U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology

National Strategy for Transportation Data

The Future of Intelligent Transportation Systems (ITS)

March 10, 2017 @ SXSW

Ariel Gold, Program Manager
ITS Joint Program Office, OST-R
U.S. Department of Transportation

Claire Barrett, Chief Privacy Officer
Office of the Secretary
U.S. Department of Transportation

Session Agenda

- Introduction to the next generation of intelligent transportation systems (ITS) technologies and data
- Introduction to USDOT approach to privacy-by-design in transportation
- Facilitated group discussion to inform our national ITS data strategy
- Open Q&A (time permitting)

Today's Transportation Challenges

Safety

- 35,092 highway deaths in 2015
- 6.3 million crashes in 2015
- Leading cause of death for ages 5-24

Mobility

- 6.9 billion hours of travel delay
- $160 billion cost of urban congestion

Environment

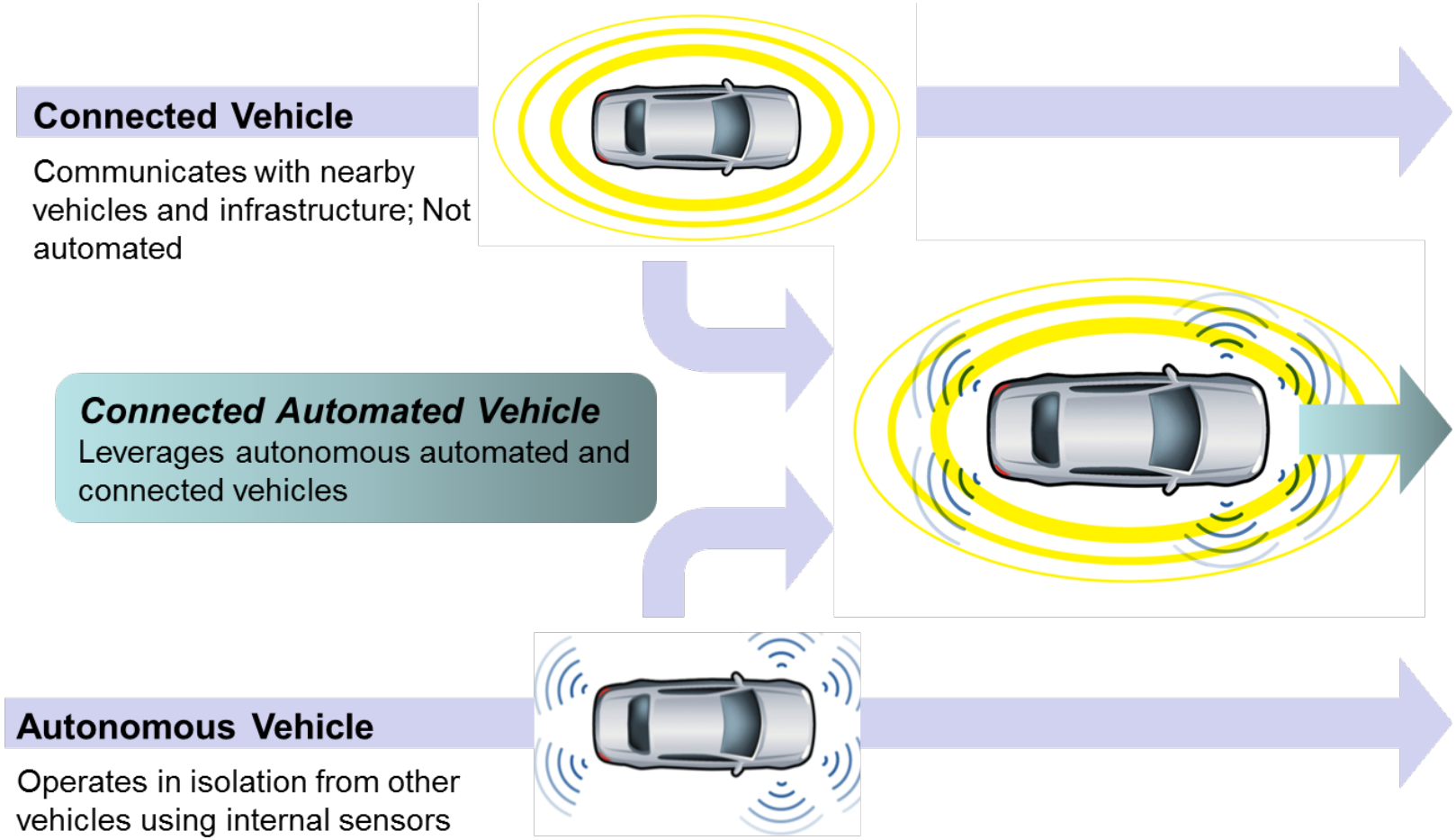
- 3.1 billion gallons of wasted fuel
- 56 billion lbs of additional CO_2

Data Sources:

