State of Florida Department of Transportation
Vehicle-to-Everything (V2X) Data Exchange Platform (DOT-ITN-20-9104-SJ)
Agreement/Contract No: BEB93

Florida Department of Transportation (FDOT) Vehicle to Everything (V2X) Data Exchange Platform (DEP)

ITS Texas

Wesley Skillern, SwRI

September 29, 2022

amazon aws FIU FLORIDA INTERNATIONAL UNIVERSITY Google FORD MOBILITY iteris kodiak SwRI SOUTHWEST RESEARCH INSTITUTE

Transportation problems affect everyone

- Safety
- Mobility
- Environmental
- Economic

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- **Safety**
- Mobility
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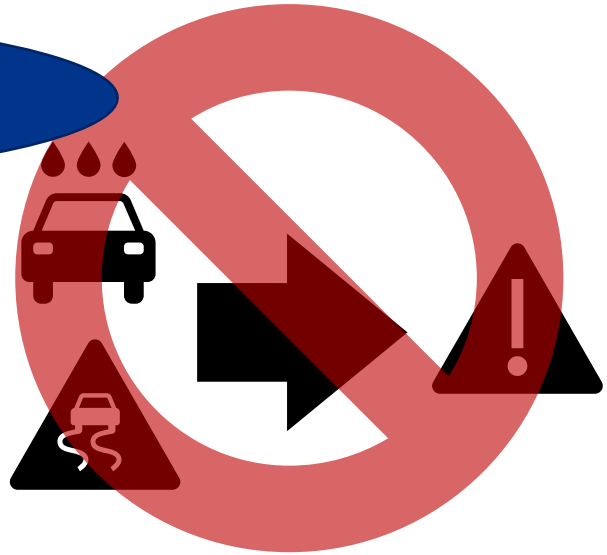

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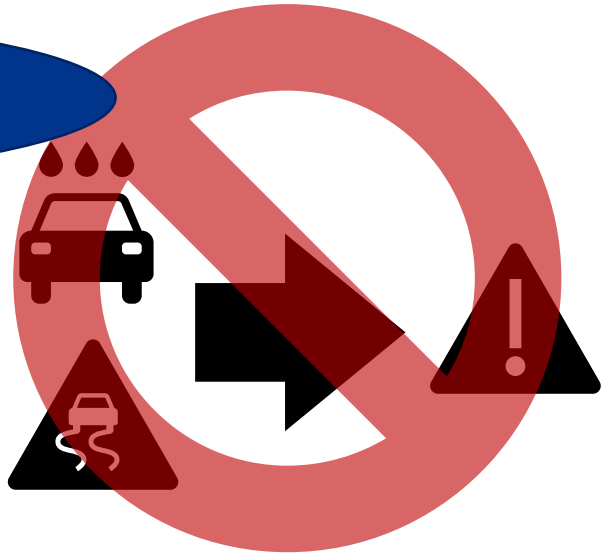

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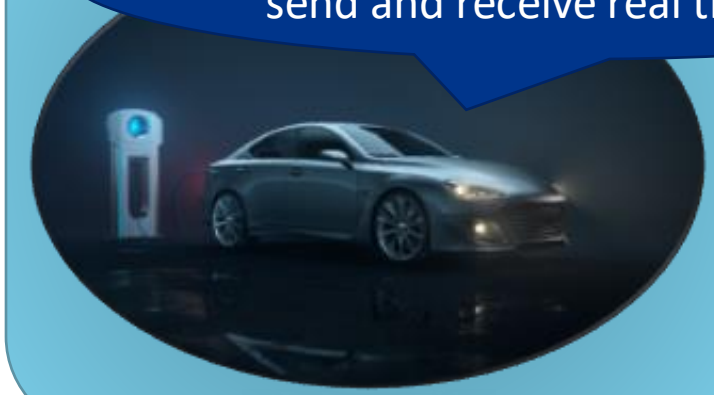

