WZDx & ITS JPO Data Exchange Development

FHWA Connected Work Zones Peer Exchange
November 15, 2022

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Timeline

Work Zone Data Exchange (WZDx) development begins	**2018**
WZDx Demonstration grants awarded	**2021**
WZDx development transitioned to Connected Work Zone Standard under ITE and AASHTO	**2022**
Managing Disruptions data specification development begins	**2022**
Development of additional data feeds continues	**2022-2026**

Scope of Data Exchanges

WZDx includes:

- Work zones
- Devices in work zones

Managing Disruptions will include:

- Incidents
- Weather
- Emergency Response
- Special Events
- Evacuation Routes
- More

WZDx Coverage

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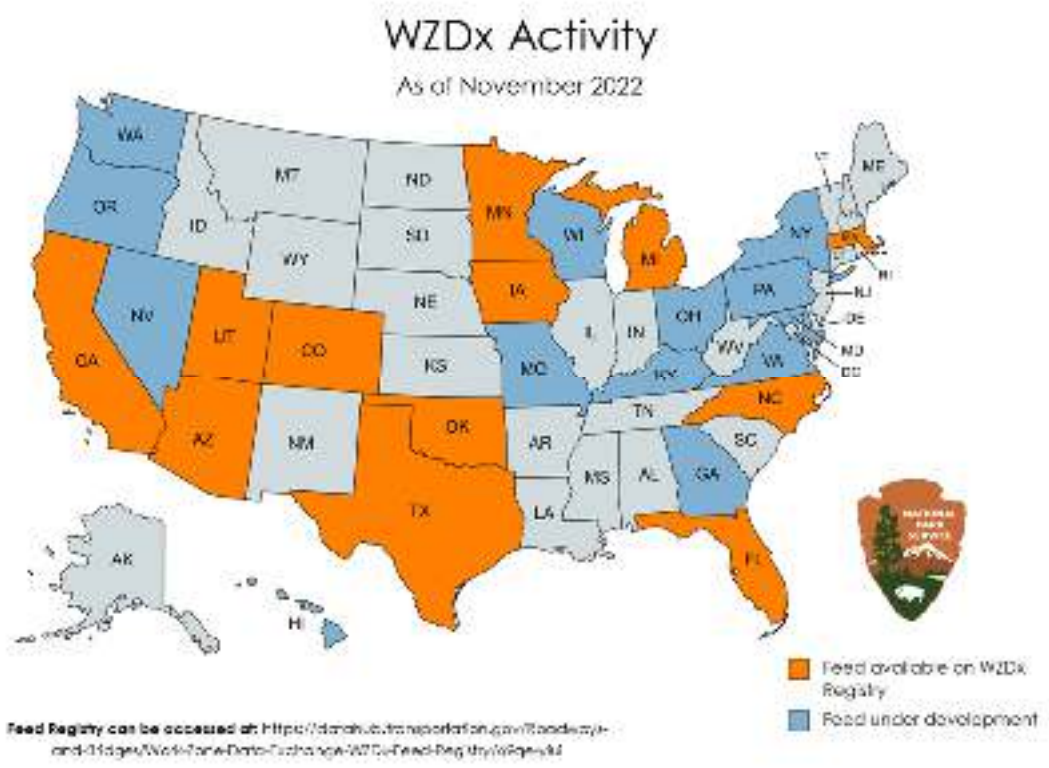


