MEETING NOTES
Iowa Advisory Council on Automated Transportation (ATC)
Economic Development and Infrastructure Joint Subcommittee Meeting
Friday, September 27, 2024
1:30 – 2:30 p.m. CT

Action Items:

- Create AV Working Group: Anyone interested in being a part of the group should email Matt Miller, Cheryl Roe, or Rick Peterson.
- If you plan to attend the ATC meeting on October 29th at the University of Iowa Driving Safety Research Institute (DSRI), please complete the questionnaire regarding dietary needs and ADS for Rural America demonstration rides when it arrives in your email.

Attendance – 20 attendees

- Rick Peterson – Iowa Economic Development Authority, Economic Development Subcommittee Chair
- Skylar Knickerbocker – Iowa State University
- Rob Denson – Des Moines Area Community College
- Andy Warren – Associated General Contractors of Iowa
- Blake Hansen – Olsson
- Heather Thomas – Marshalltown Public Works Department
- Peter Rafferty – Cambridge Systematics
- Nicole Oneyear – Iowa Division of the Federal Highway Administration
- Erik Minge – SRF Consulting
- Mark Pierson – HNTB
- Dave Ness – City of Dubuque
- Eric Porter – Iowa Communications Network
- Dan McGehee and Cheryl Roe – University of Iowa, Driving Safety Research Institute (DSRI)
- Newman Abuissa, Ben Hucker, Peggi Knight, Emma Simmons, Austin Yates, and Matt Miller – Iowa DOT

1. **Welcome and introductions** – *Rick Peterson, Economic Development Subcommittee Chair*
    a. Rick welcomed everyone and briefed the group on the meeting guidelines and provided an overview of the agenda.
    b. There were not any new subcommittee members to introduce.

2. **Economic Development and Infrastructure Readiness Subcommittee Update –** *Matt Miller*
    a. Matt informed the group that Erin Mullenix who was the Infrastructure Readiness Subcommittee Chair has taken on a new position as a research scientist evaluation specialist at Iowa State University. She hopes to continue participating in the group, but felt it was necessary to step down as chair.
    b. With Erin's departure as chair and the similarities with the two subcommittees, Matt suggested that the two subcommittees merge into one subcommittee. If anyone feels

strongly about the subcommittees remaining separate, please contact Matt, Cheryl, or Rick.

3. **IR workplan tactile updates –** *Skylar Knickerbocker, Iowa State University Institute of Transportation (InTrans)*
    a. Skylar is researcher at InTrans working primarily in the areas of traffic operators and safety, including data analytics, data visualization, and big data management. He provided an overview of two InTrans projects associated to infrastructure and connected and autonomous vehicles (CAV).
    b. Work Zone Data Exchange (WZDx) & Smart Arrow Boards Update
        - Skylar provided an update to a recently discussed WZDx and smart arrow boards project. The WZDx is a standardized feed that communicates work zone information to vehicle and mapping companies, ensuring they know the exact locations of work zones across different jurisdictions and states. A key feature of this system is the ability to verify work zones. The new system can pinpoint exact locations using smart arrow boards, ensuring that the work zones are active and verified. This updated information is then fed to vehicles and mapping companies
        - While sharing the interface, Skylar explained how the Iowa DOT has been working to integrate the smart arrowboards into their ATMS (Advanced Traffic Management System). The system currently allows for the assignment of connected arrowboards to specific work zones. Once an arrowboard is assigned, any changes in its status or location within the work zone are automatically updated in the data feed, ensuring accurate and up-to-date information is available through the work zone data exchange feed.
        - The process of assigning arrowboards to work zones is still manual. Although there are plans to automate this in the future, currently, a system of alerts notifies operators in the traffic management center. These alerts help operators manually assign the arrowboards and connect them to the correct work zone. This system serves as a temporary solution until a fully automated system is implemented.
        - When you visit the 511-website, users will see green checkmarks on work zones, indicating they are verified by smart devices. This is like the WZDx system. The precise location of work zones is shown, and if an arrowboard moves, the 511-website updates to reflect the new location. This improvement aims to provide accurate and up-to-date information for vehicles.
        - This project is expanding its use to connected equipment beyond smart arrowboards. The next stop involves testing connected portable or temporary traffic signals. Testing is expected to be finalized this year and starting in 2025, all new projects will require traffic signals that meet Iowa DOT's specifications. These connected signals will provide location and status information, like the smart arrow boards, thus enhancing connectivity in work zones.
    c. Navigation Systems for Snowplows in Low Visibility Situation

- Skylar shared high-level details about a project focused on snowplow navigation in low visibility conditions, like whiteouts. The current system uses connected and automated technologies to provide data and information to drivers, offering guidance and notifications without controlling the snowplows. This helps operators stay within lanes and identify obstacles such as stalled vehicles or debris.
- The project uses off-the-shelf hardware, including high-precision GPS receivers, to ensure it can be scaled across Iowa's fleet of over 800 snowplows. These GPS receivers are essential for lane positioning a lane departure algorithm is being developed. Front radar is employed for object detection, alerting operators to fixed objects like cars. Skylar shared several videos of the driver interface: one showing lane positioning on a phone interface, another displaying the interface and the vehicle's position on the road ahead, and a third demonstrating the interface's ability to detect objects.
- This testing is being conducted at the Tama garage, which has been pivotal for the project. They have a specific testing route and are collecting necessary data to support the effort.
- For questions, contact Anu Sharma at anujs@iastate.edu

d. Discussions
   - Peter Raferty comment in chat: "Skylar is too modest. The WZDx (CWZ) effort is repeatedly held up as an exemplary case of multiagency collaboration toward something that works great and is being adopted by many agencies (20 states now?). It's move to a standards development organization (SDO) deserves a round of applause. Thank you for your work, Skylar."
   - Matt asked about the new WZDx and what changes people might expect with it. Skylar indicated that the WZDx was a specification, but now is transitioning to become a standard, which will be called "Connected Work Zones". This effort involves collaboration between USDOT, Iowa, various states, ITE, and SAE. He believed that the final public comments were made in August. The changes from WZDx to "Connected Work Zones" are minimal, mainly adding a type of device for roadside units and a project-level identifier for linking work zones together. This ensures continuity and avoids drastic changes.

4. **AV Update –** *Matt Miller*
   a. Iowa DOT Website, along with other state agency websites, is undergoing updates to become more mobile-friendly and improve navigation. The Iowa DOT Automated Transportation page has seen updates, particularly within the Policies and Procedures. The page references the Iowa code allowing vehicles to operate without a driver. Currently, cities and counties cannot do much to prevent it. The Iowa DOT is working with AV companies to ensure responsible implementation. The site provides contact information for vendors, directing them to Toni Smith at the DOT, who has also reached out to other states to gather valuable information
   b. Iowa DOT Meetings with Texas, City of Austin, and Ontario.

