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Nomadic devices provide information to the driver

Research Goals

- To provide drivers with safe advisories, alerts, and warnings through advanced vehicle technologies–both built into the original equipment and brought into the vehicle (via portable or nomadic technologies)–that increase highway safety and offer drivers and passengers the promise of enhanced safety, comfort, security, and convenience.

- To control and mitigate the ever-present and growing threat to safety represented by driver distraction, which is a factor in many crashes.

- To evaluate driver distractions and other human factors related to ITS, leveraging the convergent findings of epidemiological and experimental studies, as well as analyses of crash data.

Research Outcomes

The outcomes are intended to eliminate distractions related to devices as contributing factors to crashes.

Human Factors Research

INTRODUCTION

Human Factors Research is a key program of the Intelligent Transportation Systems Joint Program Office (ITS-JPO) within the U.S. Department of Transportation's (U.S. DOT) Research and Innovative Technology Administration (RITA). Through the multi-modal ITS program, the ITS JPO and the private sector have begun to harness wireless technology and information sharing capabilities between vehicles and infrastructure to achieve transformative safety, mobility and environmental benefits to the multimodal transportation sector.

Driver distraction has gained importance in the traffic safety community. Currently, Ray LaHood, U.S. Secretary of Transportation has made it his mission to eliminate distraction from our roadways. More than a decade of research has shown that distraction can degrade driver performance. In 2009, the National Highway Traffic Safety Administration (NHTSA) reported that 5,870 people died in distraction related crashes. Because distraction carries with it an increased risk of crash, the ITS JPO wants to ensure appropriate distraction-reducing countermeasures and guidelines are available to implementers.

Proper interface design goes beyond distraction. To optimize effectiveness, the interface needs to deliver information to the driver in a way that is meaningful, appropriate and not distracting. The Human Factors Research program will focus on user-centered design to develop interface guidelines for ITS technologies. By taking into consideration the capabilities of the driver, the connected vehicle system, and the interfaces, the current program will determine how best to deliver information to the drivers. Human Factors Research will not only look at the requirements for passenger vehicles, but also transit and heavy truck operators. The program will also focus on prioritizing the various warnings that will be available through this system.

RESEARCH PLAN

The objective of the Human Factors Research program is to assess, counteract, and ultimately eliminate the possibility of driver distraction from safety warning technologies by developing effective interfaces. The program aims to investigate and implement technology-based solutions that could reduce vehicular sources of distraction and deter drivers from multitasking.

Using a cooperative approach, the program will foster collaborative work among the NHTSA, other DOT agencies, vehicle manufacturers, operators, equipment suppliers, and other stakeholders. This collaborative effort is intended to raise public awareness about the nature and scope of driver distraction and encourage vehicle and equipment manufacturers to design interfaces with minimal demands on driver workload.

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The ITS JPO Human Factors Research program includes the following tracks:

Track 1: Improve our understanding of crash risk due to driver distraction. This will be accomplished by evaluating the nature and scope of the distraction safety problem and the evolving technology devices and features offered to drivers by analyzing data from a variety of sources such as:

- Crash investigations

- Naturalistic studies, including the Transportation Research Board sponsored Strategic Highway Research Program (SHRP 2)

- Police Accident Reports (PARs)

The understanding attained by this track will help human factors research establish a baseline level of distraction and identify opportunities for countermeasures to eliminate or reduce driver distraction through improved interface design.This work is described in more detail in the NHTSA Distraction Program Plan.

Track 2: Develop and evaluate performance metrics for distraction mitigation. By monitoring new technology interfaces and developing best practices, objective test procedures can be developed to assess distraction and usability factors in production vehicles and portable nomadic technologies.

Track 3: Produce an integration strategy that allows nomadic systems to be functionally integrated with vehicle-based systems to optimize the driver-vehicle interface. Integration can reduce interface complexity and the occurrence of multitasking.

Track 4: Develop qualified exposure testing through field experiments that determine the long-term safety impacts of crash warning technologies and their effects on driver behavior.

Track 5: Conduct strategic stakeholder outreach to identify requirements, information needs, and usability issues, toward the goal of public acceptance.
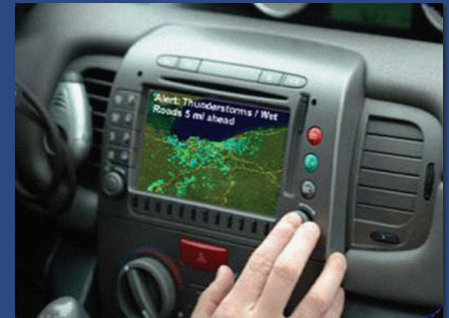
Human Factors Research supports improvement measures for on-board driver interfaces to provide information in a way that is meaningful and appropriate

Human Factors Research supports device innovation that integrates and delivers driver information and alerts with optimized efficiencies

To learn more about the Human Factors Research program, contact:

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