USDOT ITS-JPO

WZDx Statistics

13
Active Feeds

375
Current Working Group Membership

185
Unique Organizations

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

Slide 4

MM(0 Update if Michigan and MTC aren't available on feed registry

Mockett, Mark (Volpe), 2022-11-08T14:50:37.236

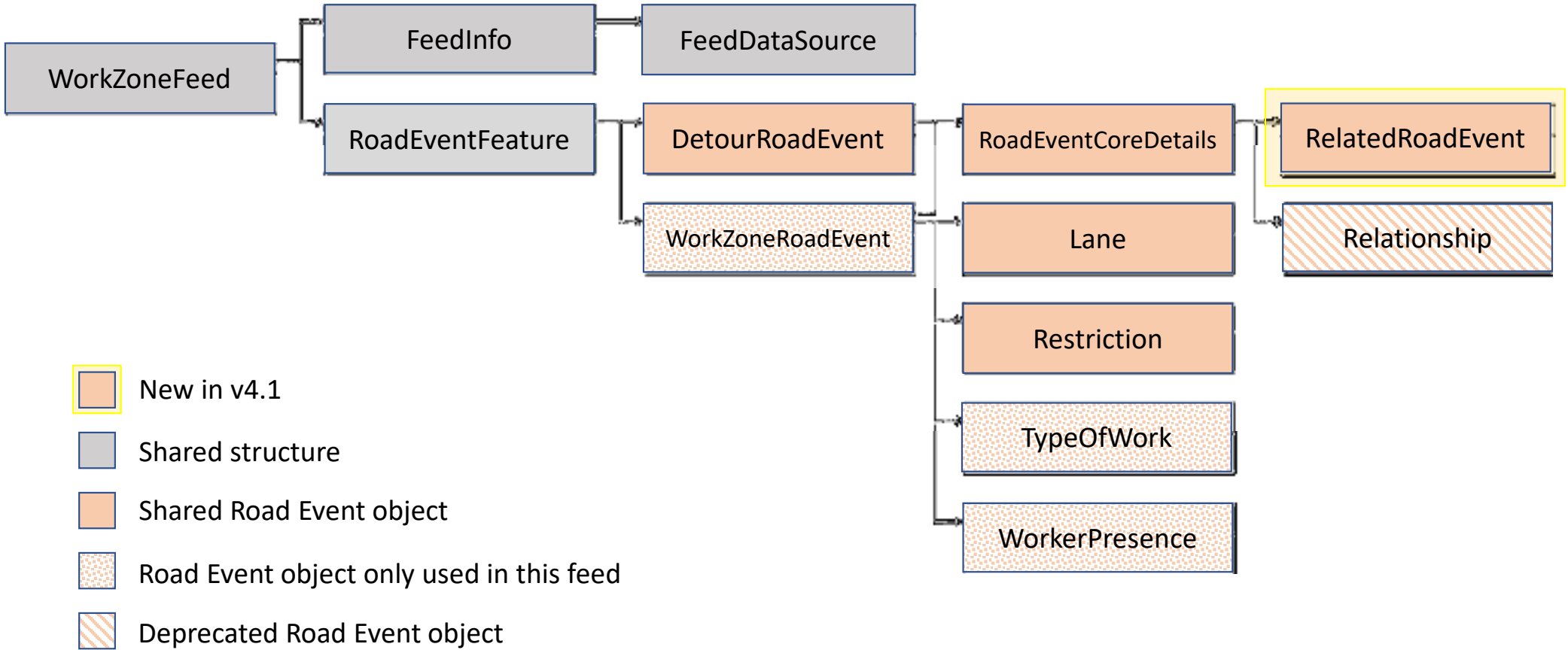
Recent Specification Updates

- Version 4.0 (November 2021)
  - Introduced option to represent connected devices in work zones (e.g., “i-Cones”, smart arrow boards) in new Device Feed
  - Introduced option to represent restrictions on roadways, such as low clearance bridges, in new Road Restriction Feed
  - Restructured “RoadEvent” model to be more extensible to other types of events
  - Added more specificity to worker presence
- Version 4.1 (September 2022)
  - Introduced option to represent crashes, special events, disasters, and winds in new Road Incident Feed.
  - Added additional devices to the Device Feed
  - Enabled better representation of mobile work zones

Four types of feeds for work zones and more

GitHub site	WZDx	WZDx	TDx	TDx
Feed	**Device Feed**	**Work Zone Feed**	**Road Restriction Feed**	**Road Incident Feed**
Features	Devices	Road Events	Road Events	Road Events
Feature types	Arrow boards, cameras, dynamic message signs, flashing beacons, hybrid signs, location markers, traffic sensors, traffic signals	Work zones and detours	Restrictions, such as bridge heights	Incidents and detours
Producer	Work zone equipment manufacturers or vendors.	Transportation Authorities like Tribal, Local, County, State, or Federal Agencies.		
Consumer	Transportation agencies. Mapping & Navigation companies and CAVs may also be interested.	Traveling public via third parties such as mapping and navigation applications and CAVs.		

