The U.S. DOT Data for Automated Vehicle Integration (DAVI)

June 6, 2019

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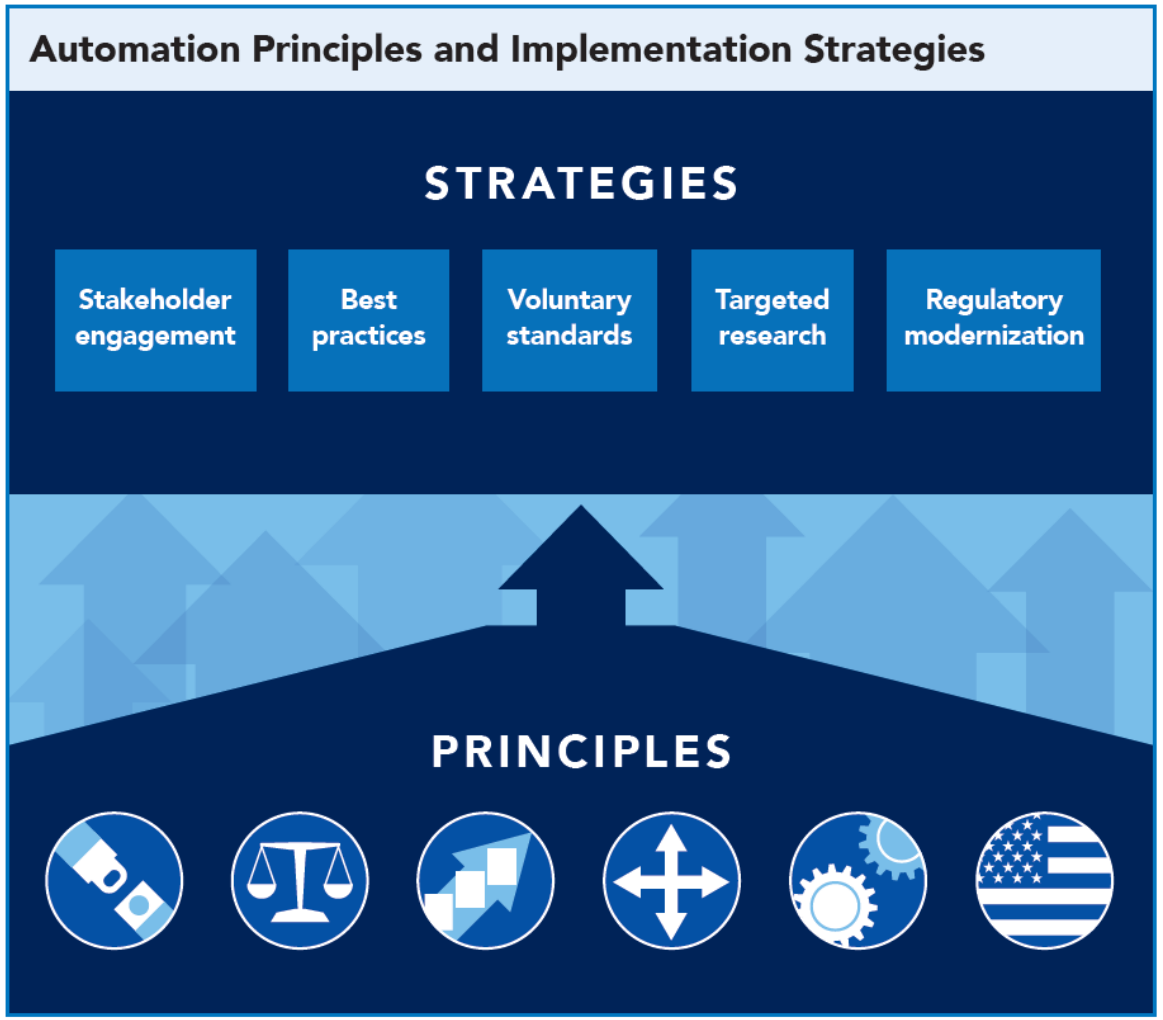
U.S. Department of Transportation

