



POSITION STATEMENT

U.S. Economic Competitiveness and Intelligent Transportation Systems Technology

*Adopted by the IEEE-USA
Board of Directors, 12 February 2010*

IEEE-USA strongly endorses a national initiative to make greater use of Intelligent Transportation Systems (ITS) to reduce highway congestion, to improve safety in all modes of surface transportation, to reduce energy consumption, and to simultaneously enhance air quality. Our nation has fallen significantly behind many European and Asian countries in the application of ITS solutions to improve mobility and safety. The nation's outdated transportation systems negatively impact the international competitiveness of the U.S. economy and the quality of life of our citizens.

The U.S. and global transportation systems are inextricably linked to the nation's economic growth. Transportation is a key economic and productivity enabler, connecting people with work, school and community services, and connecting American enterprises with domestic and global markets. The federal government must take a leadership role and bring all the stakeholders together to modernize our transportation systems utilizing ITS solutions. Towards that end, IEEE-USA recommends the federal government:

- Continue to support federal research that fosters collaboration among universities, state agencies, private industry (including small business and technology innovators), insurance companies, insurance regulators, public safety officials, environmentalists, consumer groups, and others to pursue a national transportation research program. Research objectives include improving surface transportation productivity, safety and efficiency by using secure Intelligent Transportation Systems (ITS).
- Fully fund the U.S. Department of Transportation's IntelliDriveSM program (formerly known as Vehicle Infrastructure Integration (VII)). The purpose of IntelliDrive is to enable new services that provide significant safety, mobility and commercial benefits by achieving improved communications among vehicles and

the roadway infrastructure. Real-time communications would enable a range of crash avoidance and crash mitigation applications with the potential to reduce traffic deaths and injuries, while simultaneously enabling a host of additional applications with mobility and efficiency benefits, such as optimized traffic and incident management systems and improved traveler information systems.

- Ensure that adequate cyber security and privacy safeguards are included in any and all intelligent transportation systems.
- Incentivize and support broad deployment of secure intelligent transportation system tools and strategies that improve mobility, efficiency and safety on all modes of surface transportation.

This statement was developed by the IEEE-USA Committee on Transportation and Aerospace Policy and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public policy interests of the more than 210,000 engineers, scientists and allied professionals who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of the IEEE or its other organizational units.

BACKGROUND

Intelligent Transportation Systems (ITS) offer one of the biggest and best opportunities we have to utilize our highway infrastructure to its full potential. ITS can help us meet climate change and energy-independence goals - all while improving our mobility, safety and economy. Effectively operating the transportation system is a daily process vital to the economy and central to transportation and transit agency missions. ITS can support any of the transportation financing methodologies being considered to replace the current fuel tax over the next generation. In the United States, for example, traffic congestion leads to 4.2 billion hours in extra travel time and an extra 2.9 billion gallons of fuel burned, for a total annual cost of \$78 billion, according to a 2007 report from the Texas Transportation Institute. ITS R&D funding is miniscule compared to the total economic costs related to the crashes and congestion that drain the gross domestic product of more than \$300 billion per year, or three percent of the GDP.

The U.S. commitment to ITS has fallen behind other countries' commitments to ITS research, development and deployment. While the limited U.S. investments in ITS R&D have been concentrated on incremental, near-term developments (so-called "Day One" deployment opportunities), European and Asian governments have been investing heavily in longer-term research with larger potential for enhancing transportation system performance. Other countries have also been able to achieve wider-scale deployment of the current generation of ITS technologies because of their more centralized transportation decision making structures, stronger heritage of public-private sector cooperation, and consumers who are more willing to pay to be early adopters of new vehicle technologies.

Intelligent Transportation Systems (ITS) use technology to enable government agencies and private users to keep transportation systems performing as efficiently and safely as possible. Examples of these technologies include traffic signal optimization and retiming, transit signal priority, safety service patrols, driver warning and control assistance systems, electronic border crossing systems, commercial vehicle credentialing, and monitoring and detection systems.

The IntelliDrive program is a joint public/private program for enhancing safety and providing traffic management and traveler information. It will use advanced wireless communications, sensors, GPS navigation, and computer processing to provide the capability for vehicles to identify threats and hazards on the roadways and communicate this information to give drivers alerts and warnings, as well as comprehensive real-time traffic information.

Many safety-related applications are possible using the sensing and high-speed communication capabilities provided by IntelliDrive. Vehicle-to-vehicle applications could enable a vehicle that brakes suddenly to warn nearby vehicles, enabling safer braking for them. Warnings of hazardous conditions detected by a vehicle (e.g., slippery conditions identified by the engagement of traction control systems) could similarly be communicated to nearby vehicles.

Other IntelliDrive applications involve vehicle-to-infrastructure (V2I) and infrastructure-to-vehicle (I2V) communication. These include systems where Road Side Equipment broadcasts safety-related warnings to approaching vehicles. The infrastructure may collect environmental and situational data from other vehicles or from land-based sensors such as cameras or weather sensors. Examples of warnings include bridge out, slippery road surface, or hidden traffic approaching an intersection. V2I and I2V communications can also support collection of vehicle speed and congestion information and provision of traveler information services back to drivers.

ITS can be the infrastructure to support any of the transportation financing methodologies being considered to replace the current fuel tax over the next generation. Although the situations vary significantly from country to country, ITS has been shown to have a dramatic impact on traffic in other cities worldwide.

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