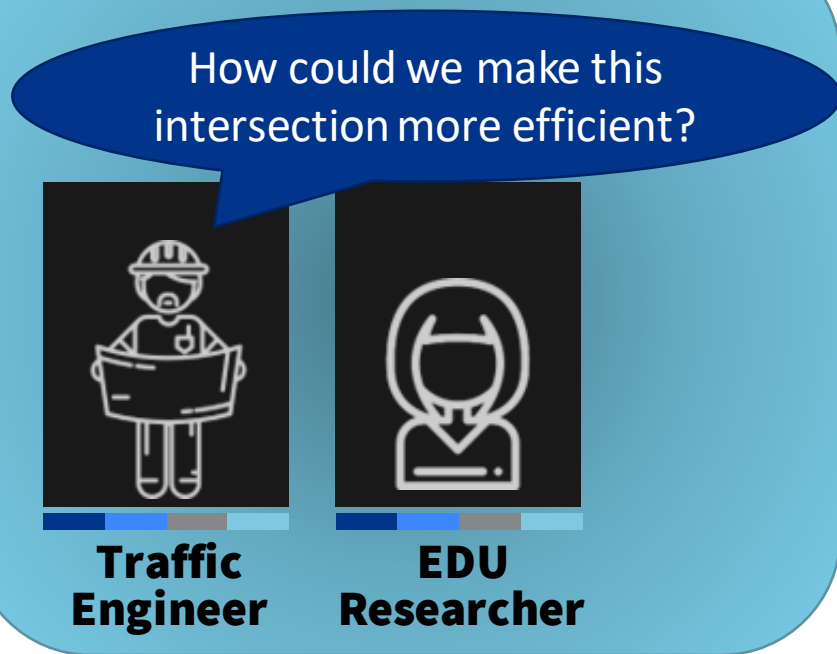

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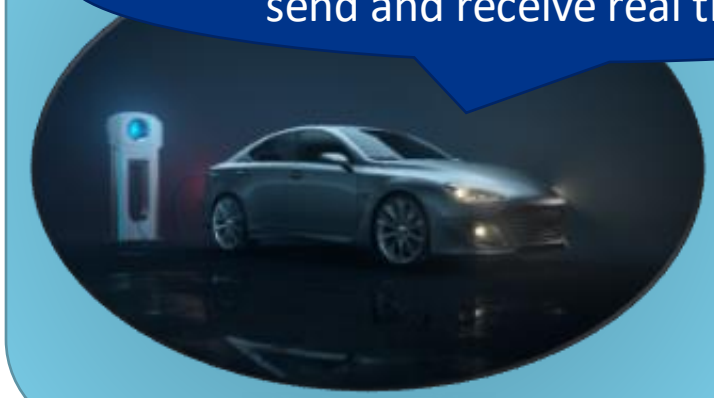
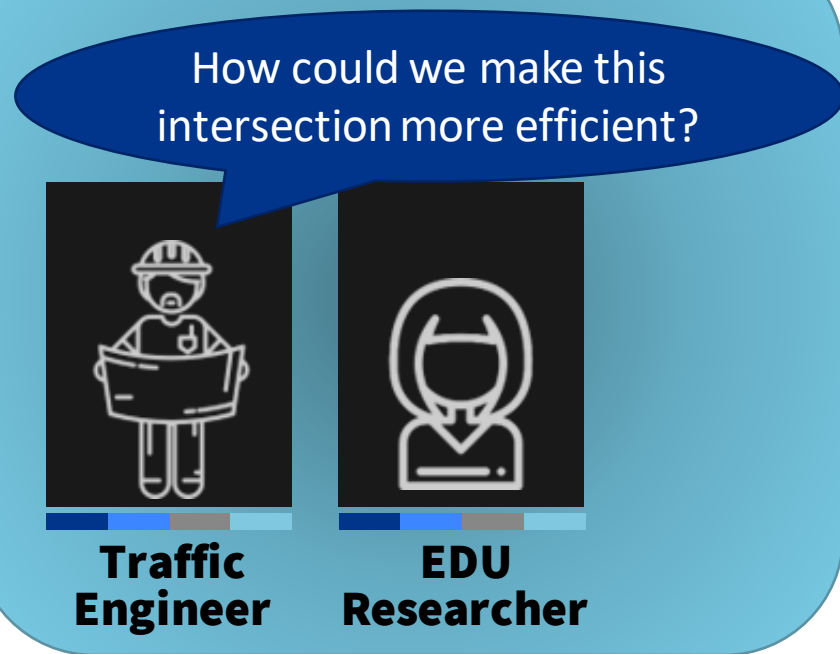
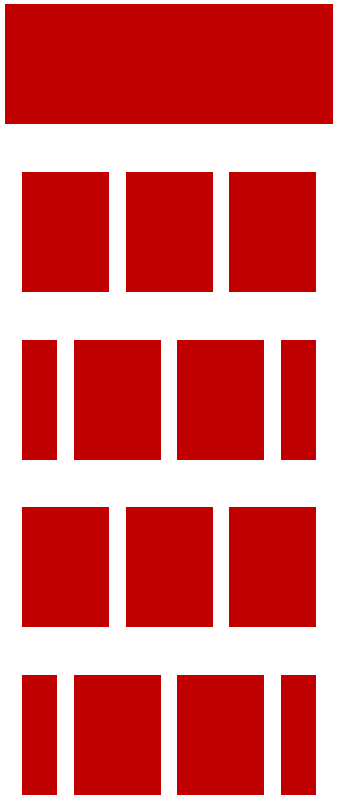