WZDx Work Zone Feed as of version 4.1



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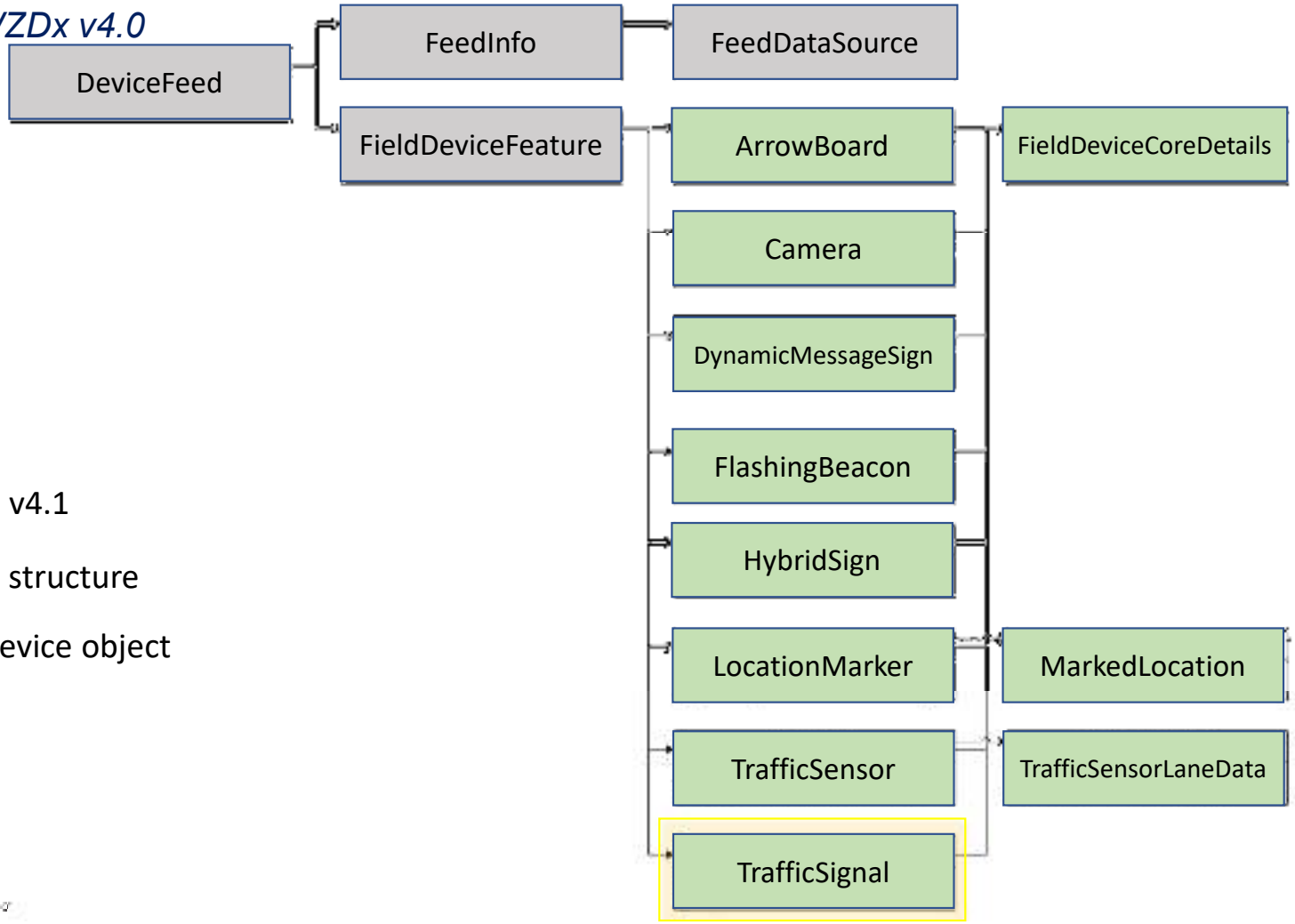
WZDx Device Feed as of version 4.1