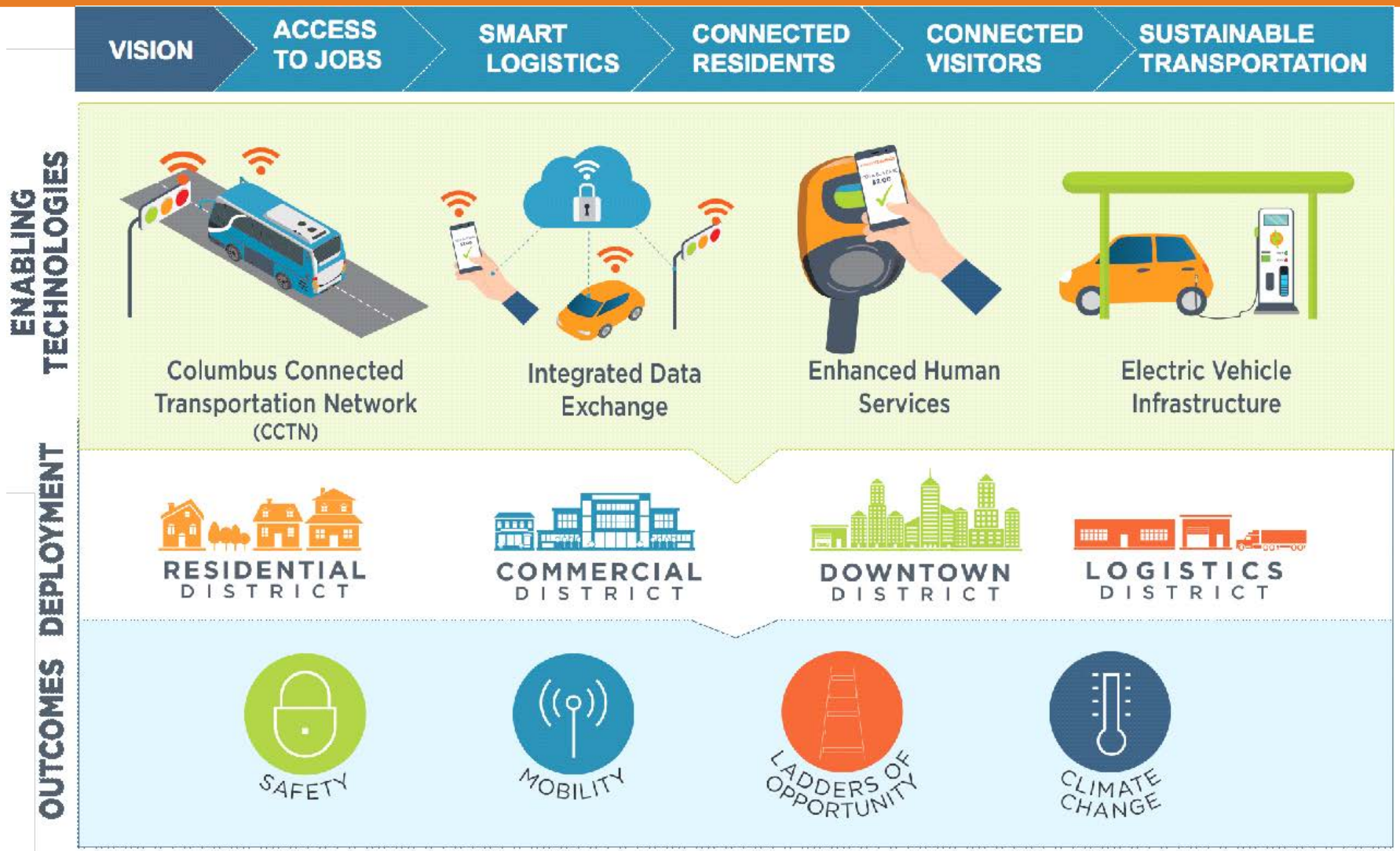
2015 Motor Vehicle Crashes: Overview, National Highway Traffic Safety Administration (August 2016); 2015 Annual Urban Mobility Report, Texas Transportation Institute (Aug 2015); Centers for Disease Control

Imagine a Transportation System in which
VEHICLES CAN SENSE & COMMUNICATE
Things That You Can't.