Data is currently in walled off silos

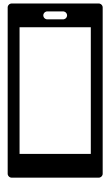
Data Producers

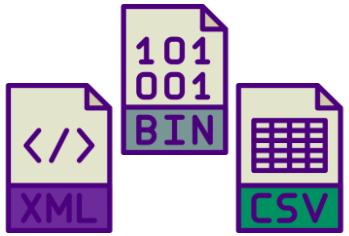
- Connected and Automated Vehicles (CAV)
- Traffic Sensors
- Environmental Sensors
- Cameras
- Traffic Management Centers
- Crowd-sources
- …



Data Consumers

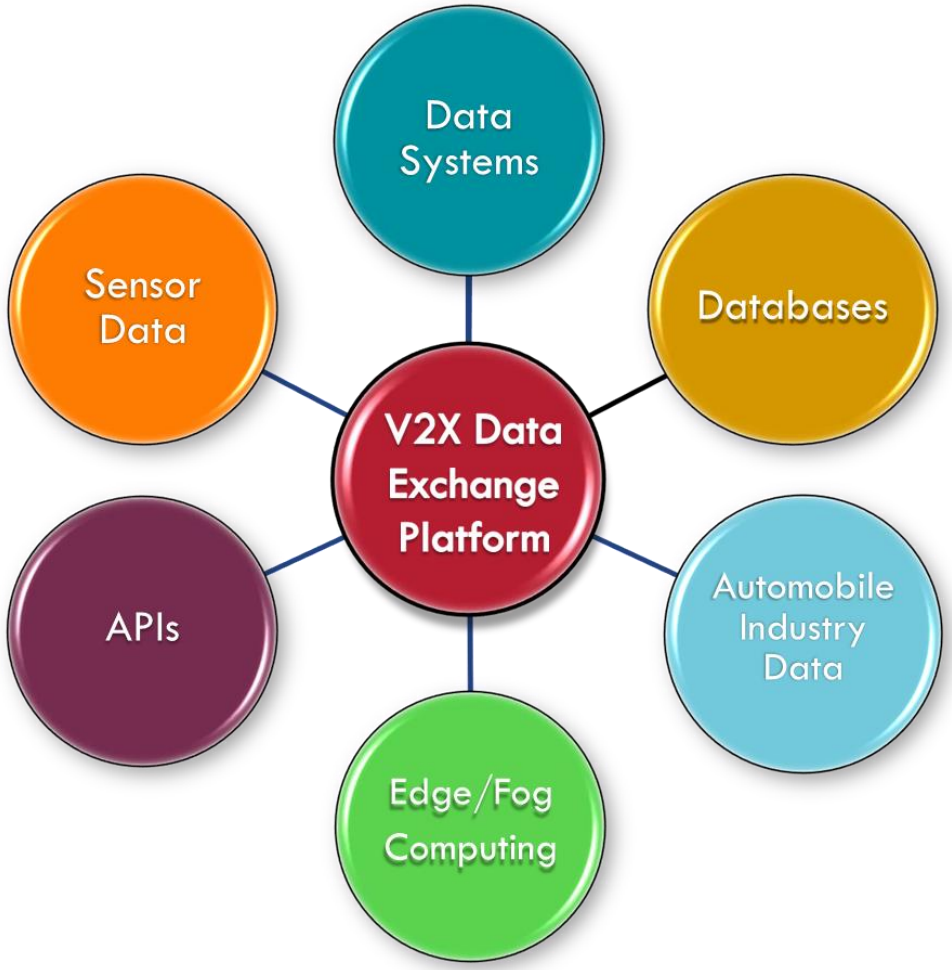
- Connected and Automated Vehicles
- Traffic Engineers
- University Researchers
- Traffic Management Centers
- Motorists
- …





