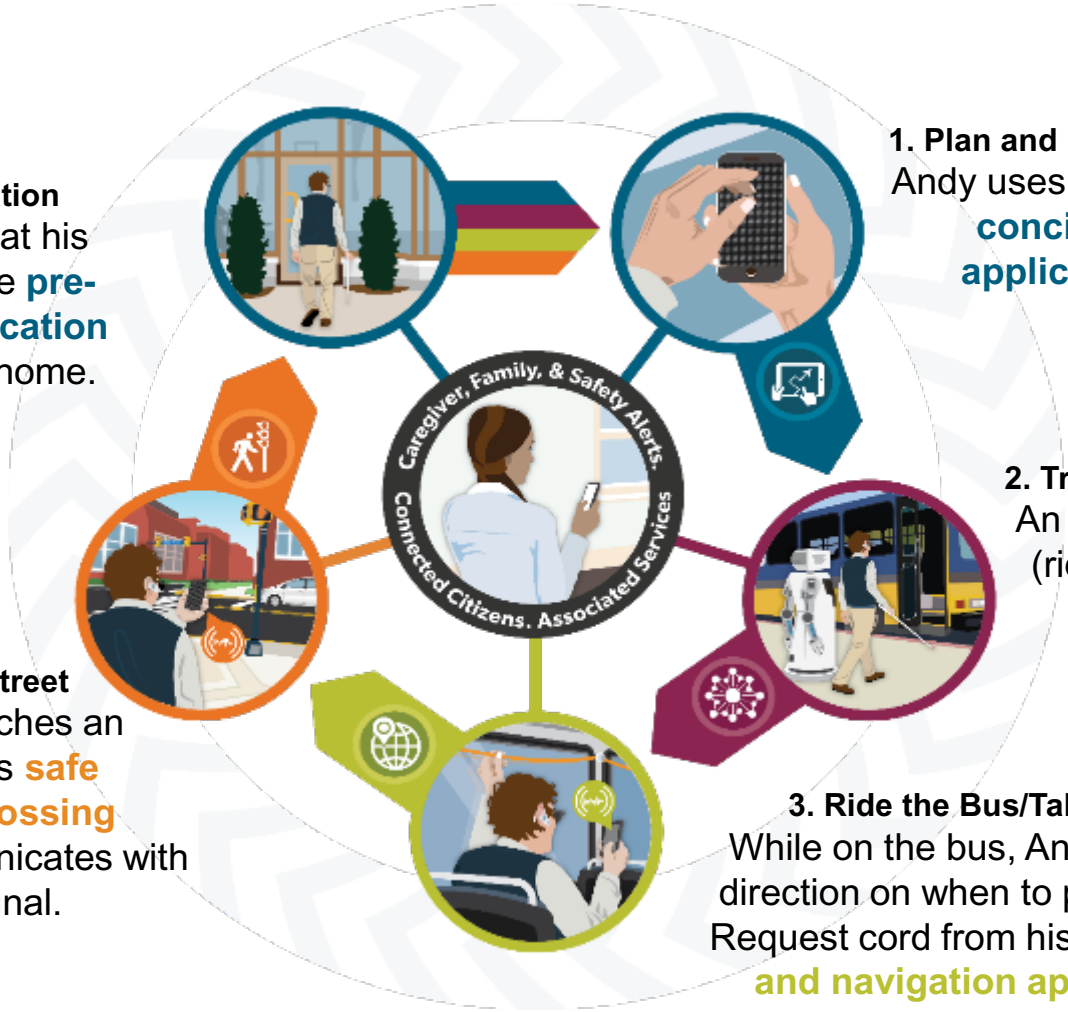
NATIONAL DIALOGUE ON
HIGHWAY AUTOMATION

ITS for Underserved Communities



Enabling the Complete Trip

5. Arrival at Destination
Andy safely arrives at his destination, while the **pre-trip concierge application** plans his return trip home.