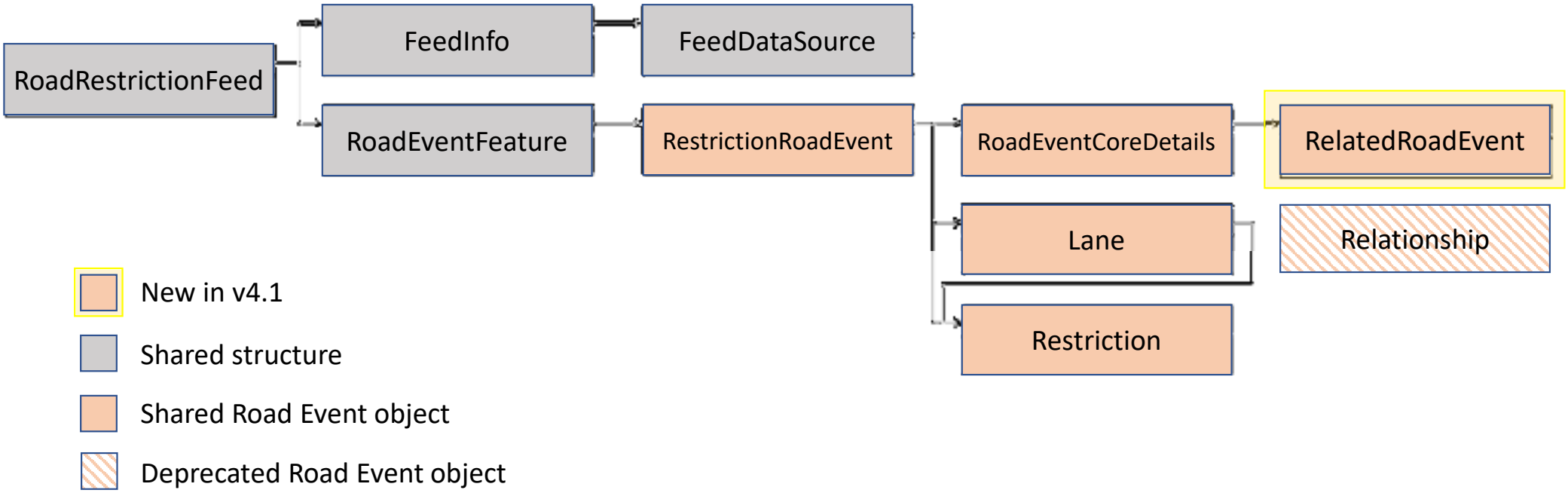
Introduced in WZDx v4.0



TDx Road Restriction Feed as of version 4.1

First extension of the WZDx model beyond work zones

Introduced in WZDx v4.0



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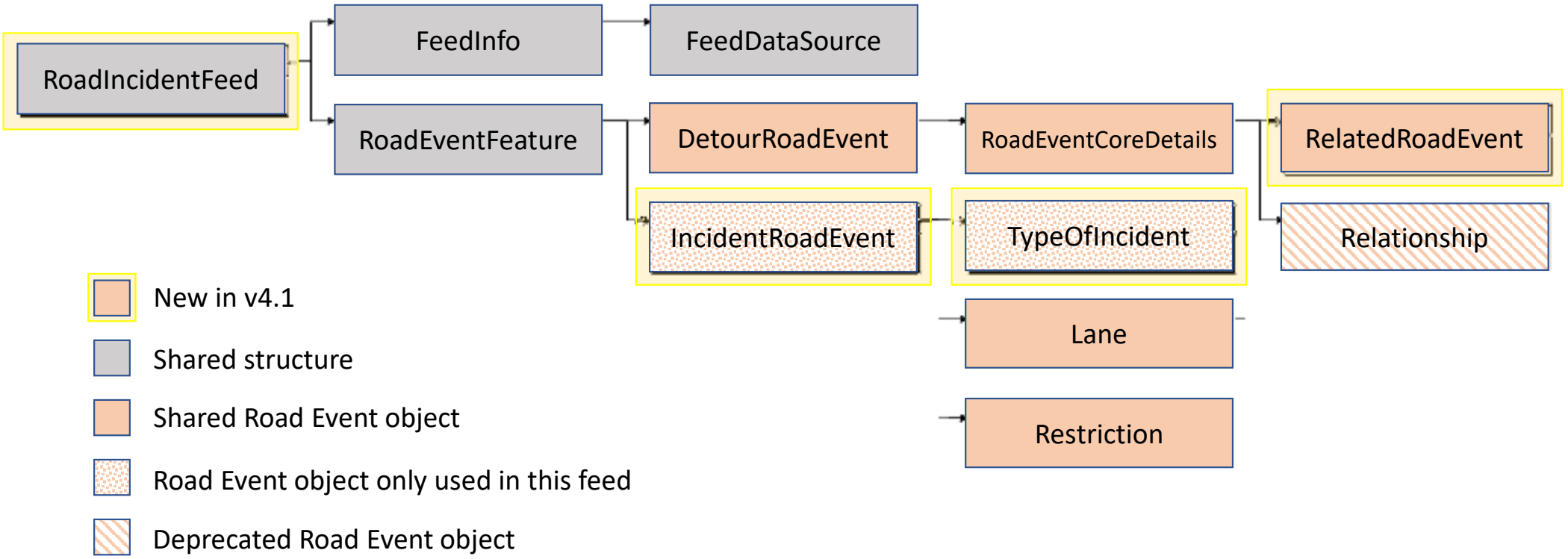