Purpose of Today's Session

- Provide an update on lessons learned through U.S. DOT's *Data for Automated Vehicle Integration* (DAVI) initiative, including:
  - Priorities for data exchange
  - Federal and non-federal roles
  - Progress on increasing access to work zone data
- Help identify uses cases and priorities for data exchange
- Explore the local government perspective

AV 3.0 & Data

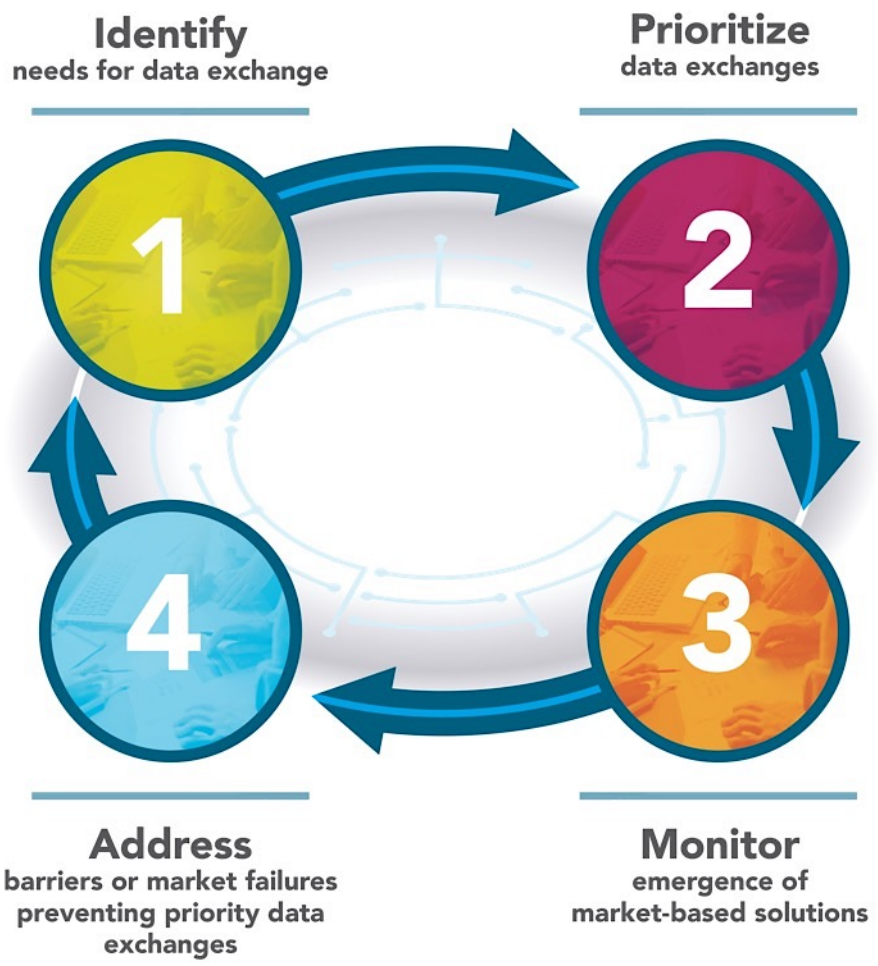
- Provides new multimodal safety guidance, clarifies policy and roles, and outlines how to work with U.S. DOT as automation technology evolves
- Calls on stakeholders to identify opportunities for voluntary data exchanges
- Features efforts aimed at enabling voluntary data exchanges



https://www.transportation.gov/av/data

Roundtable on Data for AV Safety

U.S. DOT's Data for AV Integration (DAVI) Initiative



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U.S. DOT's Guiding Principles on Data for Automated Vehicle Safety

