SwRI Connected Vehicle
Affiliated Test Bed
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Presentation Overview

♦ USDOT Connected Vehicle (CV) Affiliated Test Beds

♦ SwRI CV Affiliated Test Bed

♦ SwRI CV Development Activities

♦ TxDOT / SwRI CV Projects

♦ Conclusions / Questions
USDOT Affiliated Test Beds

Affiliated Test Beds

The Intelligent Transportation Systems Joint Program Office (ITS JPO) has organized an affiliation of 5.9GHz DSRC infrastructure device makers, operators of vehicle to infrastructure (V2I) installations, and developers of applications that use V2I communications.

Coordination
To learn more about this research contact:
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Membership & Benefits

♦ Currently 32 public, private, and academic organizations

♦ To become an Affiliated Testbed:
  – Sign Memorandum of Agreement
  – Participate in monthly calls

♦ Benefits:
  – Exchanging information
  – Sharing of deployment lessons learned
  – Developing a common technical platform
  – Expanding test bed options for users
Vehicle Probe Data
Signal Phase & Timing / MAP
Signal Prioritization
Signal Preemption
Green Speed
Wireless Roadside Inspection
Unsafe-to-pass / Unsafe-to-merge
Blind Spot Warning
SwRI CV Application Development Activities

- Roadside Alerts
- Railroad Grade Crossing
- Traveler Information
  - curve speed warning
  - dynamic/variable text
  - static signage (MUTCD based)
- Emergency Vehicle Alert
- Overheight Detection/Alert
- Wrong Way Driver Detection/Alert
SwRI CV Application Development Activities

- Cooperative ACC
- Emergency Electronic Brake Lights
- Forward Collision Warning
- Mayday Message / Relay
Loop 410 from Airport to Ingram Road

Collect BSM data / Transmit Electronic Signage
1: Infrastructure OH sensor detects OH vehicle
2: RSE identifies specific vehicle and warning is displayed to the driver
3: Vehicle exits and uses bypass – Warning is removed from driver display
4A: Vehicle does not exit – Additional warnings presented. Vehicle automatically slows if available.
4B: Vehicle is disabled or speed limited prior to hitting the bridge, if available. Emergency responders automatically notified.
Enhancing Work Zone Safety
Mobile Roadway Maintenance

LEGEND
1. Automated crash cushion vehicle follows lead maintenance vehicle
2. Automated vehicle monitors other vehicles to predict impending collisions
3. Traffic Management Center uses vehicle to infrastructure communication to monitor stationary work zone
4. Traffic management center implements rolling event response plan
5. Upstream vehicle receives advisory message regarding the mobile maintenance fleet
Enhancing Work Zone Safety
Stationary Roadway Maintenance

LEGEND

1. Maintenance crew can control automated crash cushion vehicle using tablets or gesture recognition
2. Automated crash cushion vehicle monitors other vehicles to predict impending collisions and can then notify other vehicles and road maintenance crew
3. Upstream vehicle receives advisory message regarding the stationary work zone
4. Traffic Management Center uses vehicle to infrastructure communication to monitor stationary work zone

To Infrastructure Devices
(Cameras, Electronic Signs, etc.)

CAUTION ROADWORK AHEAD!

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Conclusion

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- SwRI CV Affiliated Test Bed
- SwRI CV Activities
- TxDOT / SwRI CV Projects
Questions?

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