Connectivity Unleashes the Full Potential of Automated Vehicles – Resulting in a Wealth of Data Exchange

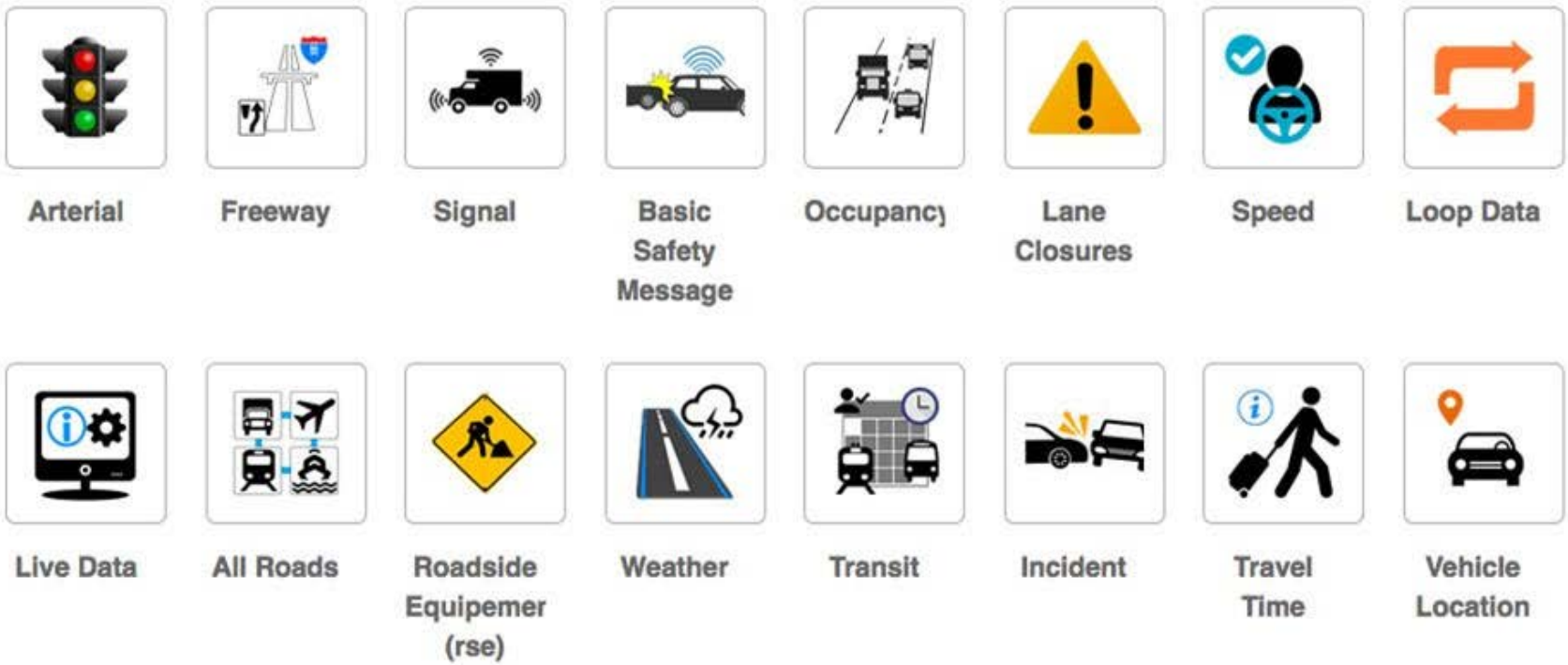


Data Unlocks the Promise of Smart Cities



Source: The City of Columbus

A Wealth of Transportation Data and Code Already Available – with More to Come



ITS Research Data Exchange: https://www.its-rde.net/engage
ITS Weather Data Environment: https://wxde.fhwa.dot.gov
ITS Situation Data Clearinghouse: https://cvcs.samanage.com/
ITS Open Source Data Applications Portal: https://www.itsforge.net/about
ITS Operational Data Environment: https://github.com/usdot-jpo-ode/jpo-ode

