SPUR Meeting Notes: Advanced Technologies

August 2025

Meeting Summary

Advanced technologies offer railroads another way to enhance safety including through the ability to detect and respond to trespassing and suicide incidents more rapidly and accurately. These advanced technologies can enable real-time situational awareness, reduce human risk by remotely monitoring hazardous or inaccessible areas and help prioritize responses to critical incidents. Data generated from these technologies allows the identification of patterns and hotspots, informing targeted interventions and resource allocation. Advanced technologies provide railroads with proactive solutions to improve safety for both the public and railroad personnel, while enhancing operational decision-making and incident response.

Key Takeaways

- Rail Sentry is a technology designed to enhance railway crossing safety. It has been in development for four years and officially went live in 2024.
    - Rail Sentry immediately identifies simple, high-risk events (e.g., vehicles stationary on the track or crossing) and flags more ambiguous behaviors (trespass, loitering) for further review. It has been effective at early detection—helping detect trespassers and alert operations.
    - Currently being deployed by Caltrain, Metrolink and several railroads in Texas, New Mexico and other states as part of trespass and suicide prevention and mitigation.
    - Rail Sentry helps reduce operator information overload by prioritizing alerts, identifying busy crossings, and highlighting actionable patterns for dispatchers to make split-second decisions.
- Some technologies may include track-intrusion detection (LIDAR/mobile CCTV) integrated into Positive Train Control (PTC) to alert approaching trains; an earthquake-detection technology with PTC integration was deployed in 2024 and was able to successfully stop a train during an earthquake.
- Drones as first responders is a concept which allows call centers to dispatch drones to rail incidents, which can arrive quickly (target ~90s) to provide immediate situational awareness before ground responders.
    - Drones can be used to address long and variable law-enforcement response times, targeting deployments to high-suicide or high-trespass locations, or use drone intel to raise response priority or send officers more effectively.
    - The benefits of using drones as first responders include: improved situational awareness and evidence capture, extremely fast on-scene arrival and a real-time HD video feed to command centers, and reduced risk to personnel by accessing hazardous or hard-to-reach locations remotely.
    - Drones can be used to live-stream to local crime/operations centers or partners and can enable better prioritization and coordination with responding units.

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