RESEARCH AGENDA

Across transportation domains, it is becoming increasingly important to address human factors in the design of the human interface. It is critical to design controls and displays that minimize risk of "design induced error" and that keep the operator informed of vehicle operating status, location, and proximity to other traffic and obstacles. In short, situational awareness and the ability to interact with the vehicle as it transits are essential to safe, economical, and speedy transit. The CTIL capabilities will enable FRA to assess the locomotive crew operating display interface. FRA's broad range of research areas of interest include:

- Emerging Positive Train Control (PTC) technologies
- Locomotive crew display and control design for safety and efficiency
- Improved countermeasures for crew fatigue and enhanced vigilance
- Crew workstation ergonomic design

CTIL

The Cab Technology Integration Laboratory (CTIL) is a full-sized locomotive simulator configured with tools for the analysis of crew performance given new cab technologies and configurations.

MISSION

The mission of the CTIL is to be a resource for collaboration among government, the railroad industry, and academia to conduct human performance research using human-in-the-loop simulation.

The CTIL aims to accomplish this mission through performing research in a simulated rail cab environment that examines the safety risks of new technologies, the boundaries of operator capability, and the risks to human performance.

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Cab Technology Integration Laboratory

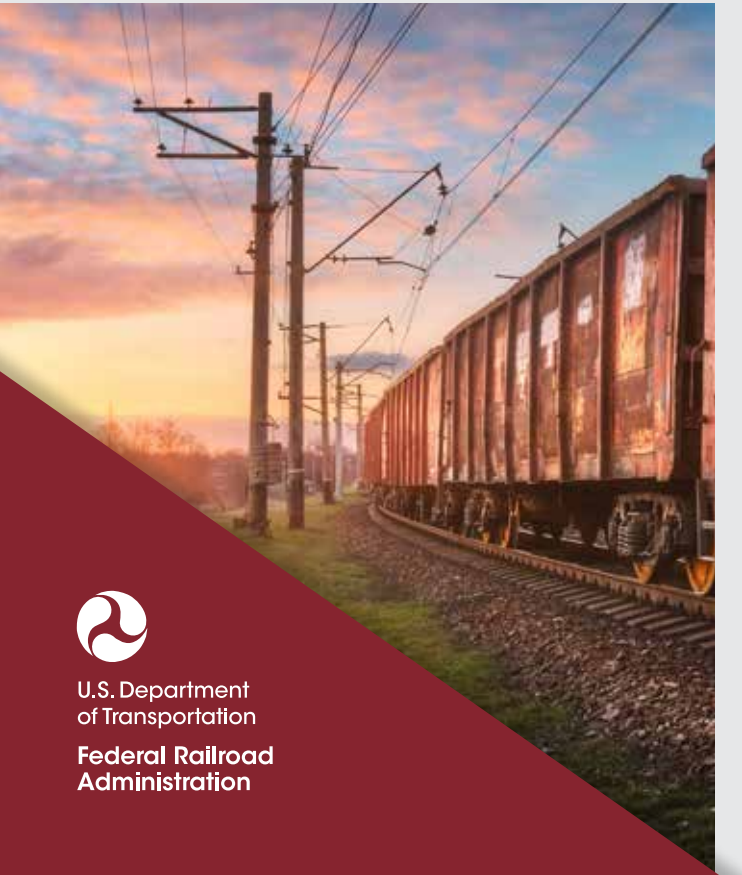
CTIL

RESEARCH MAKING RAIL SAFER

Federal Railroad Administration's Research Locomotive Simulator

CTIL

CTIL interior panoramic view showing conductor and engineer stations



U.S. Department of Transportation

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KEY CAPABILITIES

- Cab workstation reconfiguration
- Anthropometric modeling
- Crew video and audio data capture
- Head and eye tracking
- Post-run performance analysis
- Physical and cognitive crew performance analysis
- Third-party control and display integration
- Remote dial-in
- Statistical analysis tool
- Locomotive performance data capture
- Customized track scenario models
- Accident reconstruction

Researcher's Workstation

Engineer's View