https://www.transportation.gov/av/data/wzdx

TDx Road Incident Feed as of version 4.1

Second extension of the WZDx model beyond work zones

Introduced in WZDx v4.1



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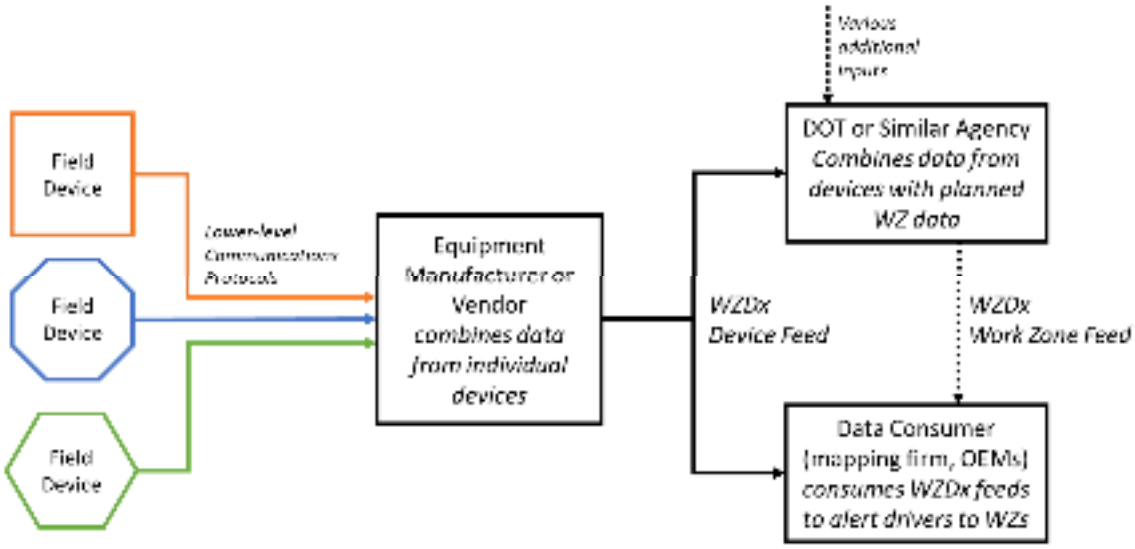
https://www.transportation.gov/av/data/wzdx