- After attending the Automated Road Transportation Symposium, Toni Smith, Cheryl, and Matt met with representatives from the Texas Connected and Autonomous Vehicle (CAV) Task Force, the City of Austin, and the Ontario Ministry of Transportation (MTO). They aimed to understand how they prepared for AV testing and learn about their experiences with various companies.
- Each representative discussed having stakeholder groups that meet periodically to discuss AV topics. The Texas CAV Task Force includes members from TxDOT, local governments, transportation officials, community members, and industry. The Texas Transportation Institute assists subcommittees, especially with white papers. They produce reports every other year.
- The City of Austin has various stakeholder groups: police, fire, EMS, and an airport working group meet monthly, another city group meets monthly, and a larger stakeholder group, including disability groups, universities, school police, schools, Texas DOT, NHTSA, and AV companies, meets twice a year. The School for the Deaf wants AVs to avoid certain streets, while the School for the Blind wants AVs. This larger group also discusses handling special events like football games and concerts.
- Like Iowa, regulatory control is minimal. Austin provides an "Expectations" document, including maps of schools, fire departments, bridges, and a calendar of events. Austin also provides information about how the city plans to issue citations and ask about ride-share needs for electricity. Texas representatives mentioned something similar, a "welcome" packet, which includes considerations and contacts.
- Texas and Austin encourage AV companies to showcase their trucks at "petting zoos" to various entities, including police, fire, EMS, government, and the public. This allows people to see, touch and interact with the vehicles which can increase awareness about what to expect. They suggest getting AV companies in front of elected officials before setting up operations, emphasizing the value of building relationships.
- Texas has an interactive AV Dashboard that informs the public about each AV company operating in Texas. The dashboard includes the type of service, vehicle description, status in Texas, safety driver, location, website, and service area.
- Austin has incident dashboard that displays various types of AV related incidents such as blocking traffic, collisions, near misses, nuisances, ignoring Austin Police Department (APD) directions, or safety concerns. The dashboard includes the entity that submitted the report such as the fire department, APD, Austin Transportation & Public Works, EMS, and the public shown on a map and a chart. The public can report an AV incident using an Autonomous Vehicle Incidents Public Form. These incidents can be filtered by AV company or viewed collectively. Each incident is reported to the AV company almost immediately.
- AV companies may request specific road markings and signs, raising questions about infrastructure investment. One example provided was the standardization

of signs. For instance, a sign indicating “No Turn on Red during school hours” may confuse AVs.

- AV companies will seek access to data exchanges like the Work Zone Data Exchange. Sharing information about significant events that may impact roads is crucial. These events could be planned, such as construction, sporting events, and concerts, or unplanned, like fires, shootings, or hazmat-related incidents.
- Austin is working to incorporate Mobility Data Specification (MDS) through Open Mobility Foundation. MDS is a digital tool that helps cities manage transportation. It can standardize communication and data-sharing between cities and private companies which can enhance vehicle management and better outcomes for the community.
- Communication is imperative to building trusting relationships. It is important to know the key points of contact within the AV company, but also within the municipalities, fire & law enforcement departments, and the state. The AV should provide the “BIG” picture upfront: short-term and long plan, type of vehicle, number of vehicles, ODD, route, and whether there will be safety operators. AV companies should also communicate changes, such as removing safety operators or changing the ODD or route. A suggestion was made to consider a dedicated email account for AVs, which the then would be forwarded to the other points of contact.
- Ontario Automated Vehicle Pilot Program is a 10-year pilot program which allows AVs to test on Ontario’s roads. Initially in 2016, a driver was required, but since 2019, this requirement has been removed. AV companies must apply to the MTO to conduct test. The application must specify where and when tests will occur, the duration, the types of vehicles being used, and whether the vehicles will include driver(s). Additionally, companies must provide details about the vehicle including compliance with federal safety measures and standard safety equipment like steering wheels and pedals. Applications for vehicles lacking standard safety equipment may take longer because they need federal approval. The program requires that each AV company provide an annual report about their testing for each AV type. The report must include number of vehicles being tested, kilometers travelled, roadway types, speed limits, road conditions, time of day, and system disengagement which were system-generated, and operator generated. Unlike Texas and Austin, data is not publicly shared.
- Considerations: Iowa needs to decide the level of control they want over AV testing, including when authorities can step in and pause operations. While involving municipalities can lead to positive outcomes, it may also impact timelines. Other considerations include the state’s comfort level with the number and type of AVs, suitable and off-limit locations for testing, thresholds for bad weather, and whether the AV company has its own thresholds for testing. Additionally, the state should determine if it wants safety assessment reports and, if so, what requirements these reports should meet.

c. Discussion
    - Dan inquired about having representatives present at a meeting to discuss crash handling protocols. Matt responded that representatives from Texas and the City of Austin have been invited to the upcoming October meeting, and Toni Smith is compiling a list of information from Arizona, Texas, and other states. Matt encouraged subcommittee members to send any questions for them prior to the meeting.
    - Cheryl encouraged subcommittee members to visit the Texas AV Task Force and City of Austin AV pages to explore their public dashboards and documents, which could benefit Iowa AV group moving forward.

5. **AV Task Force Roundtable Discussion –** *Matt Miller*

a. Director Marler tasked Matt with forming an AV Task Force to focus on future AV deployment, policy, and information gathering. The group would meet and report back to the ATC group and potentially the governor's office.
b. Matt called for volunteers, welcoming anyone interested. He suggested subcommittee chairs join the group. He also emphasized the importance of including members from the communities that may be impacted by a deployment. It is important to have law enforcement, MPOS, fire, and EMS.
c. Cheryl urged the subcommittee to think about individuals that may represent groups that Matt have not mentioned. Anyone is welcome and getting perspective from many different stakeholders is important. For example, the City of Austin has representatives from the School for the Blind and the School for the Deaf on one of their groups.
d. If you interested or know someone might want to be on the AV task force, please contact Matt Miller, Cheryl Roe, and/or Rick Peterson.

6. Driving Safety Research Institute – *Cheryl Roe*

a. Cheryl shared information about three AV-related projects at DSRI, one funded and two proposed however due to time constraints it was not included. Summary of those projects provided.
b. ADAS for Bustang Intercity and Regional Bus Transit – The Colorado DOT, in partnership with Colorado State University and the University of Iowa, received funding from the Federal Transit Administration for this demonstration project. It will feature three fully equipped public transit service buses of different sizes, each outfitted with aftermarket ADAS technology, including ACC, AEB, blind spot intervention, and lane-keeping assistance. These buses will operate on two different revenue service routes. DSRI will focus on training transit drivers on the ADAS and evaluating the impact of this training. For additional project details: Project fact sheet
c. Rural Autonomous Vehicle Research Program – DSRI along with several other universities – Virgina Tech, Auburn, and Western Virgina – submitted two proposals for this program: one for the "movement of people", and one for the "movement of goods". DSRI's role leverages years of testing on Iowa's rural roadways to address shortcoming and advance the project to the next level. The team was notified that the

"movement of people" proposal made it through the initial review process and recently presented the proposal to a group of reviewers.

d. Strengthening Mobility and Revolutionizing Transportation (SMART) – DSRI participated in a SMART Program Stage 1 proposal led by the University of Iowa (UI) CAMBUS. CAMBUS, the university's public transportation system, serves the UI campus and UI Healthcare. This project aims to expand CAMBUS's on-demand service to a new UI Healthcare facility under construction. The plan includes using DSRI's ADS transit and retrofitting several CAMBUS ADA paratransit buses with automation capabilities to serve the new healthcare facility and the two existing ones.