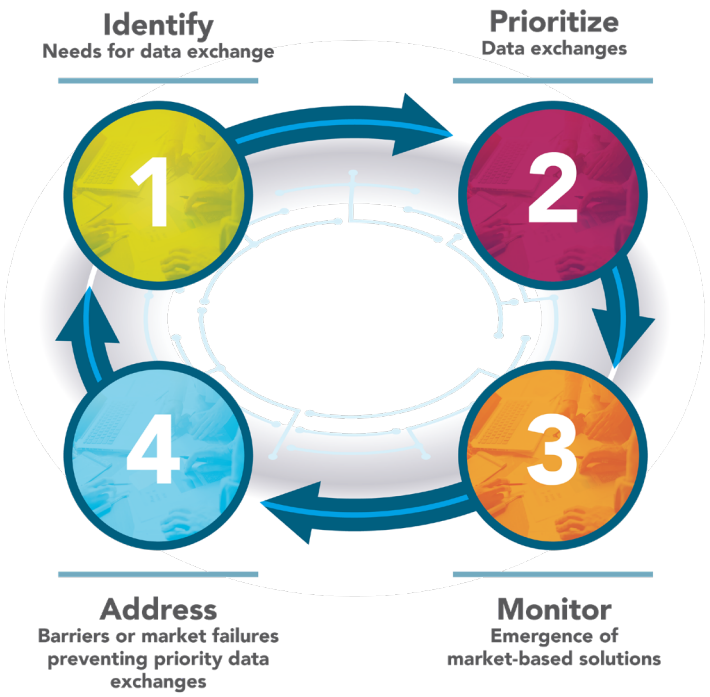
1. Promote proactive, data-driven safety, cybersecurity, and privacy-protection practices.

2. Act as a facilitator to inspire and enable voluntary data exchanges.

3. Start small to demonstrate value and scale what works toward a bigger vision.

4. Coordinate across modes to reduce costs, reduce industry burden, and accelerate action.

U.S. DOT's Data for Automated Vehicle Integration Framework



U.S. Department of Transportation Data for Automated Vehicles Integration (DAVI) Framework

Category	Goals	Data Generators & Users Participating in the Exchange	Specific Data to Exchange	Real-World Examples
Business-to-Business (B2B)	▪ Mitigate known and emerging cyberthreats ▪ Improve industry-wide safety through shared learning in safety-critical and edge case scenarios ▪ Inform future insurance policies ▪ Accelerate the resolution of legal liability claims	▪ Heavy- and light-duty original equipment manufacturers (OEMs) ▪ Transportation network companies (TNCs) and fleet operators ▪ Insurance companies	▪ Cybersecurity incidents ▪ Edge cases ▪ Near-miss events ▪ Performance in safety-critical scenarios ▪ Post-accident data	▪ Automotive Information Sharing and Analysis Center ▪ ClinicalStudyDataRequest.com ▪ PEGASUS ▪ TNO Streetwise ▪ TS America Data Exchange
Business-to-Government (B2G) ...and/or G2B	▪ Understand performance of rapidly evolving technology during testing phases ▪ Inform policies and investments to improve system safety and efficiency	▪ Heavy- and light-duty OEMs ▪ TNCs and fleet operators ▪ Insurance companies ▪ Non-federal government (state, county, municipal) ▪ Federal government (FHWA, FMCSA, FTA, NHTSA)	▪ Cybersecurity incidents ▪ Near-miss events ▪ Performance in safety-critical scenarios ▪ Crash reconstruction ▪ Connected vehicle pilot data ▪ Robust inventory of infrastructure assets	▪ Aviation Safety Information Analysis and Sharing ▪ Voluntary Safety Self-Assessments
Infrastructure-to-Business (I2B) ...and/or B2I	▪ Help vehicles navigate safely around obstacles and in adverse weather conditions ▪ Reduce system congestion ▪ Help optimize infrastructure maintenance	▪ Infrastructure owners & operators (state, county, municipal, federal, academic) ▪ Infrastructure tech companies ▪ In-vehicle & aftermarket services ▪ Heavy- and light-duty OEMs ▪ TNCs and fleet operators	▪ Work zone activities and geometrics ▪ Road weather information ▪ Missing signage or broken infrastructure ▪ Curb use rules and availability	▪ National Transit Map ▪ Waze Connected Citizens Program ▪ Meteorological Assimilation Data Ingest System
Open Training Data	▪ Improve ADS performance in common safety-critical scenarios ▪ Support basic research and education	▪ Government ▪ Industry ▪ Academia ▪ Individuals	▪ Road, signage, and other infrastructure imagery ▪ Edge cases ▪ Bike/ped near misses ▪ Truck platooning pilot data	▪ ImageNet ▪ Multimedia Commons ▪ Nexar NEXET ▪ BikeMaps.org ▪ FHWA Platooning POC