Connected Devices in WZDx

- **WZDx Device Feed** helps DOTs integrate real-time data from the field with other data
- DOTs can then publish verified work zone data in a **WZDx Work Zone Feed**
- Data consumers may make use of either/both feeds



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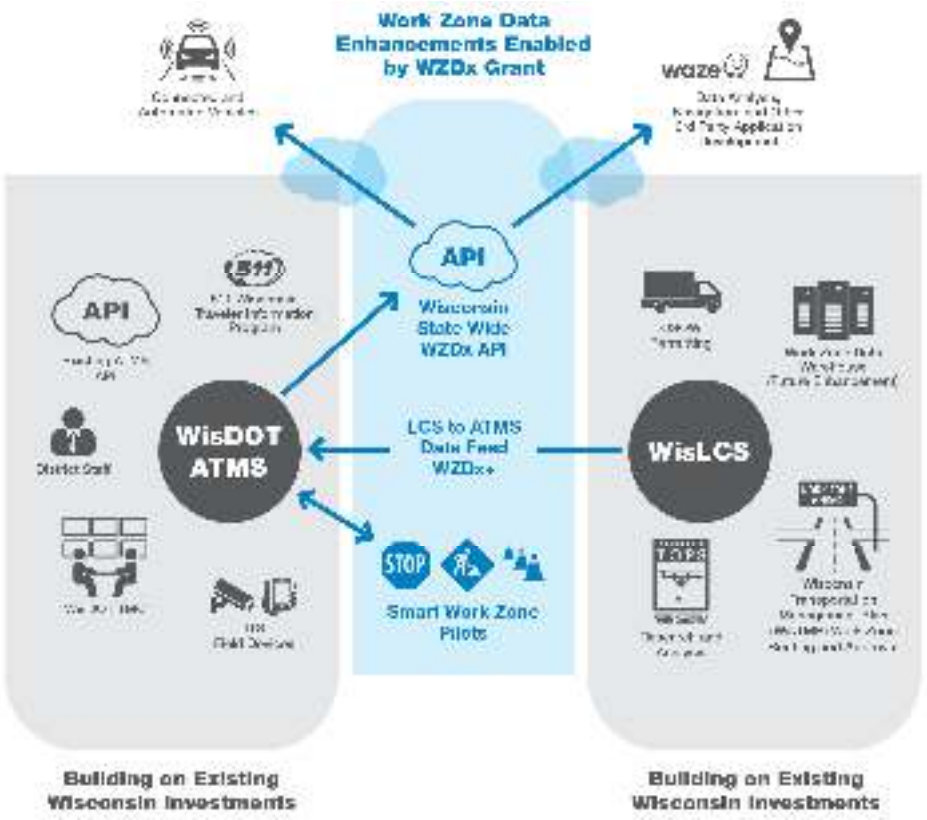
WZDx in Use – System Architecture