Use Case: Transportation Managers Need Real-Time Roadway Information

Improve Snow Removal

- Enhanced Maintenance Decision Support System

Improve Management of Work Zones

- Work Zone Traveler Information

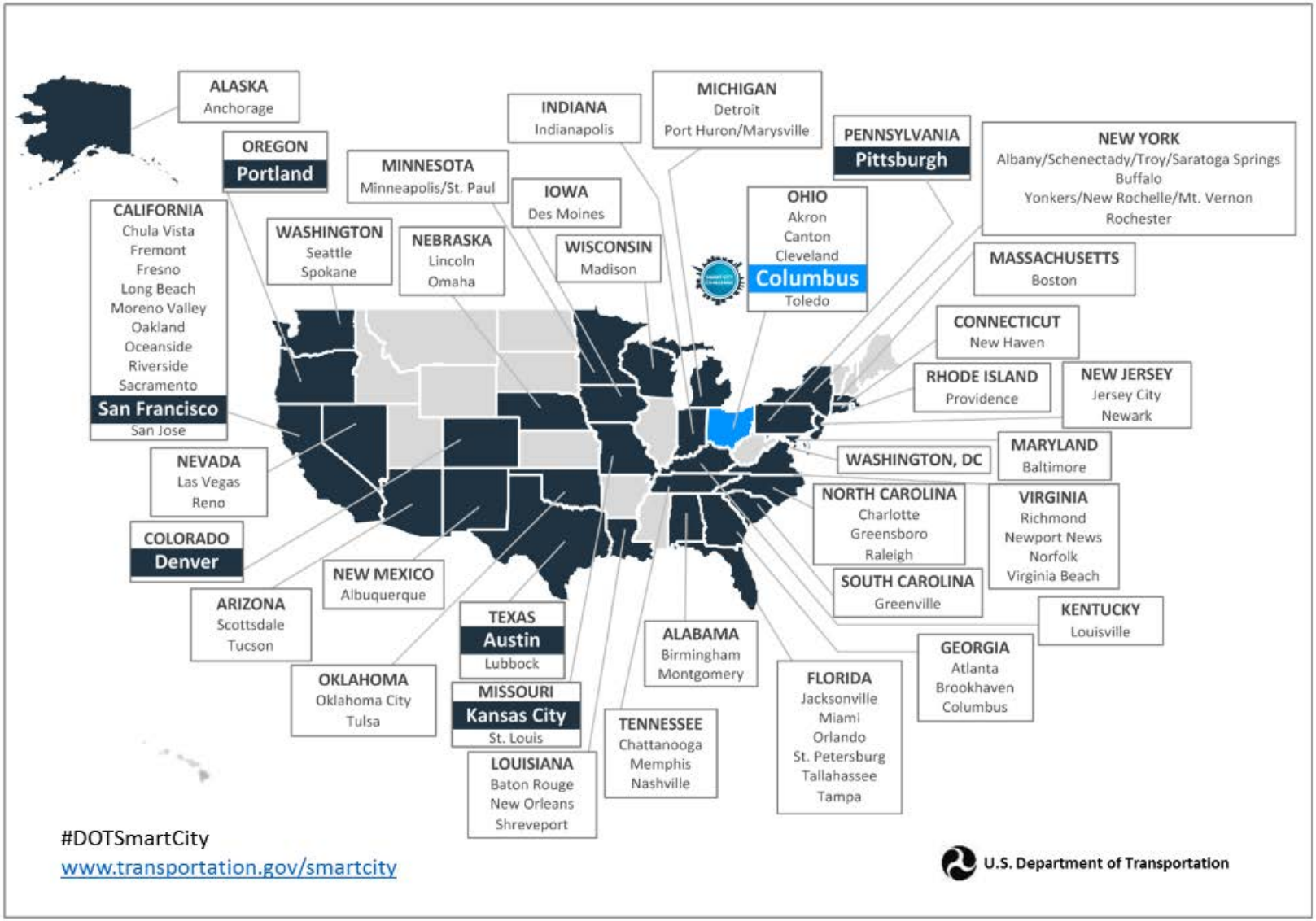
Improve Situational Awareness

- Probe-based Pavement Maintenance - black ice ahead!

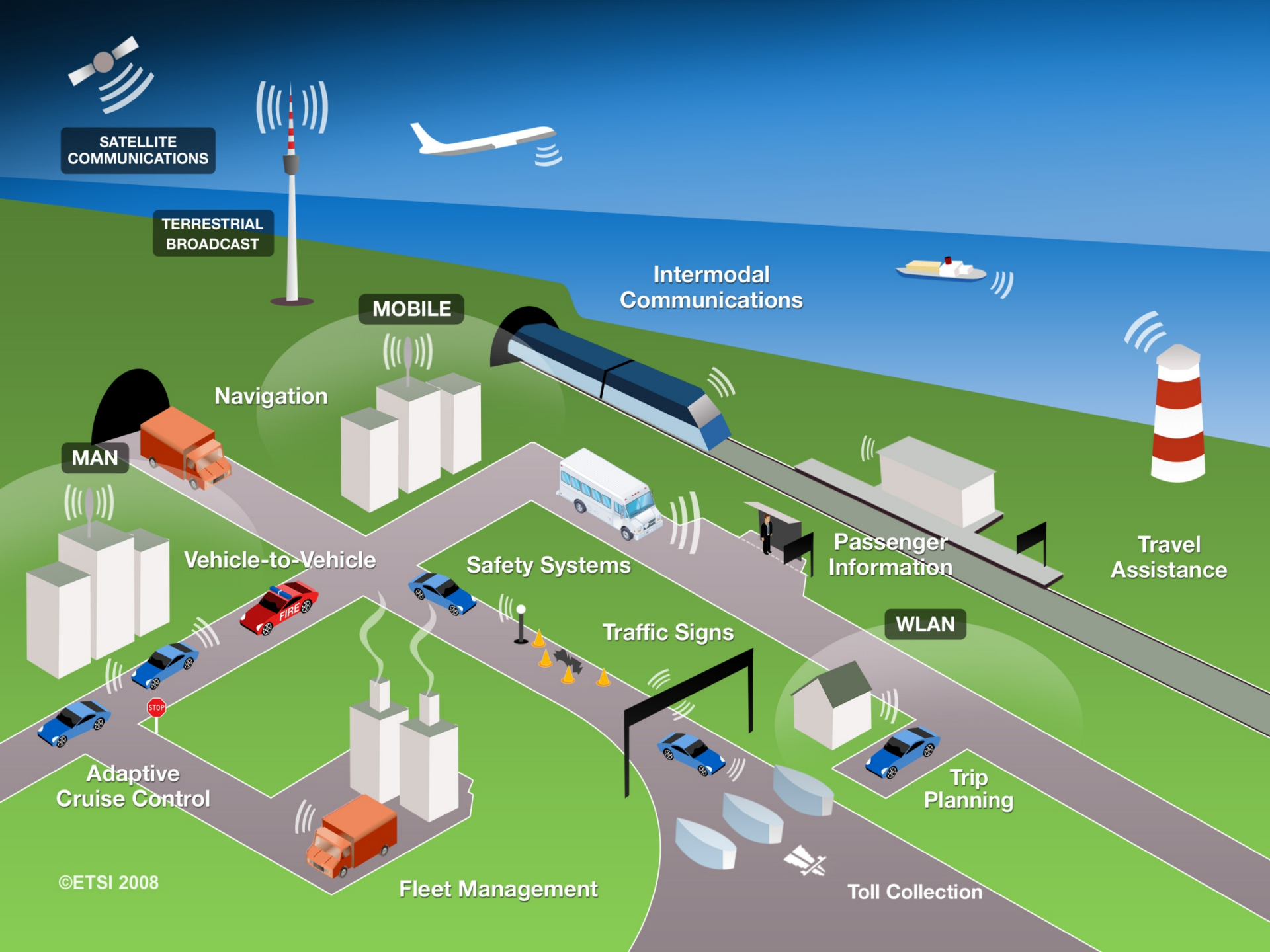
Use Case: Travelers Need Accurate and Actionable Road Information