7. Recent & Upcoming Meetings

a. **Public Safety & Enforcement Subcommittee Meeting** – Wednesday, September 25, 2024

b. **Policy & Legislation Subcommittee Meeting** – Wednesday, October 2nd, 2024

c. **Iowa Advisory Council on Automated Transportation Meeting** – Tuesday, October 29, 2024, from 10:00 a.m. – 12:00 p.m. In-person meeting to be held at the University of Iowa Driving Safety Research Institute. Virtual option will be available. ADS for Rural America Demonstration Drives available upon request.

ATC SUBCOMMITTEE MEETING

Economic Development and Infrastructure Readiness Joint Subcommittee Meeting
September 27, 2024

MEETING AGENDA

1. **Welcome, Introductions, and Subcommittee Update** – Rick Peterson, Economic Development Chair
2. **EcDev and IR Subcommittee Updates** – Matt Miller, Iowa DOT
    a. IR Subcommittee Chair Vacancy
    b. Discussion about combining subcommittees
    c. IR Work Plan tactical updates – Skylar Knickerbocker, InTrans (Iowa State University)
3. **AV Update** – Matt Miller, Iowa DOT
    a. Iowa DOT Automated Transportation webpage update
    b. Iowa DOT meetings with Texas, City of Austin, and Ontario
4. **AV Task Force Roundtable Discussion** – Matt Miller, Iowa DOT
5. **DSRI AV Project Update** – Cheryl Roe, DSRI
6. **Recent and Upcoming Meetings**
    a. Public Safety & Enforcement Subcommittee Meeting – Wednesday, September 25
    b. Policy and Legislation Subcommittee Meeting – Wednesday, October 2
    c. Iowa Advisory Council on Automate Transportation Meeting – Tuesday, October 29 from 10:00 a.m. – 12:00 p.m., hosted at the University of Iowa Driving Safety Research Institute, virtual option available. ADS for Rural America demonstration drives available by request.

WELCOME AND INTRODUCTIONS

Rick Peterson–

Economic Development Subcommittee Chair

ECONOMIC DEVELOPMENT AND INFRASTRUCTURE READINESS SUBCOMMITTEE UPDATES

IR Subcommittee Chair vacancy

Discussion about combining subcommittees

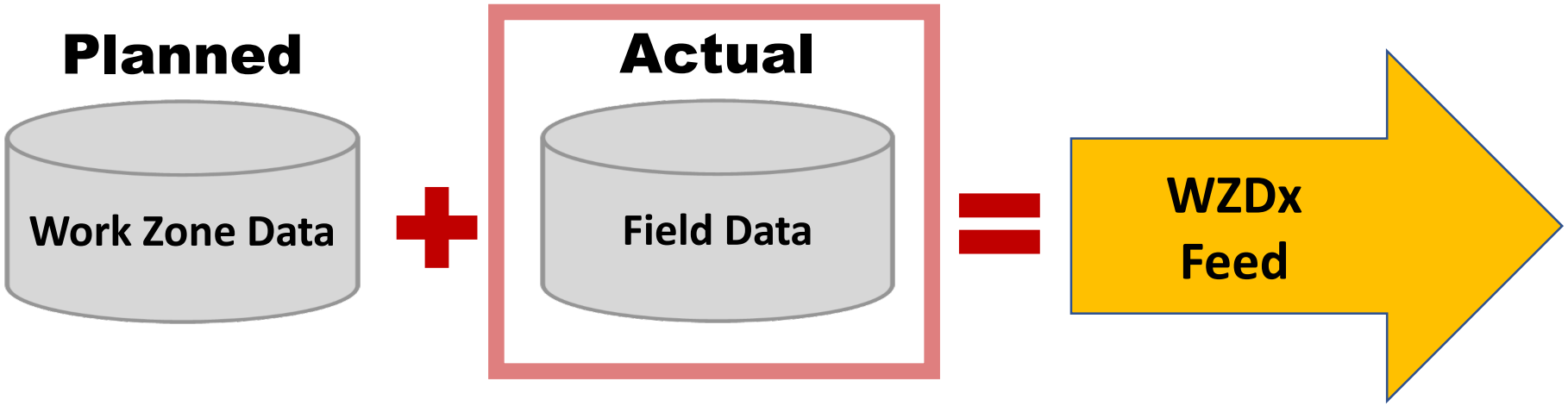
IR Work Plan Tactile Updates – Skylar Knickerbocker, InTrans