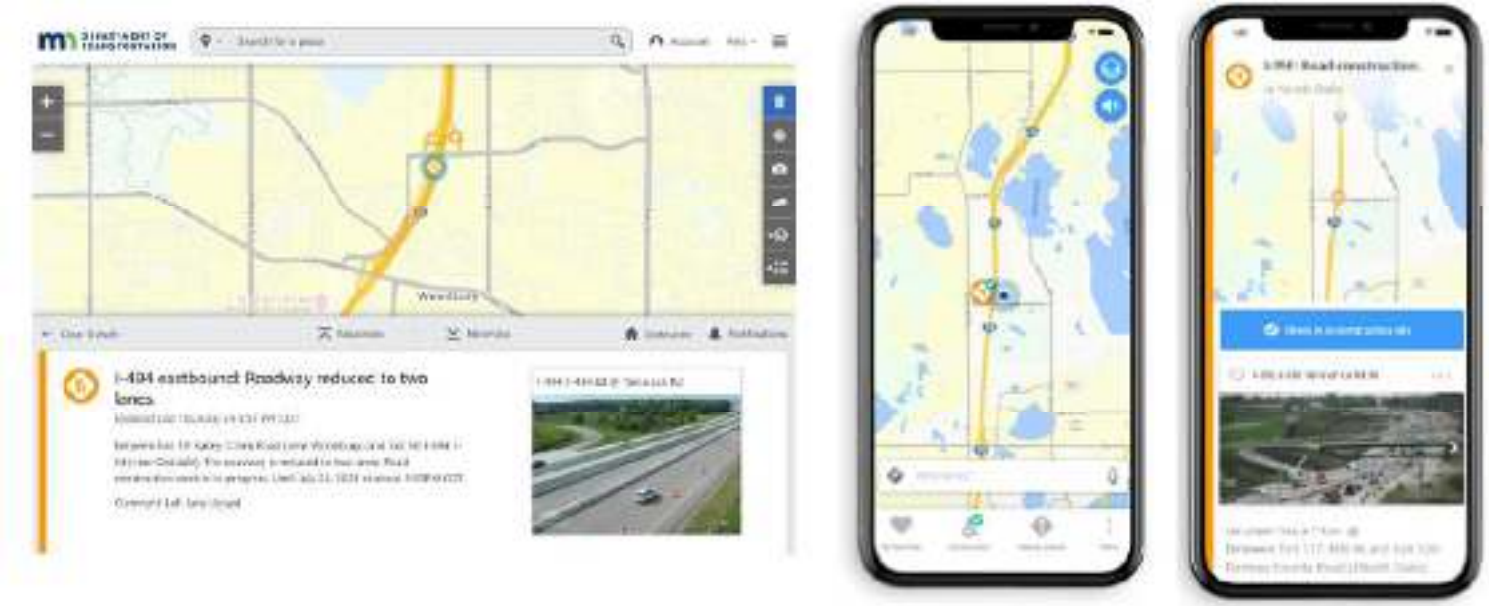
- Wisconsin DOT uses their lane closure system and advanced traffic management system to produce a WZDx feed



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

WZDx in Use – Worker Presence

- Minnesota DOT will use a worker check in app from ATMS vendor Castle Rock to activate work zones



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WZDx in Use – End to End

- Michigan DOT demo with General Motors and Ver-Mac used worker presence vest and variable speed limit signs

Future – Standardization

- Work on WZDx specification under current processes is ending
- Connected Work Zone standardization process will kick-off this fall/winter to standardize WZDx Work Zone Feed and Device Feeds following a systems engineering process
  - Co-led by SAE and ITE partnership that has facilitated the Connected Intersections process
- ***Specifications are not expected to change significantly***
- Open to participation from all stakeholders
  - Email standards@ite.org to get involved!

Future – Extending the WZDx Model

- US DOT has begun work on a new set of data exchanges around "Managing Disruptions to Roadway Operations"
- This multi-year project will refine the process established through the development of WZDx and use it to create data exchanges for additional roadway disruptions including:
    - Incidents,
    - Weather,
    - Emergency Response,
    - Special Events,
    - Evacuation Routes, and more.
- The focus of the data exchange and development of the specification will be driven by stakeholder needs - **We want to hear from you!**

Call to Action

- Join the Connected Work Zones Standardization process by emailing standards@ite.org or Mark Mockett (mark.mockett@dot.gov)
- Participate in Managing Disruptions work by emailing AVDX@dot.gov
- Set up a WZDx feed for your agency (work zones, incidents, restrictions, or all of the above!)
- Attend an upcoming meeting:
  - *Final* Work Zone Data Working Group meeting to discuss WZDx v4.2: Monday, November 21st, 2:00-3:30pm EST

WZDx Resources for Adoption & Use

- WZDx Example feeds based on common road construction closure scenarios
- WZDx data feed visualizations and archives
- JSON Schema for validating WZDx conformity
- .NET frameworks for building WZDx feeds
- Guidance documents for data producers and consumers created by the WZDx community

- All WZDx resources and the WZDx specification are open and free for all to use at https://github.com/usdot-jpo-ode/wzdx

For **questions**, more information, or to join the mailing list email AVDX@dot.gov.