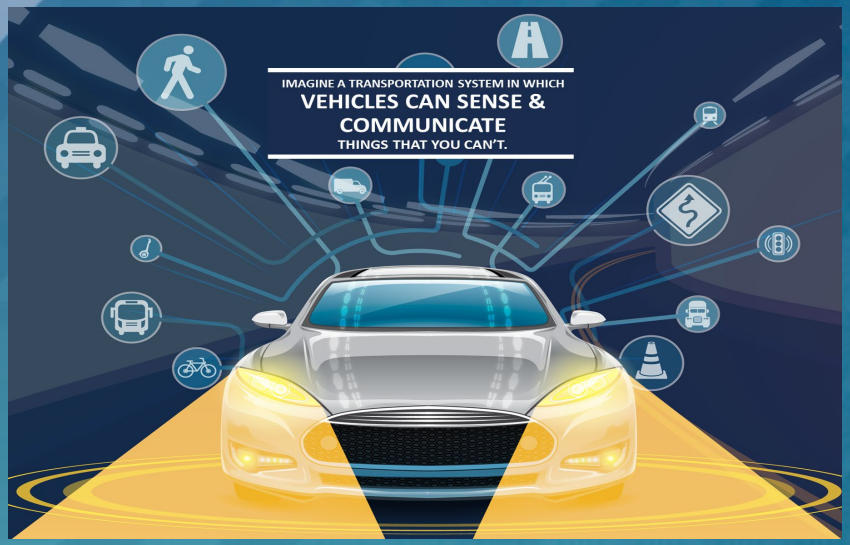
1. Plan and Book a Trip
Andy uses a **pre-trip concierge application**.

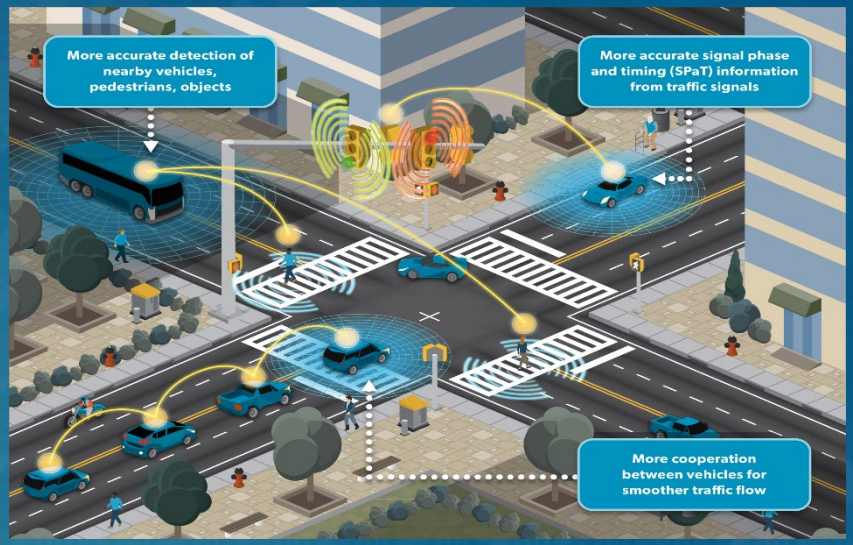
2. Travel to Transit Station
An **automated shuttle** (rideshare service) is dispatched.

3. Ride the Bus/Take a TNC
While on the bus, Andy receives direction on when to pull the Stop Request cord from his **wayfinding and navigation application**.

4. Cross the Street
As Andy approaches an intersection, his **safe intersection crossing application** communicates with the traffic signal.