WZDx + Smart Arrow Boards

WZDx in Iowa

1) Create a WZDx Feed based on existing work zones in ATMS

2) Integrate the smart arrow boards in ATMS

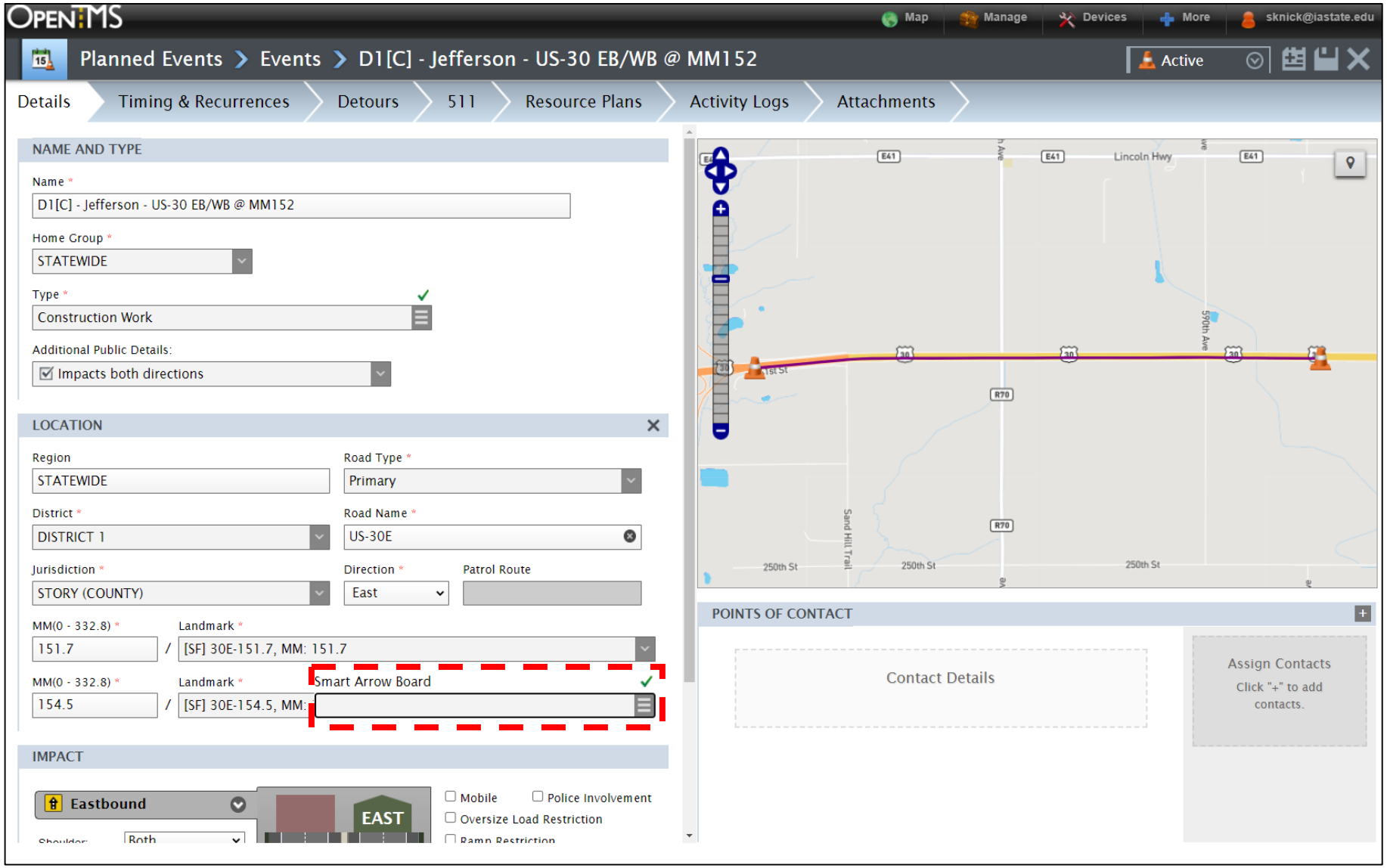


Planned events into ATMS

Confirmation from the field through smart arrow boards

"devices" are active during a corresponding planned events

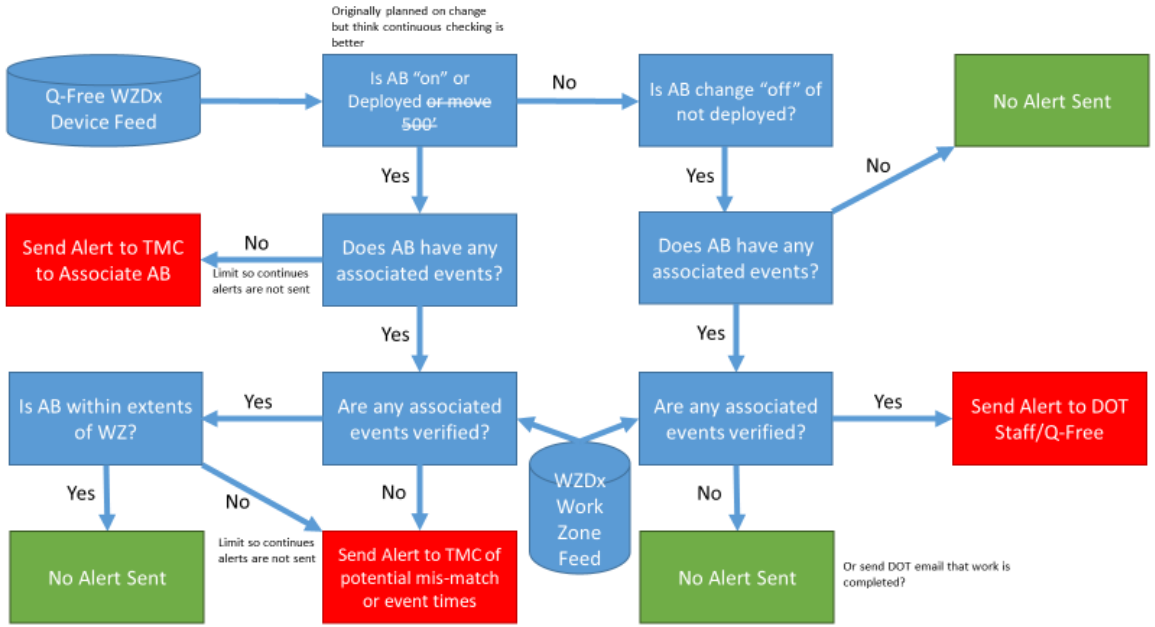
WZDx + Smart Arrow Boards



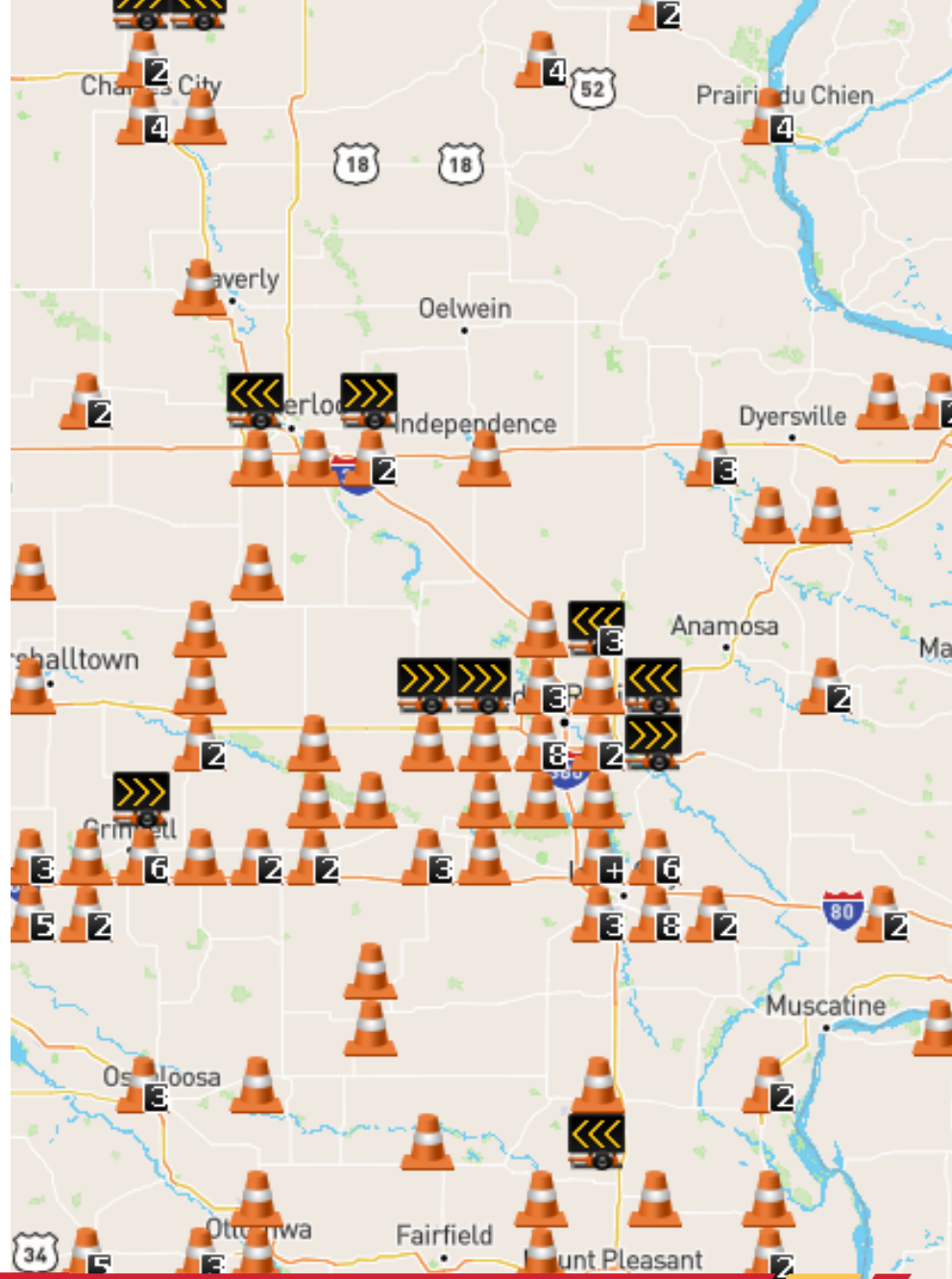
Alerting System

Arrow boards manually assigned

Need for alerts for assigning



Red indicate alerts to Operators/DOT

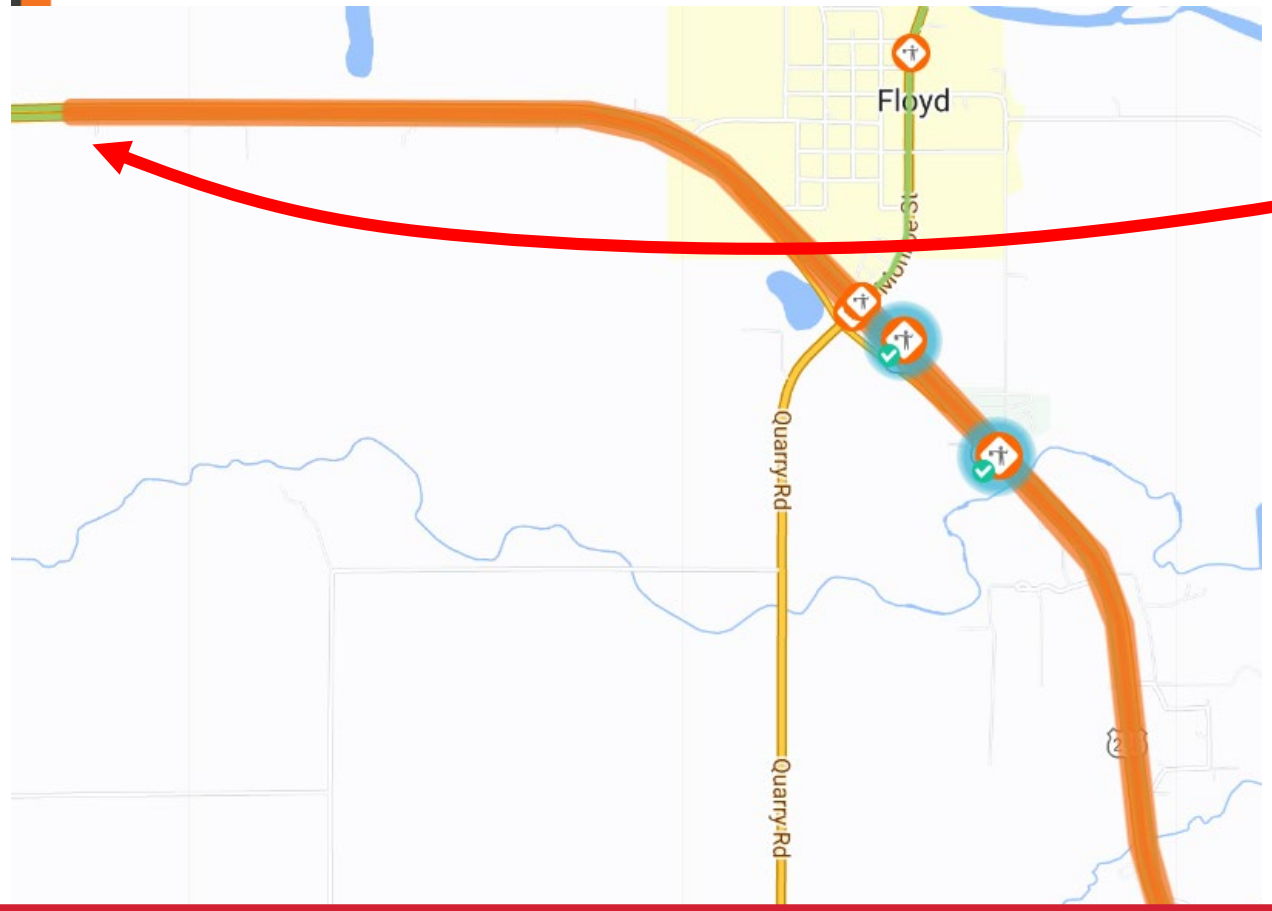


Verified Work Zones

US 18 in both directions: Road construction.

Updated September 13 by Iowa DOT

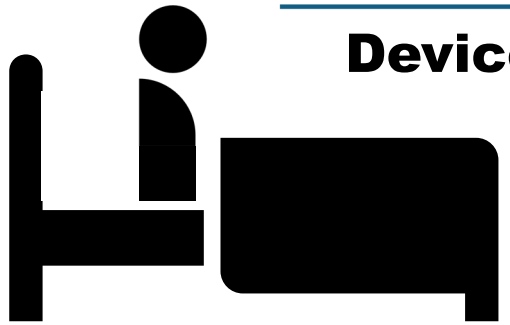
Verified by smart device



Next Steps…Connected Portable Traffic Signals

WZDx
WORK ZONE DATA EXCHANGE

Device Feed



Specification will require WZDx Device Feed

Testing in 2024, required in 2025

TrafficSignal Object

The `TrafficSignal` object describes a temporary traffic signal deployed on a roadway.

The `TrafficSignal` is a type of field device; it has a `core_details` property which contains the FieldDeviceCoreDetails and exists within a FieldDeviceFeature.

Properties

Name	Type	Description	Conformance	Notes
`core_details`	FieldDeviceCoreDetails	The core details of the traffic signal device.	Required	This property occurs on all field devices.
`mode`	TrafficSignalMode	The current operating mode of the traffic signal.	Required	

Value	Description
`blank`	The signal is not displaying anything.
`flashing-red`	The signal is in a flashing red state that could be part of startup or fault.
`flashing-yellow`	The signal is in a flashing yellow state that could be part of startup or fault.
`fully-actuated`	The signal is using an external trigger for all movements.
`manual`	The signal is using a manual trigger.
`pre-timed`	The signal is using a timed cycle.
`semi-actuated`	The signal is using an external trigger only for the minor movements.
`unknown`	The current operating mode is not known.

Navigation Systems for Snowplows in Low Visibility Situation

Project Objectives

- ***Decision assist interface to guide the operator when visibility is too low for regular operation.***
- ***The system will also provide alerts for unexpected obstacles such as stalled/slow-moving vehicles, people, or debris.***

Scope

- Ph1 system will not take over any control and only guide the operator.
- Uninterrupted flow facilities will be evaluated, implying the system will not assist the driver in maneuvering merging and traffic control such as stop signs, signalized intersection, etc

Components

Swift Piksi® Multi RTK GNSS receiver
Cm level accuracy with DOT corrections

Delphi radar (range 1 to 25 m)

