Connected Vehicles
Applications for Rail

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CV Ecosystem

♦ USDOT ITS JPO
  ♦ Facilitate development of standards and protocols
  ♦ Plan/support large scale tests and model deployments
  ♦ Coordinate multimodal engagement

♦ SAE/IEEE
  ♦ Publish and maintain detailed hardware/software/comm standard and specifications

♦ DOT Modes
  ♦ Research technology needs
  ♦ Industry stakeholder engagement
  ♦ Develop reference applications/hardware platforms

♦ Automakers/Suppliers
  ♦ Control the final vehicle-based products
  ♦ Shoulder most of the liability in trade for business benefit
FRA Accomplishments

♦ Engaging rail industry stakeholders

♦ Developed RCVW system concept and design documents

♦ Supporting ITS Joint Program Office (JPO) standards development

♦ Executing JPO funding to develop and test RCVW demonstration system

Public and Private HRI Fatality Statistics by Motor Vehicle Type from 2008-2012, excluding pedestrians
Current Research

♦ DSRC Performance Evaluation for Rail
  ♦ Can DSRC Support V2V rail comms?
  ♦ Antenna configurations?
  ♦ Locomotive EMI impacts?

♦ Rail Crossing Violation Warning (RCVW)
  ♦ Retrofit existing active crossings
  ♦ Leverage track circuit train detection
  ♦ Leverage signal preemption functionality
  ♦ RSE/Signal Controller integration

♦ Advancing from Connected Vehicles to Autonomous Vehicles
1. Approaching train activates crossing.
2. RSE transmits a “crossing active” signal via DSRC radio.
3. Drivers approaching the crossing receive an in-car warning if they do not heed infrastructure warning systems.
Ongoing Objectives

♦ Keep rail in the ITS conversation
♦ Research technology gaps
♦ Educate stakeholders
♦ Work with industry to reduce crossing fatalities/injuries