Use Case: How Do We Safely Deploy Autonomous Vehicles?

Use Case: How to Enable a Marketplace of Interoperable Smart City Solutions?



Privacy - *It's a Matter of Trust*


SATELLITE COMMUNICATIONS
TERRESTRIAL BROADCAST
MOBILE
Intermodal Communications
Navigation
MAN
Vehicle-to-Vehicle
Safety Systems
Passenger Information
Travel Assistance
FIRE
Traffic Signs
WLAN
STOP
Adaptive Cruise Control
Trip Planning
Fleet Management
Toll Collection
©ETSI 2008

The Challenge

Characteristics

- Data exchange between vehicles without pre-existing relationship
- No impact on vehicle design
- New entrants
- Dynamically changing technology

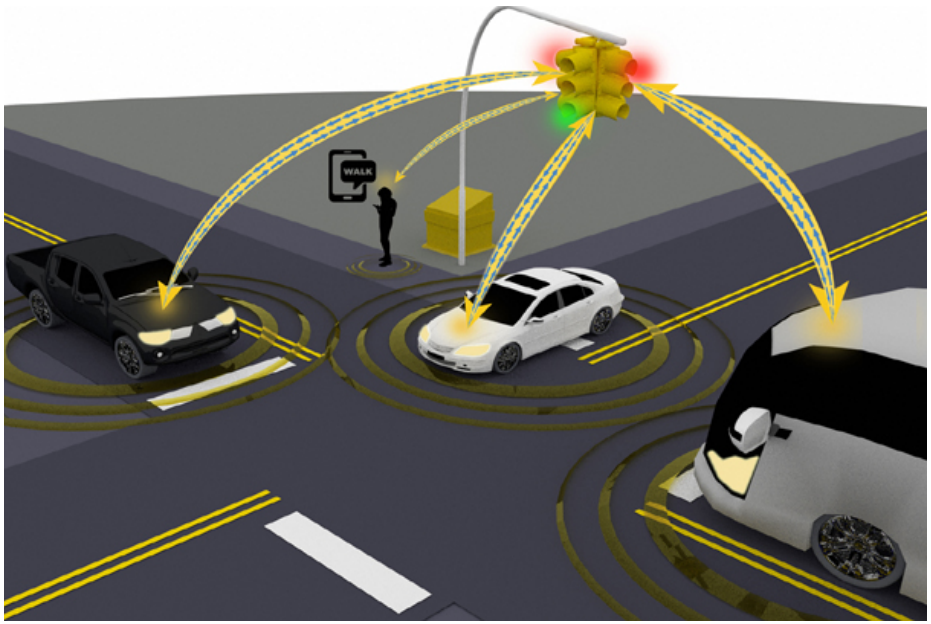
Predicates

- Data confidentiality
- Data integrity
- Authentication
- Non-repudiation
- Authorization

ITS Privacy Considerations

Connected ITS operations are contingent upon “vehicles” broadcasting signals indicating location; these are intended to be received and understood by a range of other devices. **If entities are able to locate and track specific vehicles:**

