Remarks of Dr. Peter Sweatman

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Chairman Burgess, Ranking Member Schakowski, and Members of the Subcommittee: thank you for the opportunity to testify today about Vehicle-to-Vehicle Communications. These technologies – which I shall call V2X - will transform the safety of our nation's surface transportation system.

My name is Peter Sweatman, Director of the University of Michigan Transportation Research Institute, or UMTRI.

I am a past Board member of ITS America, and immediate past chair of its Leadership Circle.

I want to tell you about our experience with V2X.

With over 33,000 fatalities and 2.3 million injuries on our nation's roads each year, our need for V2X could not be more acute. The U.S. Department of Transportation has estimated that 80 % of fatalities and serious injuries in unimpaired single vehicle crashes will be addressed by V2X.

Current vehicle-based crash avoidance provides a self-contained safety benefit. V2X grows exponentially with the number of equipped vehicles and with equipment in the infrastructure. V2X also supports vehicle automation, which directly avoids the consequences of human error.

We conducted the USDOT's Safety Pilot Model Deployment in August 2012 through August 2014. Deployed 2843 vehicles and collected 115 billion messages from 35 million miles of driving.

The community embraced V2X, including about 2500 volunteers. They like the idea that vehicles can be retrofitted and that all road users benefit.

Our volunteers reported receiving warnings that prevented crashes. And of course analytics on the system testing data by USDOT confirmed DSRC's life-saving potential on a large scale.

Hence NHTSA's decision to proceed with rule-making and the Transportation Secretary's recent call for moving much faster in the deployment phase.

This V2X experience compelled us to do more.

Since August 2014, we have continued the Ann Arbor test environment and 47 companies have come to the table to expand the test environment and create larger, real-world deployments.

The USDOT is also contributing, but this ecosystem brings a new dimension in both funding and R&D. It includes automakers and Tier 1 suppliers, traffic control and sensor suppliers, aftermarket suppliers, insurance, telecommunications, big data, IT and mobility services. We have long-established global companies as

well as entrepreneurial players in V2X and automation. We are working with the Michigan Department of Transportation, the City of Ann Arbor and numerous counties to equip the infrastructure and build out the ecosystem.

The University of Michigan invested in the Michigan Mobility Transformation Center (MTC), to pursue connected and automated vehicle technologies.

MTC is moving forward to deploy a planned 20,000 vehicles across SE Michigan over the next 2 years, building on the I96-I696 smart corridor created by Michigan Department of Transportation during 2015. This will be the first sustainable production-ready US V2X deployment.

We are currently expanding the Ann Arbor deployment to 9000 vehicles, and working with the city to make it sustainable – that is the wish of the city.

We are extending our V2X applications to cyclists and pedestrians. Our current V2X volunteers, many of whom are

parents in the Ann Arbor public schools system, are excited about school children - and students of all ages - being connected into life-saving V2X via smartphones.

We have also found that motorcyclists love the idea that, with V2X, they are more likely to be detected by other vehicles.

<u>There is no substitute for Dedicated Short Range Communication (DSRC).</u>

Let me emphasize that our entire ecosystem of companies – large and small – is committed to V2X using 5.9 GHz Dedicated Short Range Communication. They are all building product strategies around V2X, and many include automation as well. And we are finding that DSRC makes automation that much more effective, and safer to implement.

DSRC is currently the ONLY technology that has low enough latency and sufficient reliability for crash prevention applications. DSRC is the ONLY technology that has been successfully tested for saving lives by both automakers and NHTSA.

I would note that our partners see value in other communication protocols (such as 4G LTE) for non-safety-critical V2X applications.

Spectrum must be protected for V2X safety performance.

V2X performance depends on the absolute reliability of messages, as well as certainty in spectrum availability, in the mode that has been fully tested. Spectrum sharing is a theoretical possibility that cannot compete with the full substance of V2X R&D and deployment.

Initial V2X deployments are being replicated.

Our SE Michigan V2X deployment is designed to be sustainable, and expandable to other locales around the country.

We will again invite our peers from around the country – cities, regions and states – to Detroit for the Global Symposium on Connected Vehicles and Infrastructure in September this year.

We are also convening a meeting of US academic institutions in Ann Arbor, in a matter of weeks, to exchange information on deployments.

V2X creates innovation beyond its primary mission of safety

V2X technology will unleash innovation, from advanced traffic management systems and on-demand services to real-time traffic, transit and parking information, vital mobility solutions for freight vehicles and countless new transportation applications. Many of these new businesses, will use V2X data streams.

GM CEO Mary Barra has announced cars equipped with V2X technology starting in the 2017 model year. And all of our automotive partners are actively developing DSRC product. Today's automobiles – computers on wheels – are integrating communications, sensors, and software - and DSRC is a vital part of the vehicle's IT.

This integration extends to our traffic control technology partners who are using DSRC to include maps and area-wide traffic

algorithms in traffic signal controllers, as well as safety-critical apps that avoid crashes at intersections.

The new industries of safety and mobility are coming together around V2X and automation. This is not about the auto industry OR the tech industry. We are seeing what happens when the auto industry, the traffic industry, the infrastructure managers and broader tech-based and service industries come together.

Federal actions are needed to level the playing field.

We must give free rein to V2X innovation in industry and government agencies. But there is an important federal role in supporting ever-larger deployments of V2X. Current gaps requiring federal support include:

- Cyber-security solutions that suit both the vehicle and the infrastructure
- Guidelines for V2X data curation, access and privacy
- Standards for aftermarket devices

- Financial support to initiate local deployments, with the expectation that local sources step up over time.

We at U-M appreciate the V2X deployment opportunities that have been created through federal programs and the incredibly positive industry response. We have truly entered the portal of 21st Century Mobility, and V2X brings the connected and automated future of transportation.

In a few weeks, the U-M will launch Mcity, a safe, off-roadway 21st Century test environment for connected and automated vehicles for our nation's cities.

I want to take this opportunity to invite you all to the Grand Opening. This will take place on Monday July 20, on the U-M campus in Ann Arbor.

Thank you again for this opportunity, and I look forward to your questions.