V2X DEP Concept

- Ingests data from
  - CAV devices (roadside units (RSUs) and on-board units (OBUs))
  - Intelligent Transportation Systems (ITS)
  - Third parties
- Optionally interacts with FDOT's Statewide ITS (SunGuide)
- Allows data to be shared between computer programs, data systems, and users
- Ultimate solution for data generated in all CAV projects in Florida



DATA EXCHANGE PLATFORM

Data Producers

- Ford Fleet
- Basic Safety Messages
- MAP/SPaT
- Roadway Events
- Traffic
- Sign Messages

Ingestion interfaces

- Near real time data ingestion, processing, analysis, and data dissemination
- Cloud-based and serverless
  - Highly scalable and available
  - No hardware management
- Cybersecurity

Parquet
Curated data lake

Data warehouse

Streaming

ETL

Analytics

Dissemination interfaces

Data Consumers

- Data queries
- Data visualization
- Work Zone Data Exchange (WZDx) Feed
- Real time notifications

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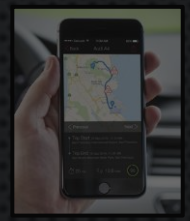

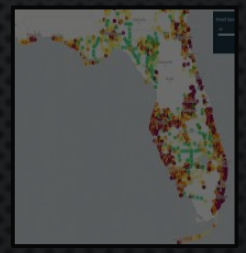

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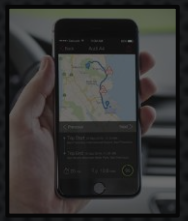

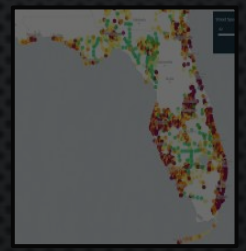

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Information available to DEP Consumers

Data Type	Description	Example Producers
Traffic	Aggregate information about many vehicles or flow of traffic in general at a roadway location.	SunGuide TSS HERE Flow
Vehicle	Status pertaining to a single vehicle	J2735 RSU BSM Ford
Event	Roadway or traffic events outside of normal operation like closures, crashes, incidents, etc.	SunGuide EM Waze Alerts and Jams
Message	Messages to the traveling public.	SunGuide DMS
Map	Intersection or roadway configuration	J2735 RSU MAP
Spat	Intersection current signal timing and status	J2735 RSU SPaT
Weather	Weather and environmental sensor information	SunGuide RWIS

