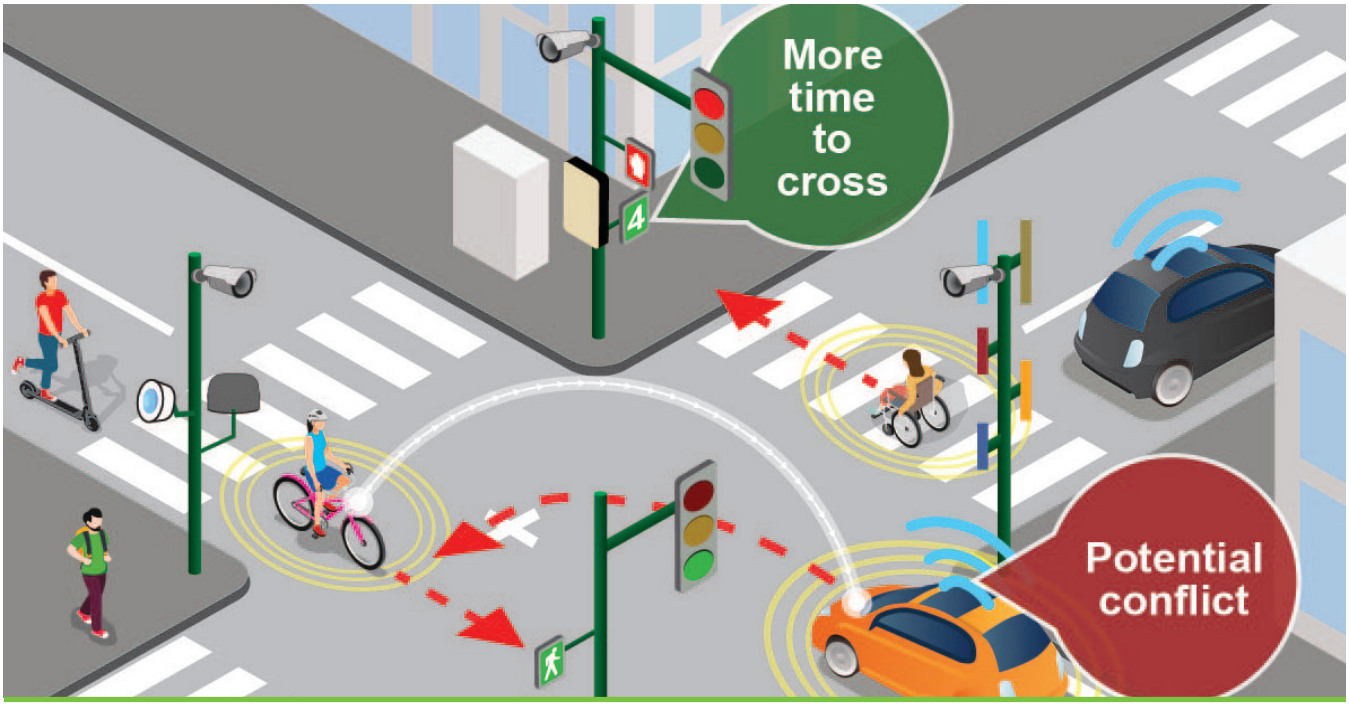
EXPLORATORY ADVANCED RESEARCH

Exploratory Advanced Research (EAR) Program

Highlights

Thank you for visiting the Federal Highway Administration's EAR Program booth at the 2025 Transportation Research Board Annual Meeting.

The EAR Program addresses the need for longer term, higher risk research that has the potential for transformative improvements to transportation systems. Here are references for the recent and current EAR Program projects that were highlighted at the booth to illustrate the kinds of improvements this program cultivates.



Simulated example of SAIFE system in use. ***Using Artificial Intelligence to Improve Safety for Vulnerable Road Users.***

DIGITAL TWIN-ENABLED EXTENDED ACTIVE SAFETY ANALYSIS FOR MIXED TRAFFIC

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-054.pdf

EVALUATING AND IMPLEMENTING CC-I-L CEMENT FOR THE NEXT GENERATION OF CONCRETE BRIDGE CONSTRUCTION

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-057.pdf

EMPLOYING ARTIFICIAL INTELLIGENCE (AI) TO ENHANCE INFRASTRUCTURE INSPECTIONS

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-055.pdf

INNOVATIVE METHODS TO DETECT AND MEASURE FLOODED ROADWAYS

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-006.pdf

U.S. Department of Transportation
Federal Highway Administration

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MEASURING DECARBONIZATION IN THE PAVEMENT LIFECYCLE

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-056.pdf

USING ARTIFICIAL INTELLIGENCE TO EVALUATE PAVEMENT CONDITION AND SAFETY

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-058.pdf

PREDICTIVE REAL-TIME TRAFFIC MANAGEMENT IN LARGE-SCALE NETWORKS USING MODEL-BASED ARTIFICIAL INTELLIGENCE

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-23-107.pdf

IMPROVING THE COMPATIBILITY OF WASTE

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-21-084.pdf

USING ARTIFICIAL INTELLIGENCE TO IMPROVE SAFETY FOR VULNERABLE ROAD USERS

https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-24-080.pdf

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FHWA-HRT-25-040
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To learn more about these projects, follow this quick response code or URL to the website.

https://highways.dot.gov/research/research-programs/exploratory-advanced-research/about-exploratory-advanced-research-program

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