Last updated 11/5/2018

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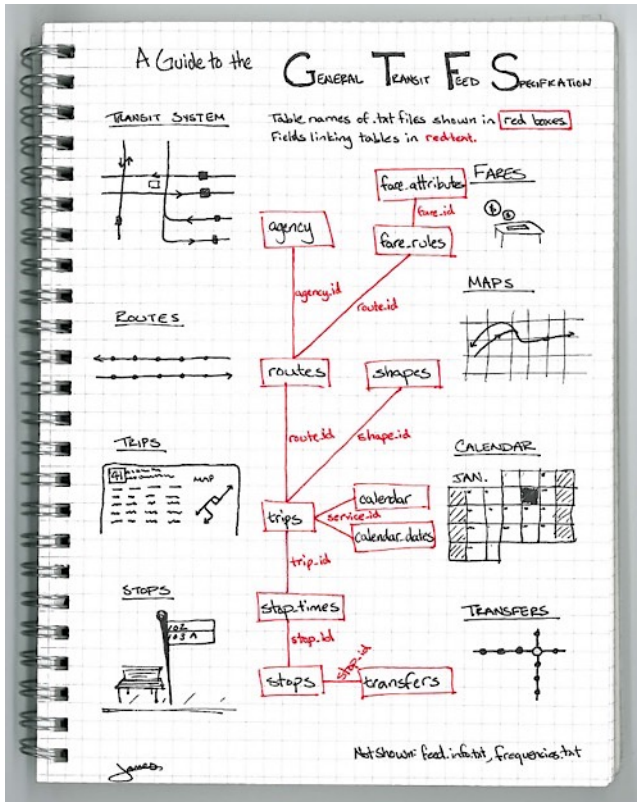
What is the local data challenge?

- Up-to-date information about dynamic conditions occurring on roads–such as construction events–can help automated driving systems (ADS) and humans navigate safely and efficiently.

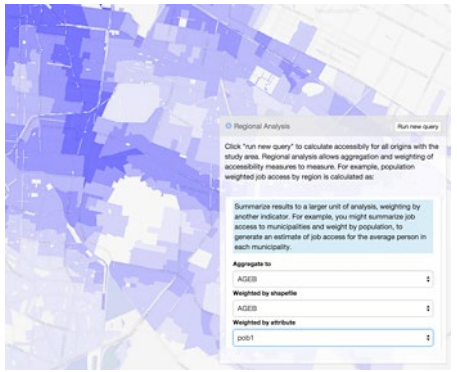
- Many Infrastructure Owners and Operators (IOOs) maintain data on work zone activity. However, a lack of common data standards and convening mechanisms makes it difficult and costly for third parties–including original equipment manufacturers (OEMs) and navigation applications–to access and use these data sets across various jurisdictions.

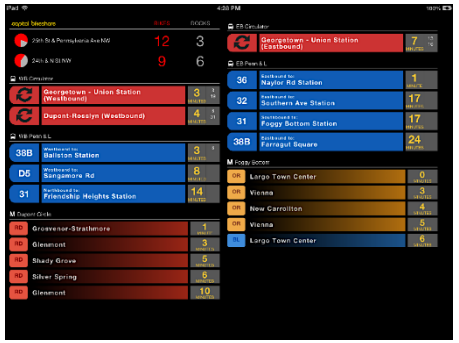
What can we learn from the open transit data story?

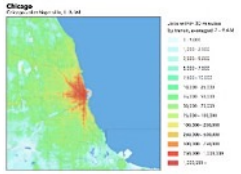
A **simple** specification…



…with a **wide range** of uses







A Federated Front Door to Transit Data

- Now, **basic transit data** is easy to **find and use nationwide.**
- Transit agencies and their users **continue to collaborate** on the specifications.

