

Cars Talking to Cars: Different Languages, Same Messages

Cooperative Intelligent Transportation Systems (ITS), as they are called in the European Union (EU), and connected vehicles as they are called in the United States, have the potential to contribute to a safer, more-efficient, and environmentally friendly transportation system. Through a wireless communications network, a cooperative vehicle system enables cars, buses, trucks, and other vehicles to “talk” to each other and to roadside infrastructure, cell phones, and other devices. Recognizing the potential benefits of a system of communicating vehicles and infrastructure, the U.S. Department of Transportation Research and Innovative Technology Administration and the European Commission Directorate General for Communications, Networks, Content and Technology are working together to foster international cooperative ITS research and harmonization of the technology and standards necessary to achieve broad deployment of cooperative ITS.

Cooperation between the EU and U.S. industry, governments, and standards communities has resulted in a substantially harmonized core safety message set—the EU draft Cooperative Awareness Message (CAM) and the U.S. Basic Safety Message (BSM). These message sets include the data elements that need to flow to and from vehicles to support the applications that enable a cooperative vehicle network. While the EU and U.S. message sets are not identical, they are now sufficiently harmonized to enable the use of the same hardware and similar software to generate and receive messages on vehicles built in both regions. This harmonization greatly reduces both the cost and complexity for automobile manufacturers, which is great for consumers worldwide. This harmonization also affords faster development and testing of applications, thereby accelerating deployment.



U.S. Department of Transportation



The video/animation demonstrates the emergency electronic brake light application, which notifies drivers when a vehicle ahead brakes hard for some reason. In the video/animation, the EU vehicle brakes suddenly, sending a CAM message to the U.S. vehicle. The U.S. vehicle understands this message and generates a warning to the driver of the sudden-braking vehicle ahead. With this advance warning, the driver could then react accordingly. The demonstration also shows the same scenario with the BSM originating from the EU vehicle and transmitting to the U.S. vehicle. The hardware on the EU vehicle enables it to receive and understand the BSM as well. Common hardware on all of the vehicles enables them to communicate both message sets interchangeably.

Harmonization facilitates interoperability between products and systems, which can benefit transportation management agencies, vehicle manufacturers, equipment vendors, and ultimately, the public. EU and U.S. standards harmonization will enable the use of substantially common hardware and software for products in both regions, reducing both cost and complexity. While cars destined for markets in the U.S. and EU may not travel on the same roads, harmonized standards will allow for more similar hardware and software to enable more-widespread, faster, and less-expensive deployment of a cooperative transportation system on both continents. This is great for consumers.