- Is ITS location information “personal information”?
- What is at stake?
- Likelihood of Risk & Harm?
- Opt-in / Informed consent
- Opt-out / Implied consent
- Mandatory model

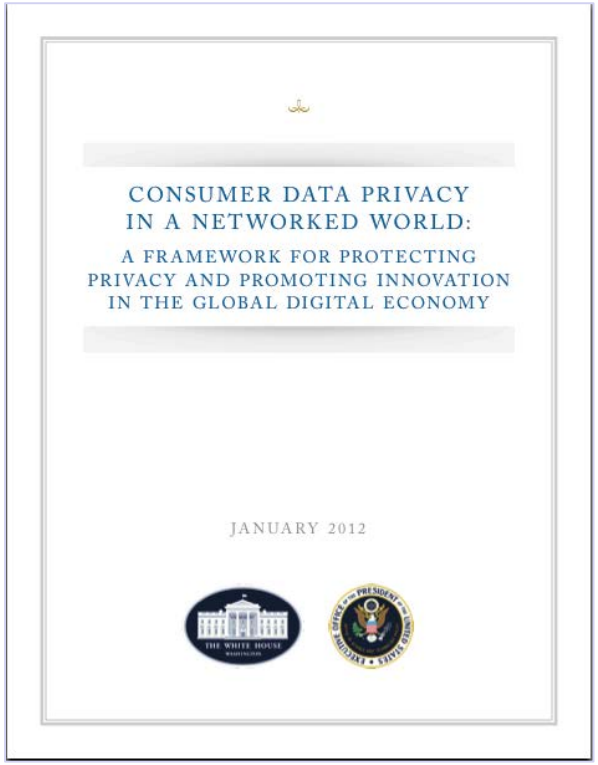


ITS Privacy Law

- No federal laws exist that specifically protect an individual's locational information
  - Driver's Privacy Protection Act of 1994
- Proposed laws
  - Geolocational Privacy and Surveillance Act
  - Location Privacy Protection Act of 2011
- States with statutes that require disclosure of data tracking devices that are included in cars by auto manufacturers include:
  - Maine, Colorado, California, and New Hampshire
  - Virginia (Va. Code § 38.2-2212(C)(s), § 38.2-2213.1,§ 46.2-1088.6,§ 46.2-1532.2)

Consumer Privacy Bill of Rights

- Individual Control
- Transparency
- Respect for Context
- Security
- Access and Accuracy
- Focused Collection
- Accountability


CONSUMER DATA PRIVACY
IN A NETWORKED WORLD:

A FRAMEWORK FOR PROTECTING
PRIVACY AND PROMOTING INNOVATION
IN THE GLOBAL DIGITAL ECONOMY

JANUARY 2012

Consumer Data Privacy in a Networked World

Applies to personal data, which means any data, including aggregations of data, which is linkable to a specific individual. Personal data may include data that is linked to a specific computer or other device.