Accelerating Deployment

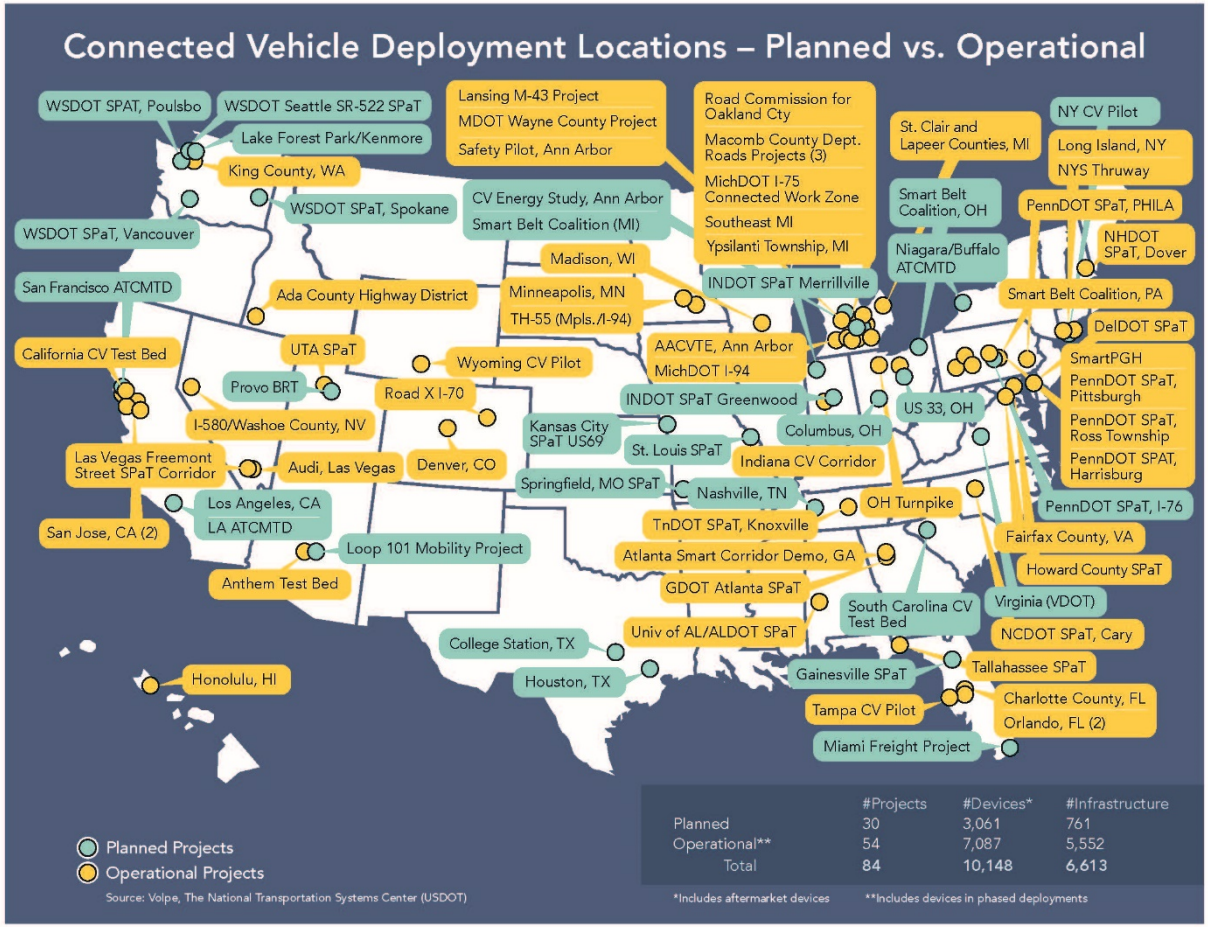


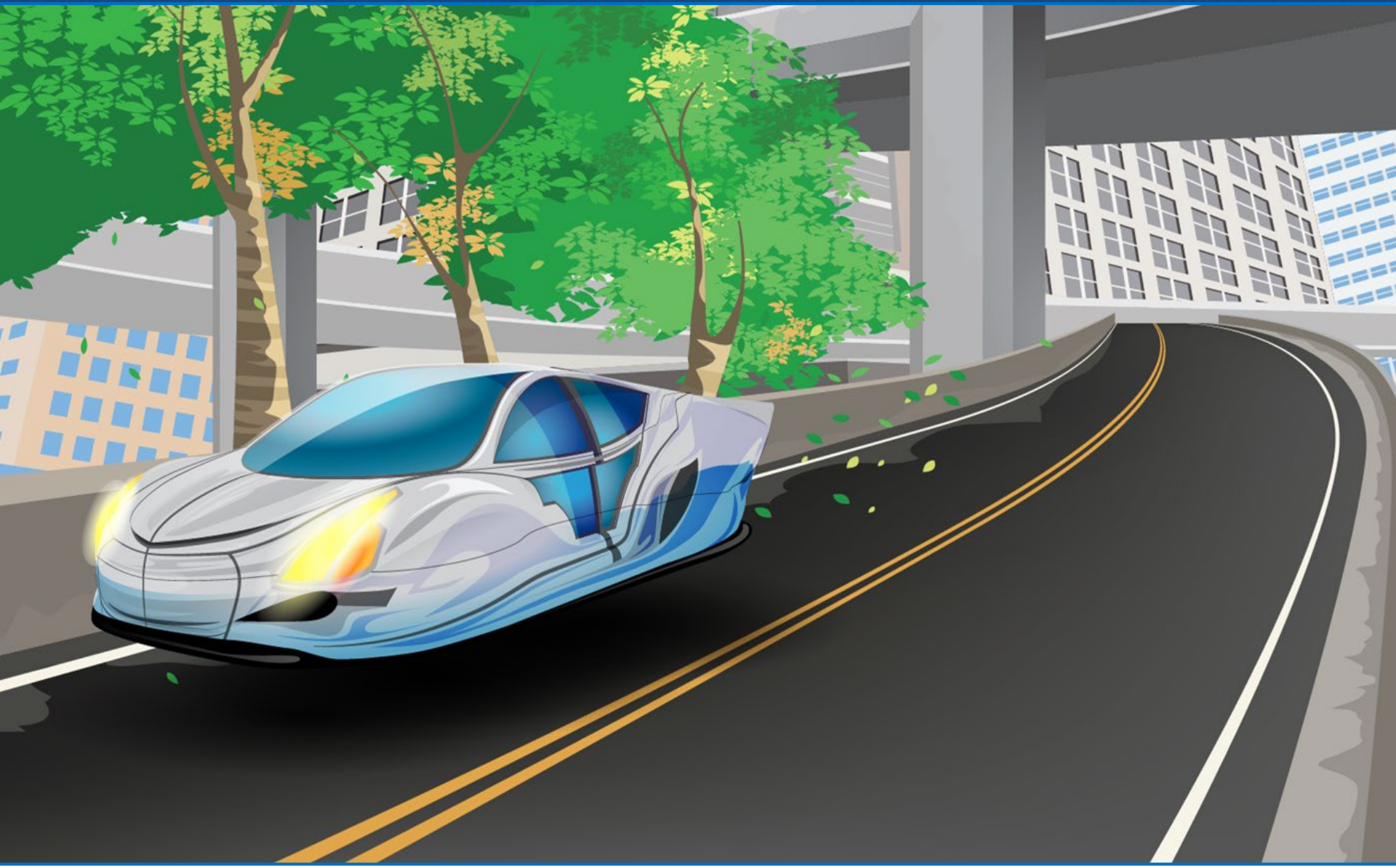


Connected Vehicles
A Solution worth Achieving

Significant Connected Vehicle Deployment

- Connected vehicles are being tested nationwide
- USDOT supports "Connected Automation" for self-driving cars
- New Security Credential Management System is operational
- USDOT proves connected vehicles are interoperable
- Free connected vehicle data is available to the public



	#Projects	#Devices*	#Infrastructure
Planned	30	3,061	761
Operational**	54	7,087	5,552
Total	84	10,148	6,613

Preparing for the Future of Transportation