Power Management

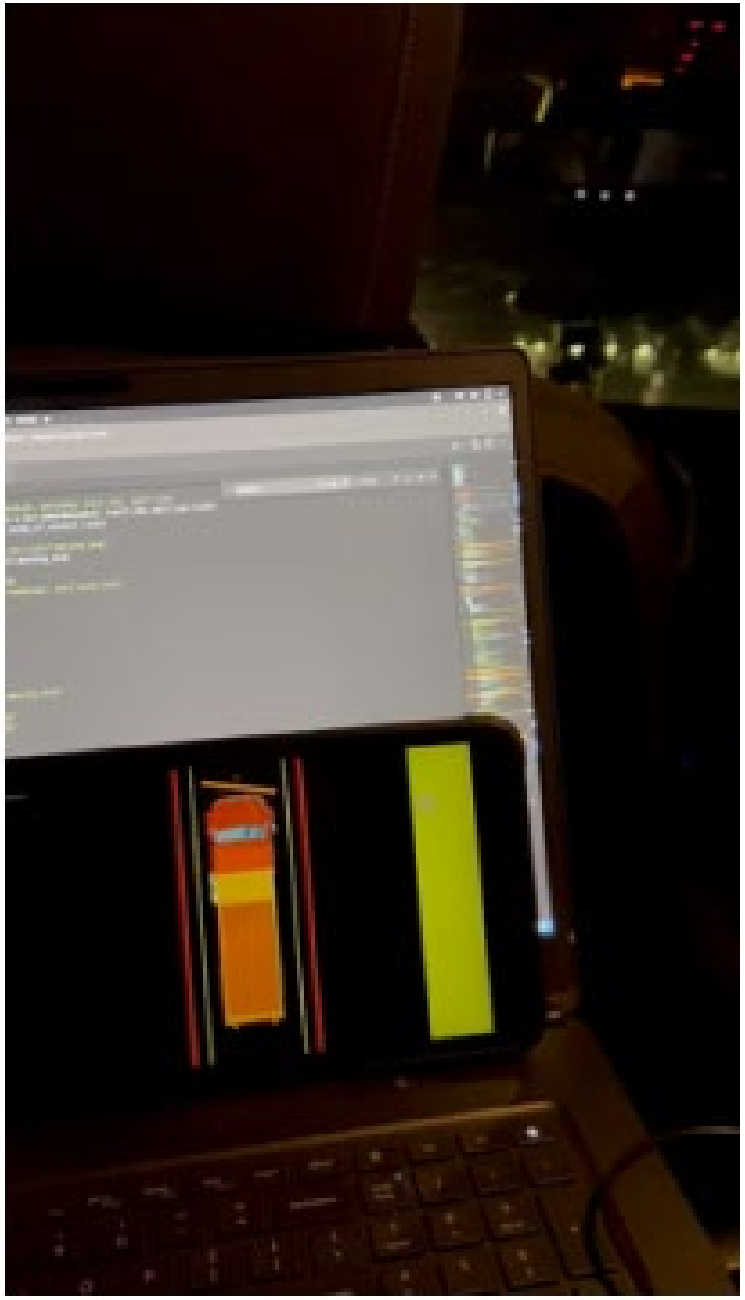
Nuvo 7002E device

Galaxy ActiveTab3

ZED Camera

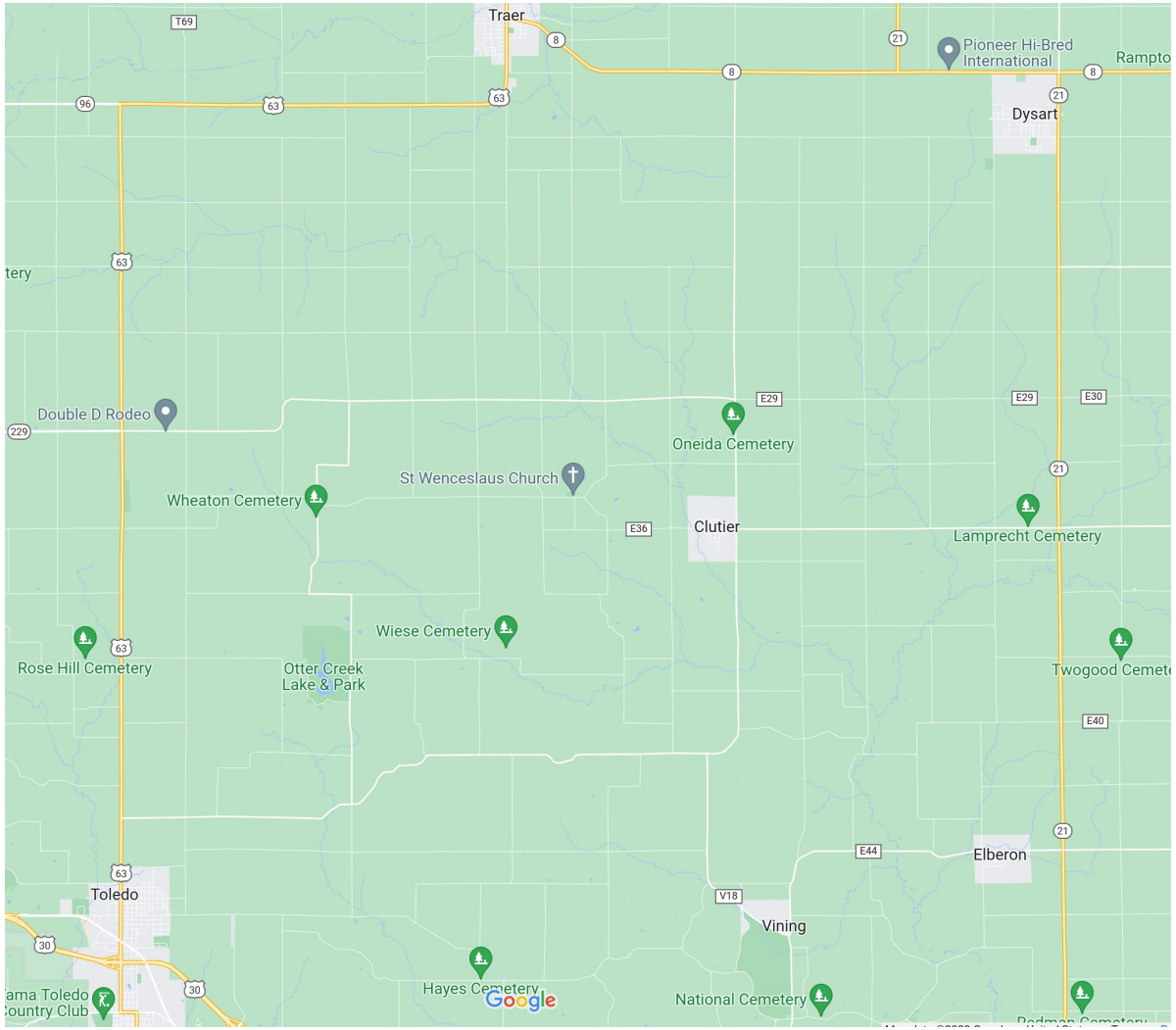
Lane Departure Algorithm Testing

Lane departure logic being tested on a local road




Map: Available
Gnome
Veterinary Medical Research Institute
Gentle Doctor Cafe
Greenbriar Park
S 16th St
Copper Beech at Ames
Dublin Bay Irish Pub & Grill
Ag Leader Technology
Merck Animal Health
Sam's Club
Provisions Lot 1
Airport Rd
Hap's Air Service
Burger's Coffee | South Ames
Iowa State University Research Park
Ames Municipal Airport
Google
Honda of Ames