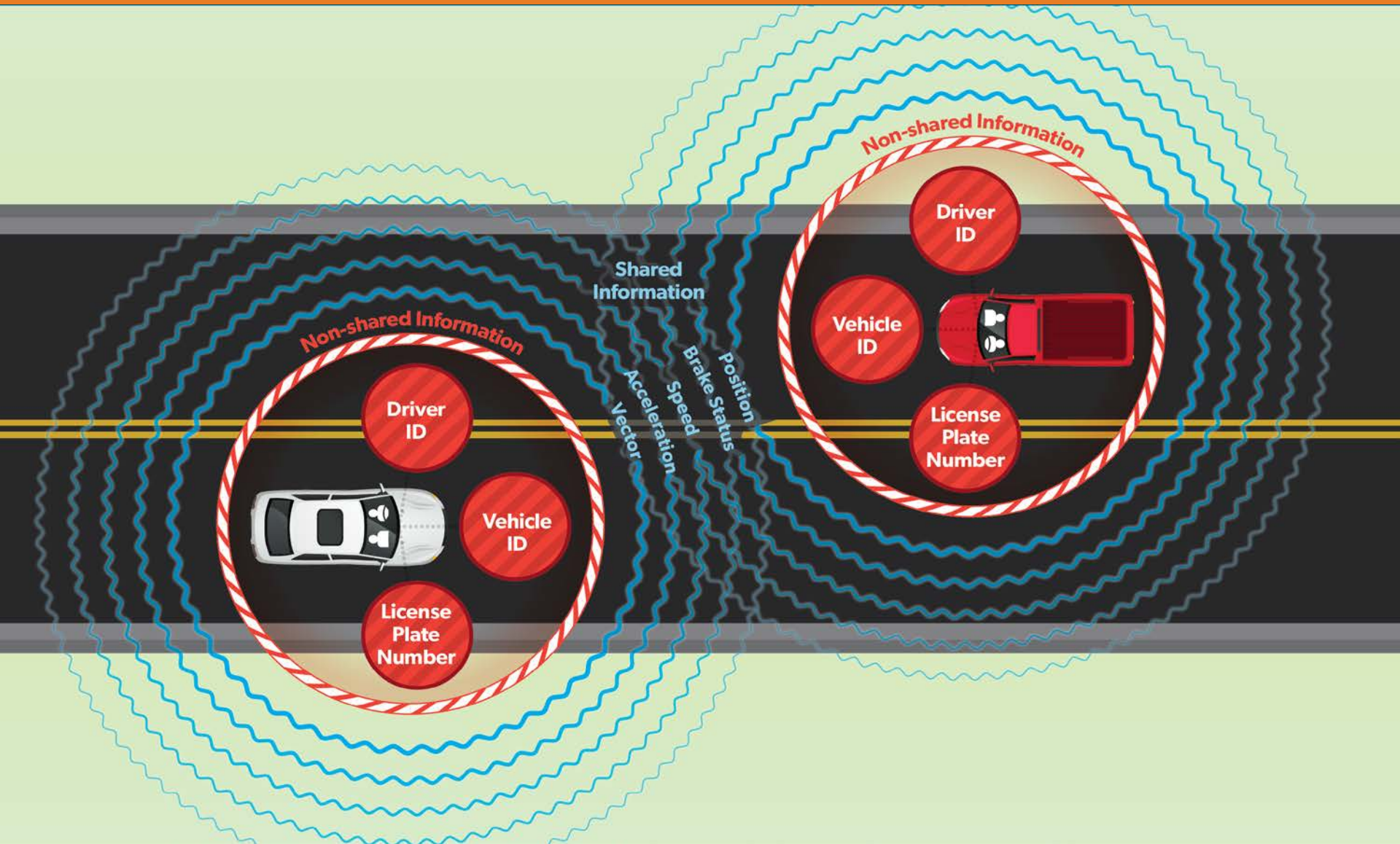
Federal Trade Commission

- Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45(a)(1) (2011), prohibits
  - "unfair or deceptive acts or practices' and most states have analogous consumer laws.
- Active in regulating companies' privacy notices to consumers about how they collect and use consumer data, including locational data.

"Protecting Consumer Privacy in an Era of Rapid Change: Recommendations For Businesses and Policymakers"

- Privacy by Design
- Simplified Choice for Businesses and Consumers
- Greater Transparency

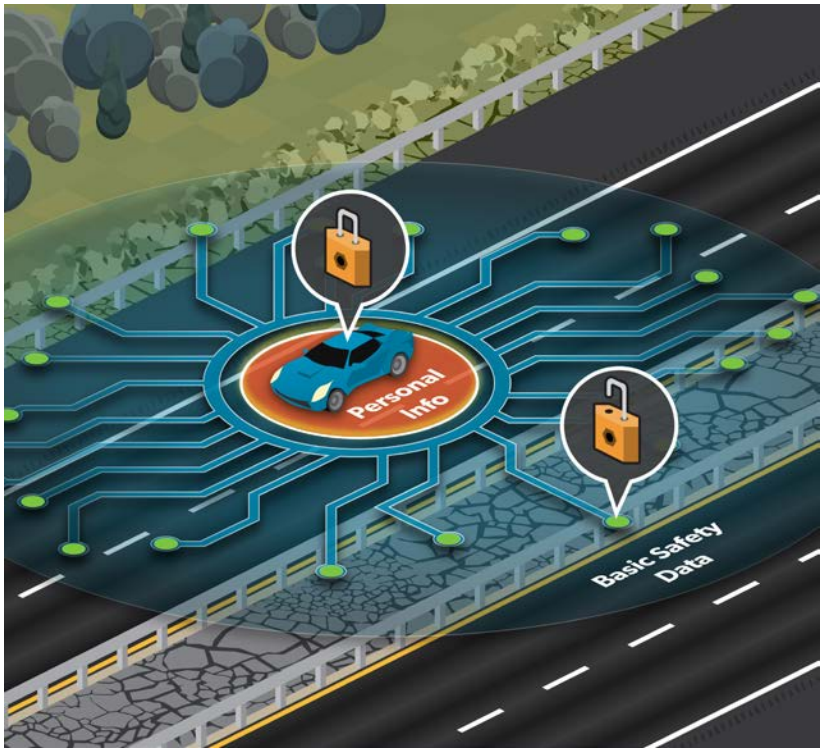
Connected Vehicle Privacy



Responding to the Challenge

The Connected Vehicle system will NOT:

- **Collect or store any data** on individuals or individual vehicles
- **Include data** in safety messages or security system **that could be used by law enforcement** to identify speeding or erratic driving
- **Permit tracking though space or time** of vehicles linked to specific owners/drivers/persons
- **Collect financial information, personal communications, or other information** linked to individuals
- **Require collection any information identifying specific vehicles** or owners for automatic enrollment
- **Provide a "pipe"** into the vehicle for extracting data