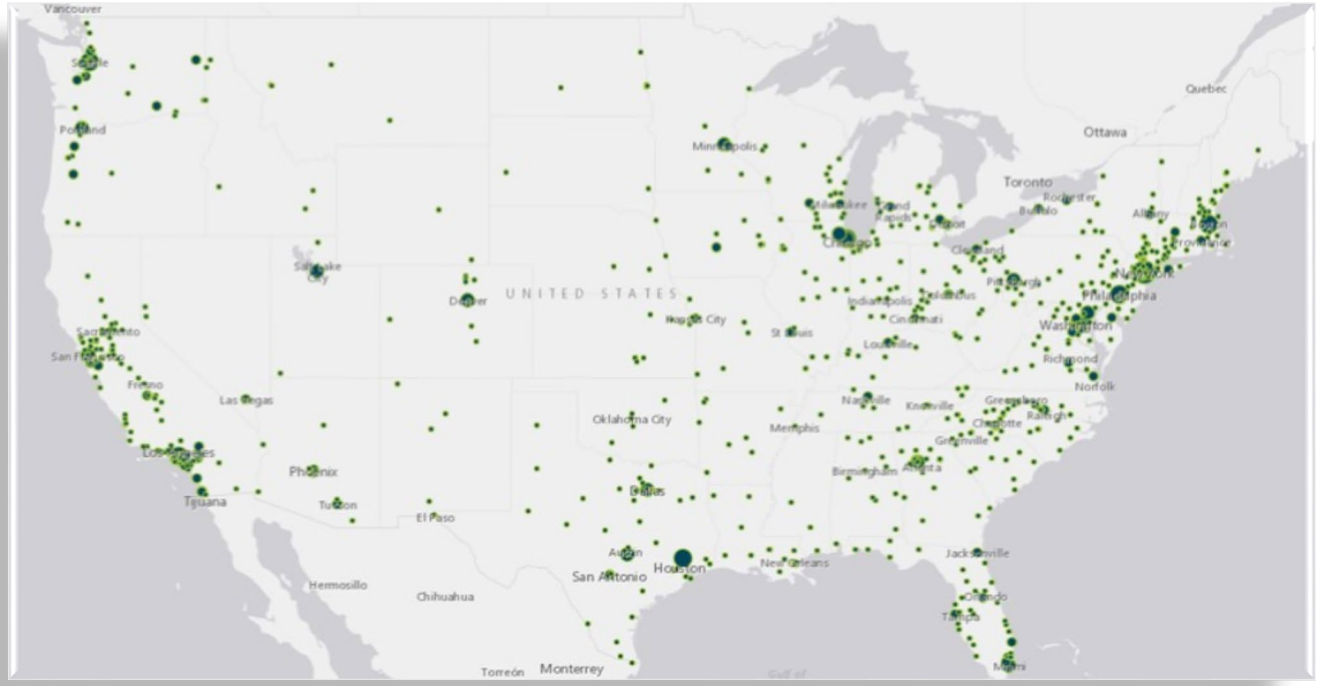
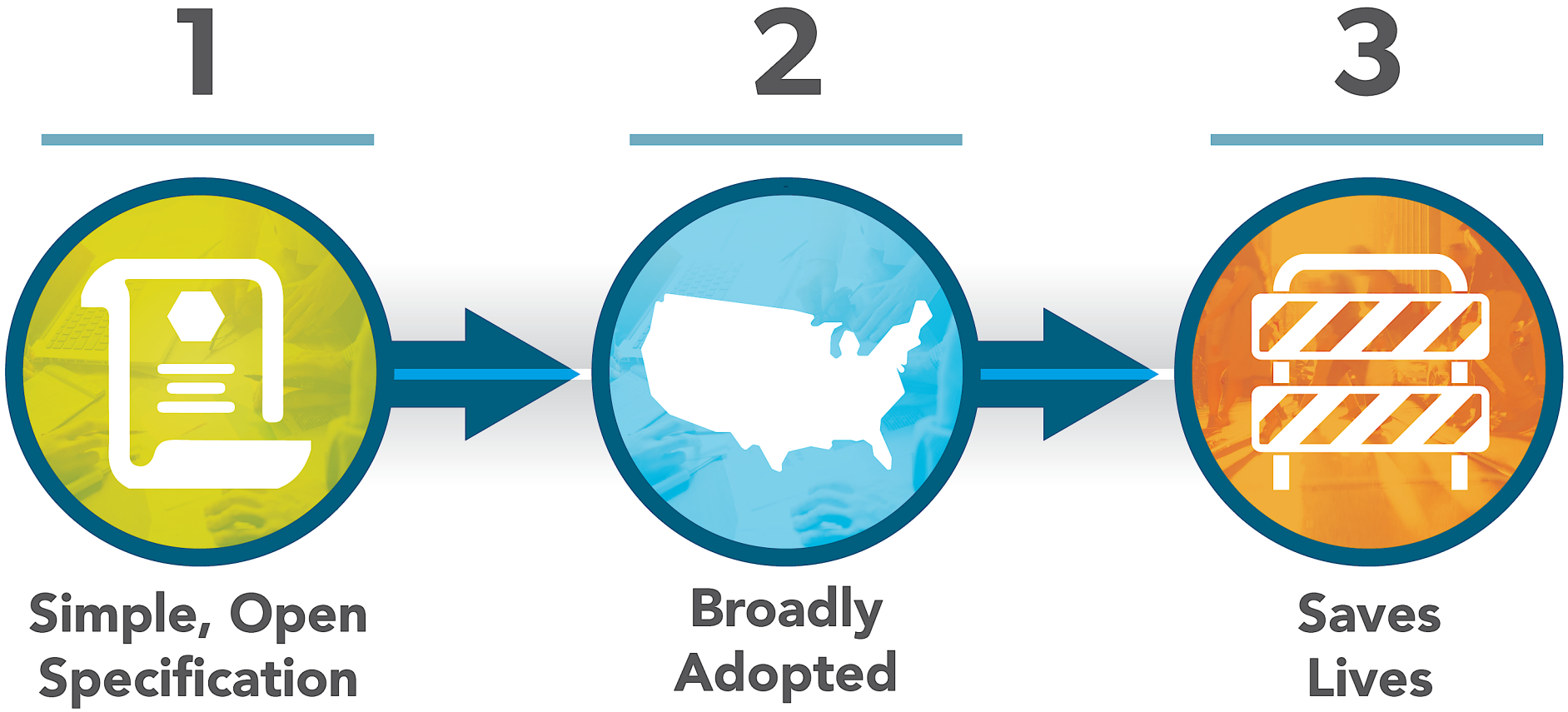