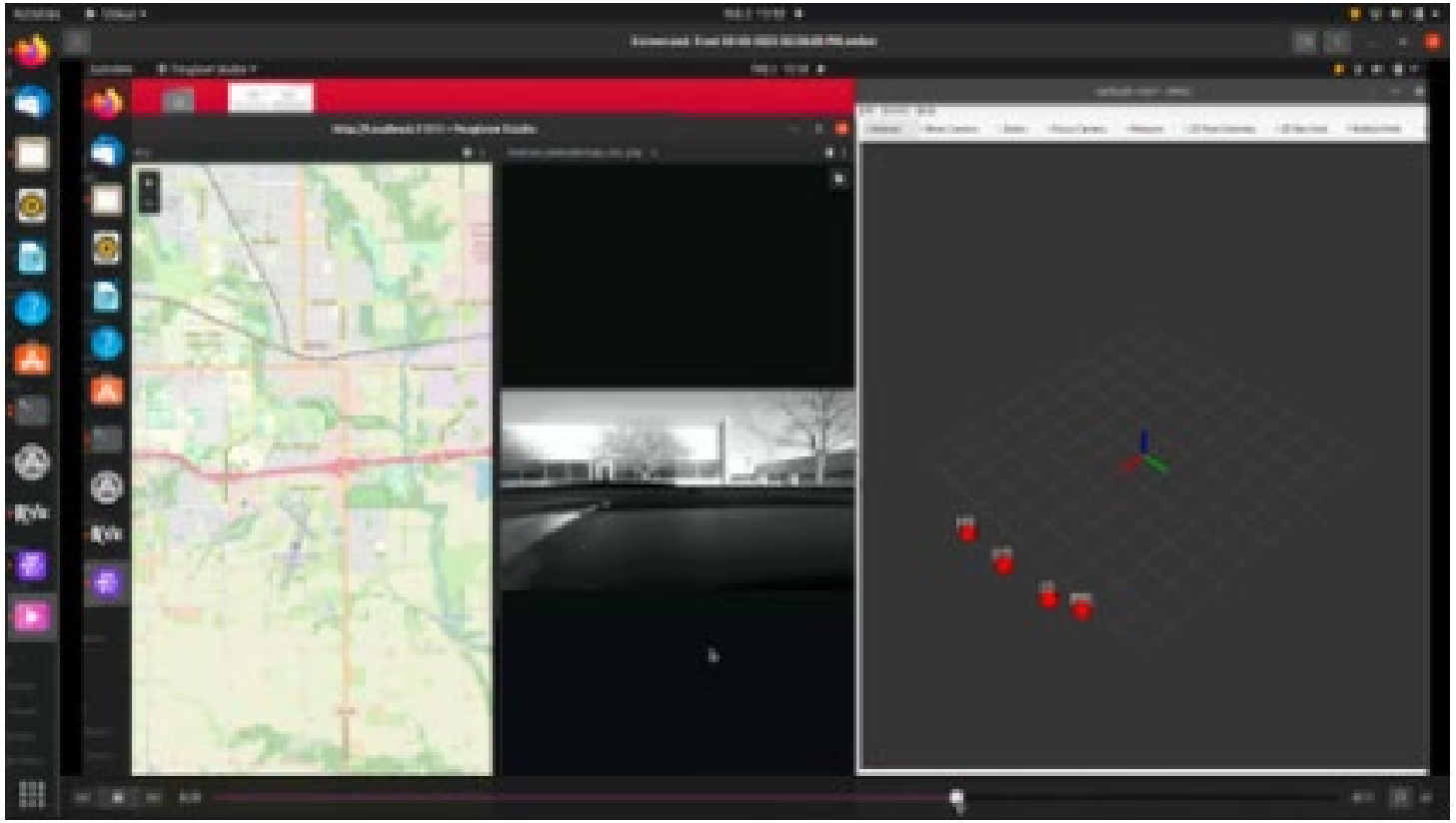
Tama Map

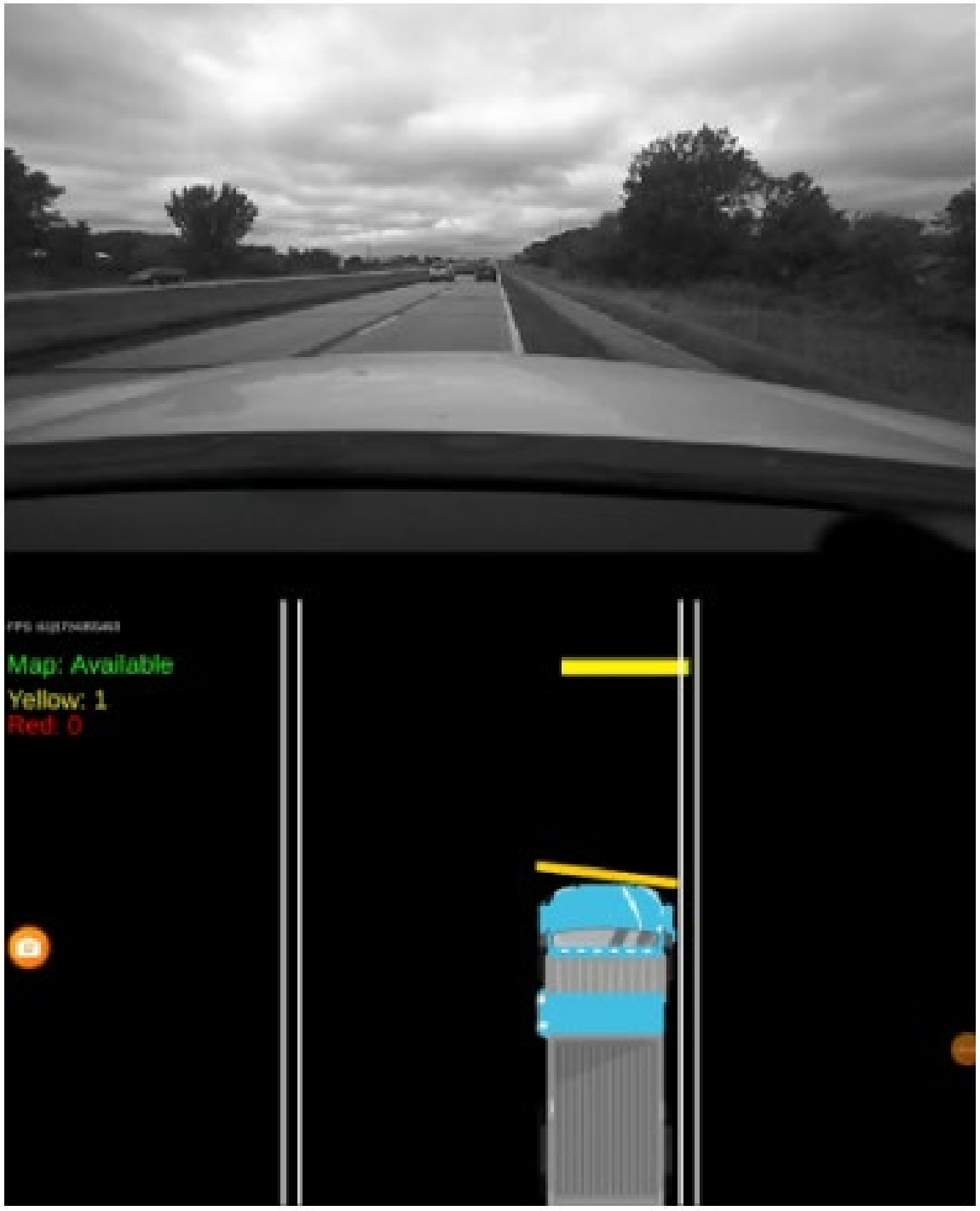

Traer
Pioneer Hi-Bred International
Dysart
Double D Rodeo
Oneida Cemetery
St Wenceslaus Church
Wheaton Cemetery
Clutier
Lamprecht Cemetery
Wiese Cemetery
Rose Hill Cemetery
Otter Creek Lake & Park
Elberon
Toledo
Vining
Hayes Cemetery
National Cemetery
Google