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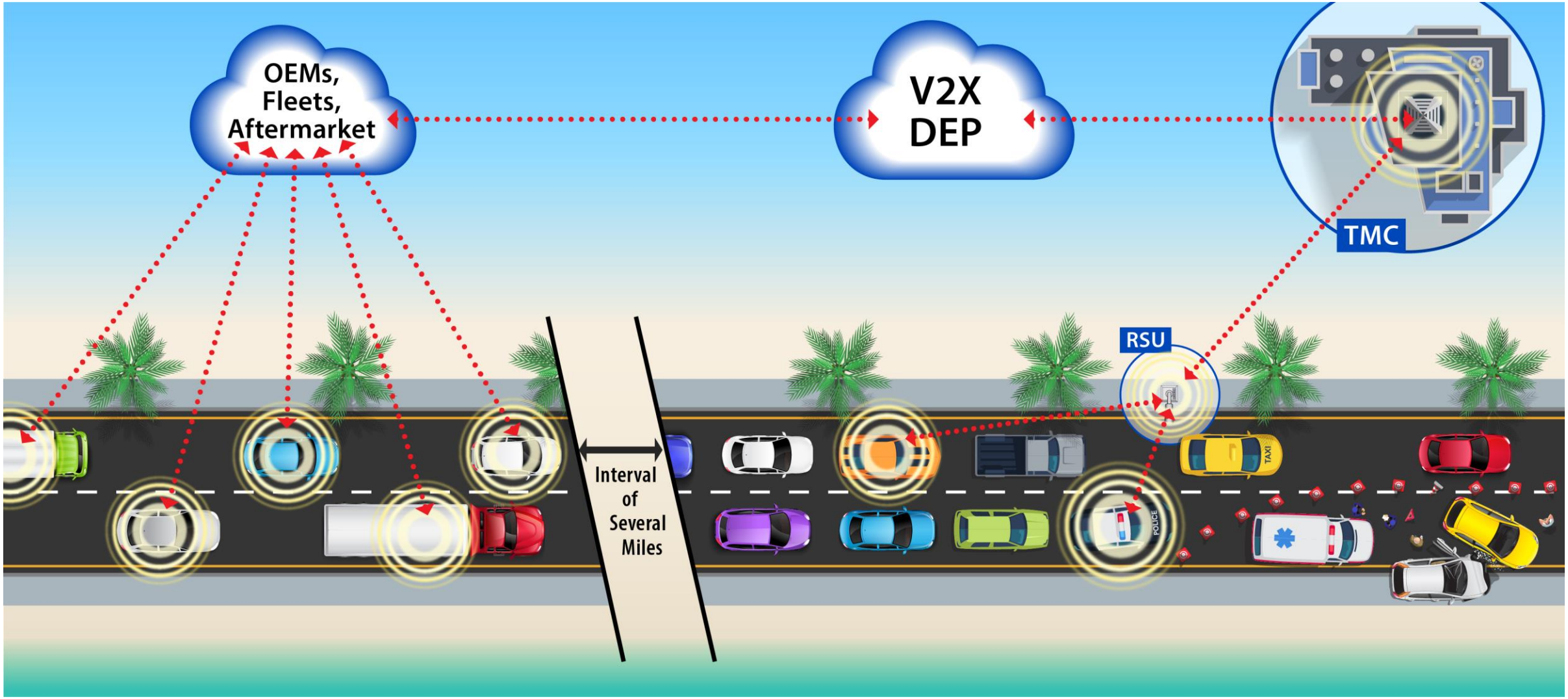
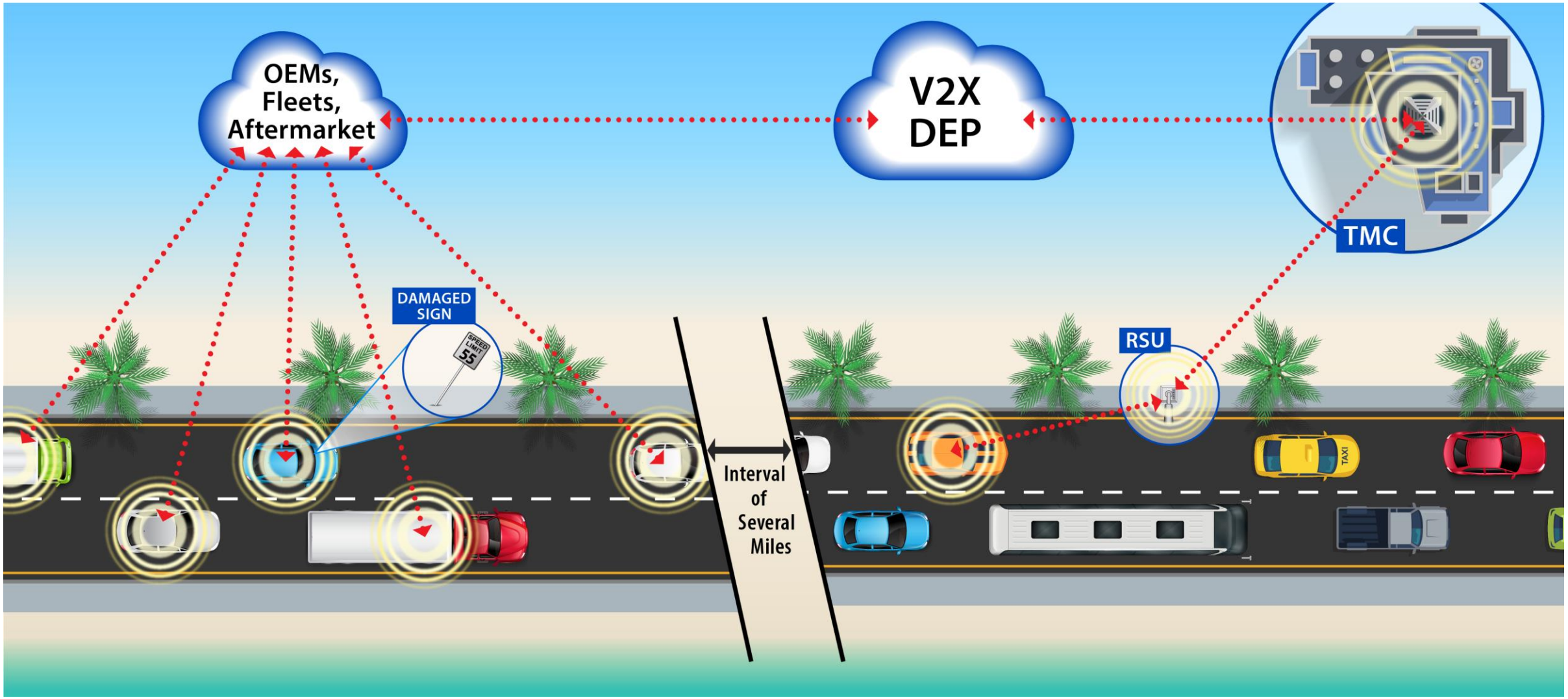
Where are we now?