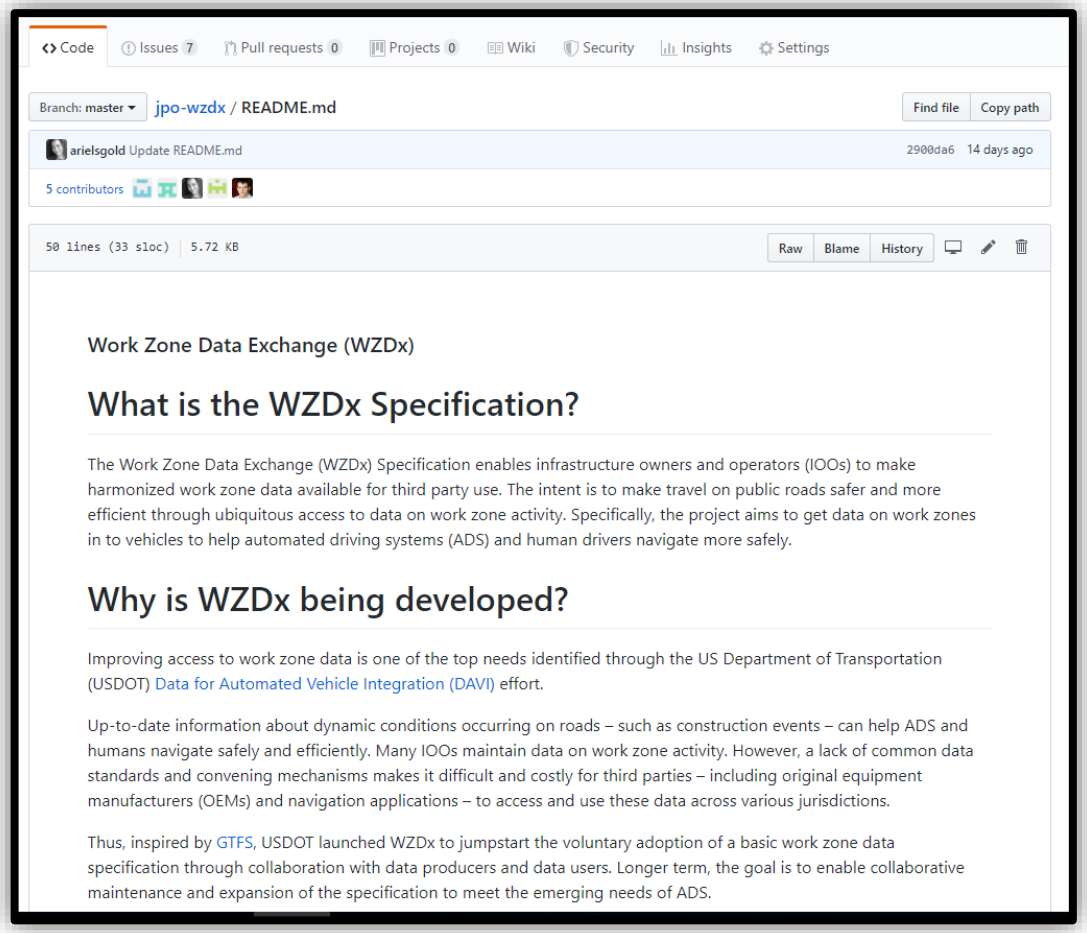