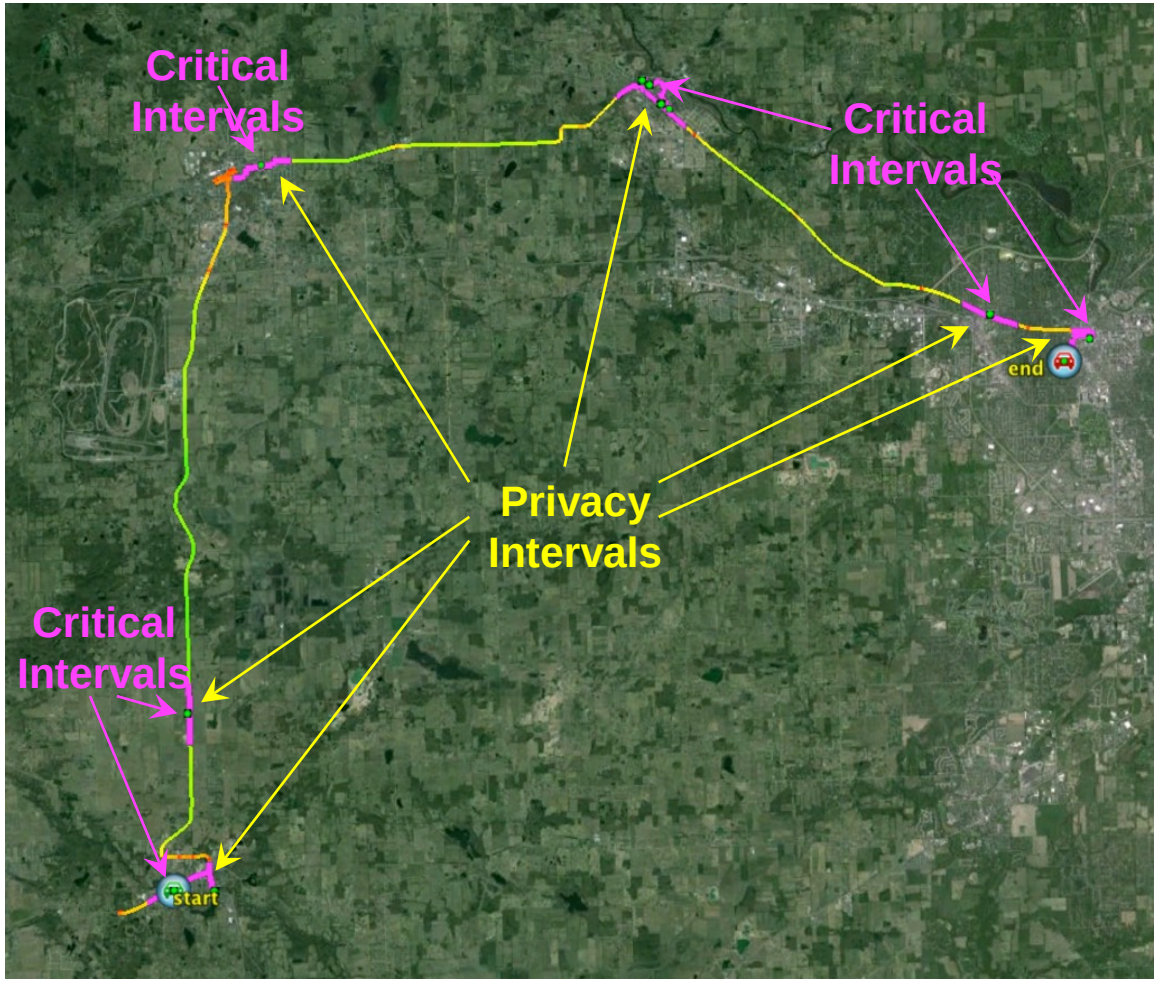


Operationalizing Privacy-by-Design

Examples:

The Basic Safety Message (BSM) privacy module reduces risk of identifying individuals via aggregated BSM data

The BSM sensitivity model helps local agencies understand the impact of different Roadside Equipment (RSE) deployments on privacy risk



Discussion Questions

1. What new **businesses**, **public services**, and **research** could these new transportation data fuel?

2. What **data feeds** or **archives** do you need and for what **use cases**?

3. What **complementary data sets** do you have and what **products** or **services** could you provide to the future transportation system?

4. What is the impact of these technologies on **traveler privacy** and how can we **reduce risk** to individuals' privacy?

5. How can data sharing enable or impede **national interoperability** and **safety** of the transportation system?

6. What should the **Federal role** be in enabling system-wide access to the data while protecting travelers' privacy?

Any questions?

For More Information

Ariel Gold
USDOT / ITS JPO
Ariel.gold@dot.gov

Claire Barrett
USDOT
Claire.Barrett@dot.gov

Twitter: **@ITSJPODirector**

Facebook: **www.facebook.com/DOTRITA**

Website: **http://www.its.dot.gov**