



**Testimony of**

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**Subcommittee on Highways and Transit**

**Hearing on**

***Improving the Effectiveness of the Federal Surface Transportation Safety Grant Programs***

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Chairman Petri, Ranking Member Holmes Norton, and members of the Subcommittee, thank you for inviting me to testify about the importance of Federal surface transportation safety grant programs and how we can improve their effectiveness.

I am honored to speak with you about key steps for creating a much safer and more efficient transportation system through new and emerging technologies. My perspective is research, development and deployment, and how to maximize the benefits of new technologies for the citizens and economy of the United States, with worldwide application.

I will be sharing my views on this important topic both as a recipient of federal safety grants through the University of Michigan Transportation Research Institute (UMTRI), and on behalf of the Intelligent Transportation Society of America (ITS America) which is the nation's largest association dedicated to advancing the research, development and deployment of technology solutions to our nation's surface transportation challenges.

First, I wish to thank the Subcommittee for all of the important reforms you passed as part of MAP-21. Along with the Intelligent Transportation Systems (ITS) and research communities, we look forward to working with this Committee to pass a reauthorization bill this year that not only brings long-term financial stability to the Highway Trust Fund, but that will also encourage the adoption and deployment of more innovative technologies and approaches for improving highway and vehicle safety and for providing greater efficiencies and mobility to America's transportation users.

As we continue to look for ways to improve the effectiveness of Federal programs and make every dollar count, it is critical that safety grants be part of the discussion. Through such Federal funding, we are able to ensure that improvements in vehicles, infrastructure and driver behavior come together in such a way that the whole is greater than the sum of the parts. Federal funding also allows powerful, but sometimes complex, safety technologies to be developed efficiently in the national interest. Such Federal investments also assist our global competitiveness.

Several megatrends currently affect the way that safety systems are developed, evaluated and deployed. The auto industry is increasing the pace of development and deployment of sensors and safety devices. Sensing now applies to imminent risks as well as root causes of crashes, such as driver health and traffic problems. The burgeoning consumer electronics industry increases scale and reduces costs for key enabling technologies. Advances in communications, providing ubiquitous connectivity, lead to early detection of risky driving situations and avoidance of crashes. These trends mean that a wider range of industry sectors need to be involved, and research needs to be carried out on a very large scale, under real world operating conditions.

What does this mean for the effectiveness of Federal safety grant programs? First, our programs need to be highly collaborative. Researchers need to work with companies of all stripes, from automotive, transit and commercial vehicles to telecommunications, tolling and information technology. At the same time, data collection needs to be extensive and independent, while analytics are open and transparent. Second, research and development efforts are increasingly intertwined with the forces driving deployment. Deployment follows from model deployment, where benefits are proven in a real setting. However, a successful model deployment does not guarantee that deployment will occur on a scale sufficient to save many lives. Because safety solutions extend beyond the confines of vehicles, to embrace a system for connecting them, it is no longer sufficient to rely entirely on auto safety mandates.

Historically, the auto industry has focused much of its safety effort on mitigating the impacts of a crash after it happens, and these efforts have been very successful at reducing traffic fatalities and injuries. Significant efforts have also been made to influence driver behavior, but the number of these preventable tragedies each year is still far too high, at approximately 33,000. The next giant leap in reducing the number of fatalities and injuries on our nation's roads is to prevent crashes before they happen.

One of the most innovative examples of how Federal grant funding is helping revolutionize safety is the connected vehicle safety research program managed by the U.S. Department of Transportation's (DOT) Intelligent Transportation Systems (ITS) Joint Program Office.

The U.S. DOT, working collaboratively with major automakers, university research centers, and other public and private sector stakeholders, has been working to finalize the development and testing of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications, known collectively as "connected vehicle" technology, to help prevent vehicles from crashing. This innovative technology solution relies on a dedicated area of spectrum in the 5.9 GHz band which was set aside by the Federal Communications Commission (FCC) to ensure high-speed, accurate, secure and reliable communications which are critical for vehicle safety. It is essential that the availability and performance of this spectrum is protected for safety purposes.

The National Highway Traffic Safety Administration (NHTSA) estimates that a fully deployed connected vehicle network could potentially address 80 percent of all non-impaired crash scenarios, an unprecedented figure representing thousands of lives saved each year. And we're not just talking about cars talking to cars, but also about cars talking to trucks, buses talking to bikes and motorcycles, and even vehicles detecting pedestrians via cell phone or other aftermarket devices to help avoid crashes.

At UMTRI, we have been conducting the largest naturalistic test of connected vehicle technology in the world in Ann Arbor, Michigan, referred to as the Safety Pilot Model Deployment. This federally-funded pilot is a large-scale test of connected vehicle safety systems, and the performance data from the Safety Pilot are being used by NHTSA as they work with vehicle manufacturers to determine the most effective and appropriate path toward full-scale deployment of this life-saving technology.