Figure 4: Map identifying the different locations where basic transit data can be found and used

Can this be replicated?



The Work Zone Data eXchange (WZDx)



Work Zone Activity Data Lifecycle

PLANNING / DESIGN

"First cone down"

"Estimated" work zone activity

Data is dynamic, ephemeral

Uses:

- Project coordination/ scheduling of closures
- Predictive travel times
- Fleet routing
- Anticipated capacity reduction
- Less detail regarding work zone configuration

CURRENT

"Last cone up"

"Actual" work zone activity

Data is dynamic, ephemeral

Uses:

- Traveler information
- Work zone management
- Situational awareness
- Inspection
- Asset management
- Contract monitoring
- Automated vehicle navigation

POST-CONSTRUCTION

"Historical" work zone activity

Data is static, persistent ("read-only")

Uses:

- Permanent record of prior activity, serving:
  - Performance management
  - Contract monitoring
- May be overlaid with other historical information (e.g., crashes, traffic probe data, etc.) to establish correlation between work zone activity and other operational information.

Fireside Chat: A Local Government Perspective on Data Exchange

Ariel Gold

Data Program Manager
U.S. Department of Transportation

Jason JonMichael

Assistant Director for Smart Mobility
City of Austin

Q & A

Resources

To learn more and access available resources, please visit:

- DAVI Website
- Automated Vehicles 3.0
- AV Data Roundtable Summary Report
- City of Austin Smart Mobility Roadmap
- General Transit Feed Specification
- WZDx Version 1.1. Common Core Data Specification
- WZDx Project Repo
- Work Zone Data Initiative

For information on the WZDx project or anything else related to the DAVI initiative, contact *avdx@dot.gov*

Join U.S. DOT at ITSA 2019

U.S. DOT Booth #601

Thursday, June 6

11:00 am – 12:00 pm

- New York City Connected Vehicle Pilot
- Tampa Connected Vehicle Pilot
- Wyoming Connected Vehicle Pilot

12:00 pm – 2:00 pm

- New York City Connected Vehicle Pilot
- Tampa Connected Vehicle Pilot
- Wyoming Connected Vehicle Pilot
- Work Zone Data Exchange
- CARMA

2:00 pm – 4:00 pm

- New York City Connected Vehicle Pilot
- Tampa Connected Vehicle Pilot
- Wyoming Connected Vehicle Pilot

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PLENARY SESSION

Friday, June 7 11:45am to 1:00pm Room 206

Representatives across the U.S. DOT modal agencies will participate in a plenary session at this year's ITS America Annual Meeting. DOT administrators and deputy administrators will share insights and discuss their ITS research goals and program.

Diana Furchtgott-Roth
(Moderator)
Deputy Assistant Secretary for Research and Technology

K. Jane Williams
Acting Administrator, Federal Transit Administration

Brandye Hendrickson
Deputy Administrator
Federal Highway Administration

Richard Balzano
Deputy Administrator
Maritime Administration

Raymond Martinez
Administrator
Federal Motor Carrier Safety Administration

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