Data Exchanges in Surface Transportation

A Sampling

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Examples – Current and Future

• The General Transit Feed Specification

• The Work Zone Data Exchange
A simple specification

• Developed in partnership
  – Portland TriMet
  – Google

• Loosely specified
  – To ease adoption
  – To facilitate a minimum viable use case
An array of uses
No single set of terms

• Each transit agency has different terms of use. The terms do not address the same items.
  – Some require attribution, some do not, some are silent.
  – Some allow derivative products, some prohibit it, some are silent.
  – Some allow redistribution, some prohibit it, some are silent.
  – Some assert copyright, many are silent.

• To aggregate reliably, the Federal government needed to put a marker down.
  – We asked for a Creative Commons Attribution License (CC-BY).
  – We asked for all other terms to be waived for our use.
From nothing to 50% coverage
Where does GTFS go next?

• Where’s my bus?
  – Uses the simple specification as a baseline
  – Add new concepts
    • Service alerts
    • Trip updates
    • Vehicle positions

• Extension and extensibility – this format works for trains, intercity buses, and more…
Automated Vehicles & 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
Data for AV Integration (DAVI)

1. Identify needs for data exchange
2. Prioritize data exchanges
3. Monitor emergence of market-based solutions
4. Address barriers or market failures preventing priority data exchanges
Safety in Work Zones

In 2017…

• 799 fatalities that took place in work zones

• 2% increase over the previous years

• 132 work zone workers were killed

• Over 80% of fatalities in work zones are by drivers or passengers just trying to navigate through a work zone
The Work Zone Data eXchange
The Work Zone Data eXchange

Work Zone Data Exchange (WZDx)

What is the WZDx Specification?

The Work Zone Data Exchange (WZDx) Specification enables infrastructure owners and operators (IIOs) to make harmonized work zone data available for third party use. The intent is to make travel on public roads safer and more efficient through ubiquitous access to data on work zone activity. Specifically, the project aims to get data on work zones into vehicles to help automated driving systems (ADS) and human drivers navigate more safely.

Why is WZDx being developed?

Improving access to work zone data is one of the top needs identified through the US Department of Transportation (USDOT) Data for Automated Vehicle Integration (DAVI) effort.

Up-to-date information about dynamic conditions occurring on roads – such as construction events – can help ADS and humans navigate safely and efficiently. Many IIOs maintain data on work zone activity. However, a lack of common data standards and converging mechanisms makes it difficult and costly for third parties including original equipment manufacturers (OEMs) and navigation applications – to access and use these data across various jurisdictions.

Thus, inspired by GTFS, USDOT launched WZDx to jumpstart the voluntary adoption of a basic work zone data specification through collaboration with data producers and data users. Longer term, the goal is to enable collaborative maintenance and expansion of the specification to meet the emerging needs of ADS.

https://github.com/usdot-jpo-ode/jpo-wzdx
WZDX in Maricopa, AZ

PHASE 2

PHASE 1

MC-85 (Buckeye Rd)

I-10

I-10

L-101

91st Ave

83rd Ave

75th Ave

99th Ave

95th Ave

97th Ave

91st Ave

83rd Ave

75th Ave

PHASE 2

PHASE 1
WZDX in Maricopa, AZ

https://api.mcdot-its.com/WZDx/Activity/Get
WZDX Lessons Learned

• Immediate benefits may not be connected to ADS.

• Map developers are the primary data users.

• It’s difficult for infrastructure owner-operators to set up feeds.

• There are multiple potential starting points for generating harmonized feeds.

• There are many potential organizations and mechanisms to drive this vision forward.
What will you work on next?

1. Simple, Open Specification
2. Broadly Adopted
3. Saves Lives