I am pleased to report to you that this model deployment has collected 27 billion basic safety messages transmitted between almost 3,000 vehicles over a period of 18 months' operation. This represents 3.5 million trips covering 22 million miles of travel.

This is a truly revolutionary partnership, and a great example of what can happen when the Federal government works with private sector innovators, the university research community, and state and local agencies who manage the infrastructure to accomplish big things. This could not have happened without Federal leadership shaping how such a system could operate and establishing certain essential parts of its architecture.

But this is not just a model for how collaborative research can be effective. It's also an example of how Federal grant funding can be used to leverage state and local dollars and private sector investment. In Michigan, we have found that model deployment leads to deployment, and also leads to investment. Leveraging starts early in the process. Our model deployment used the City of Ann Arbor's fiber optic system to help transmit a huge volume of data. The Michigan Department of Transportation (MDOT) directed roadway operations for installing and connecting technology in the infrastructure.

The model deployment has had sufficient impact on Michigan institutions, companies and the community that plans were developed, and funding identified, to develop a full regional deployment of connected vehicles in Southeastern Michigan. The State of Michigan recognized connected and automated vehicles as a necessary center of excellence for the automotive future of the state. The state partnered with the University of Michigan to develop a new center devoted to deployment of connected and automated systems (Michigan Mobility Transformation Center (MTC)). That center, which will include industry partners, is also designing a unique off-roadway test facility for connected and automated vehicles. The MTC will consolidate the United States' lead in developing and testing automated vehicles. At the same time, private interests are evaluating the potential for a large test center in Southeastern Michigan where manufacturers from all over the world will come to evaluate their technologies for on-road use.

As we move from model deployment to a highly-leveraged real deployment of connected vehicles, and begin to realize very significant savings in fatal auto crashes, there is a continuing need for Federal funding. The Michigan plan calls for 20,000 company vehicles fitted with V2V. To bring the system together, we need to install 500 sets of roadside equipment (V2I), leveraging federal funding with MDOT deployment resources, and fill some gaps in MDOT's current data backhaul coverage. This infrastructure investment is an example of how the new reauthorization bill could provide vital support for the real-world deployment of intelligent technologies that are modernizing our nation's transportation system, ushering in the next generation of vehicle and highway safety, and helping restore our nation's competitive advantage and leadership role in transportation innovation. We view this as a prototype regional deployment that can and should be replicated in other parts of the United States.

These innovations will be showcased from September 7 – 11, 2014 at the 21<sup>st</sup> World Congress on Intelligent Transportation Systems which will be held in the birthplace and home of America's auto industry – Detroit, Michigan. For any Committee members, staff, or other transportation stakeholders who are interested in riding in connected or automated vehicles or checking out the latest innovations happening across the transportation world, this is a must-attend event. The ITS World Congress will feature hundreds of exhibits and technology demonstrations, tours of innovative transportation projects, and will bring 10,000 transportation and high-tech leaders together from the U.S. and around the globe to address critical transportation challenges. If you are interested in attending or would like more information, please don't hesitate to contact ITS America which is organizing the event.

An important function of Federal transportation grants is to encourage states to deploy ITS technology within the highway infrastructure. The deployment of ITS, as part of an infrastructure project, will often unlock a wide range of benefits, including but not limited to safety. For example, lane management technology including dynamic message signs can alleviate congestion problems while also helping to deal with accident black spots. Such deployments carry technical risks for cash-strapped local authorities and Federal programs can help reduce such risks and encourage wise deployment of ITS.

We are currently seeing the successful development of ITS technologies specifically for the benefit of vulnerable road users, including pedestrians, bicyclists and motorcyclists. This group currently makes up 30 percent of highway fatalities. With Federal assistance, the functionality and benefit of such ITS solutions need to be evaluated and deployment strategies developed. Such solutions should include expansion of connected vehicles and infrastructure to benefit all actors using highways and streets.

While I have concentrated on safety innovations in my remarks, the connected and automated technologies we are dealing with have a much broader potential impact. They will have an equally powerful impact on mobility, accessibility, energy efficiency, system performance, and the environment.



Given the cross-cutting benefits of ITS technology, an additional opportunity to improve the effectiveness of Federal safety grants is to strengthen the overall coordination and communication between Federal agencies so the full impacts of technological innovation can be exploited, whether they relate to safety, mobility, energy efficiency, or emissions.

Collaboration between agencies is also critical for providing certainty to researchers, industry leaders and investors who are working on collaborative projects like connected vehicle technologies which depend on dedicated spectrum in the 5.9 GHz band. Efforts to open up the 5.9 GHz band to Wi-Fi applications, at the same time the U.S. DOT, automakers and ITS communities are finalizing testing and working to commercialize this life-saving technology in this same band, are but one example of how better communication and collaboration between agencies could improve the effectiveness of Federal safety grant programs.

I thank you for the opportunity to testify, and look forward to answering your questions.

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