Future Use Cases – Traffic Hazards



Future Use Cases – Roadway Characteristics



Thanks to FDOT for support!

Get in touch to exchange data

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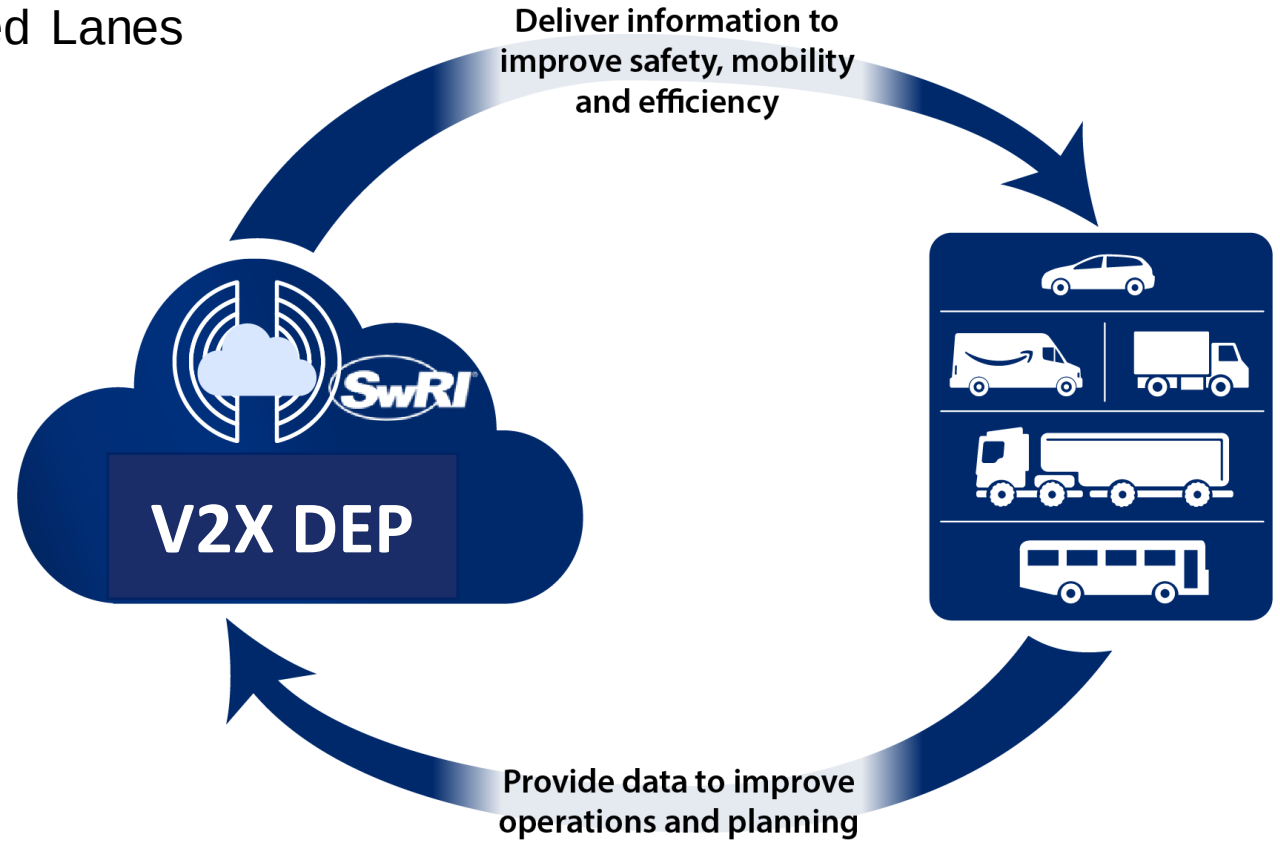
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