9238
8943
9104
9019
8951
20220
20221
1232
1233

Radar integration

Radar integration started




Map: Available
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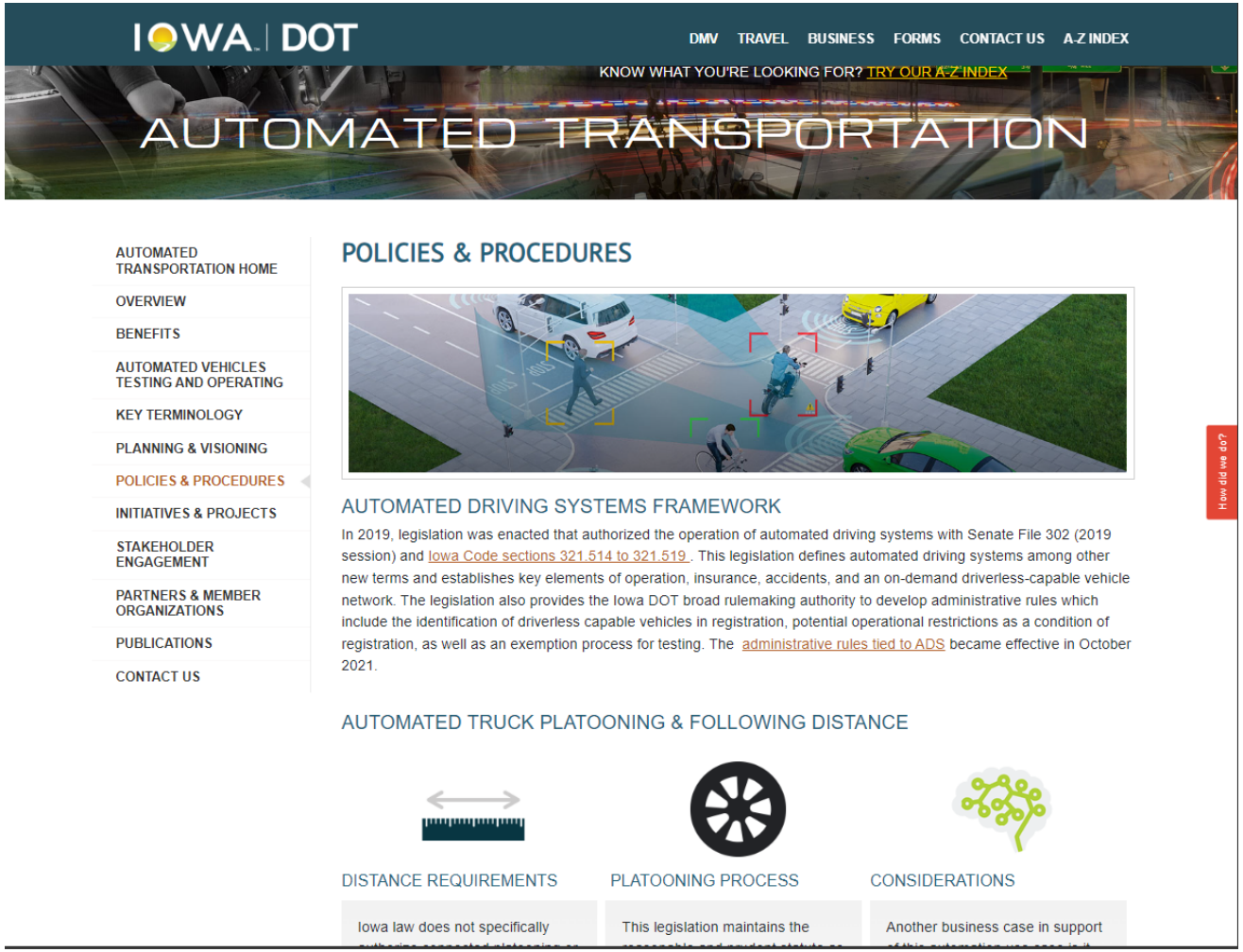
AV UPDATE

Iowa DOT Automated Transportation Webpage Update

Summary of Iowa DOT meetings

IOWA DOT AUTOMATED TRANSPORTATION UPDATE



https://iowadot.gov/automatedtransportation/Policies-Procedures

AV UPDATE

Iowa DOT Automated Transportation Webpage Update

Summary of Iowa DOT meetings

IOWA DOT MEETING SUMMARY

- Texas AV Task Force, City of Austin, and Ontario Ministry of Transportation (MTO)
- Task Force and/or stakeholder groups
  - All stakeholders have a responsibility to share information – Task force "opens doors"
- Like Iowa, their regulatory control is minimal
  - "Welcome" and/or "expectations" document
  - Interactions with police, fire, EMS, government officials and public – "petting zoos" and ride-along
- AV deployment dashboard, incident data dashboard
  - Texas AV data Austin AV Incidents Austin AV Incident Public Form
- Infrastructure needs and cost
  - Data Exchange (i.e., Work Done Data Exchange)
- Communication is KEY
  - AV's plan (ODD, route, safety operator(s), short term and long-term, etc.)
  - Points of contact (AV company, cities, state, fire, police, etc.)

AV TASK FORCE ROUNDTABLE DISCUSSION

Volunteers are needed

Cross-section representation

Interaction with AV Company

Inform policy

Regular reporting to the Iowa Advisory Council and the Governor's office

DRIVING SAFETY RESEARCH INSTITUTE PROJECT UPDATE

Presented by Cheryl Roe, DSRI

DRIVING SAFETY RESEARCH INSTITUTE

- ADAS for Bustang Intercity and Regional Bus Transit – funded FTA
  - Colorado Department of Transportation
  - Demonstration of three fully equipped public transit service buses with aftermarket ADAS technology.
  - DSRI role: training operators and evaluation materials
- Rural Autonomous Vehicle Research Program – proposal
  - Virginia Tech Transportation Institute, Auburn University, and West Virginia
  - Opportunities for transporting people and/or goods
  - Transportation of people proposal has made it through the initial evaluation process
- Strengthening Mobility and Revolutionizing Transportation (SMART) Grant Program – proposal
  - Project led by University of Iowa Cambus
  - ADS shuttle to be used to provide service to new UIHC location in North Liberty
  - Cambus vehicle will be equipped with ADS hardware and software
  - DSRI to train UI Cambus staff for operating ADS vehicle

RECENT AND UPCOMING MEETINGS

Public Safety and Enforcement Subcommittee Meeting – Wednesday, September 25 from 11:00 a.m. – 12:00 p.m.

Policy & Legislation Subcommittee Meeting – Wednesday, October 2 from 11:00 a.m. – 12:00 p.m.

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THANK YOU