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WORLD'S FIRST MOTOR VEHICLE 'BLACK BOX' STANDARD CREATED AT IEEE

Standardized Event Data Recorders for Crashes Promise to Improve Highway Safety

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PISCATAWAY, N.J., USA, 23 Sept. 2004 Driven by a lack of the uniform scientific crash data needed to make vehicle and highway transportation safer and reduce fatalities, the IEEE has created IEEE 1616™, the first universal standard for motor vehicle event data recorders (MVEDR) much like those that monitor crashes on aircraft and trains.

National Safety Council statistics show that motor vehicle accidents are the leading cause of death in those between one and 33 years in the U.S. They are the nation's largest public health problem, causing a death every 12 minutes and a disabling injury every 14 seconds. Worldwide, someone dies in a motor vehicle crash each minute. Road crash fatalities have claimed about 30 million lives globally since 1896.

The new standard, IEEE 1616 "Motor Vehicle Event Data Recorders," specifies minimal performance characteristics for onboard tamper- and crash-proof memory devices for all types and classes of highway and roadway vehicles. This international protocol will help manufacturers develop what is commonly called "black boxes" for autos, trucks, buses, ambulances, fire trucks and other vehicles. It includes a data dictionary of 86 data elements and covers device survivability.

"The more accurate the data we gather on highway crashes, the better chance we have to reduce their devastating effects," says Jim Hall, co-chair of the IEEE P1616 Working Group and former head of the National Transportation Safety Board (NTSB).

"That's why it's so important to have recorders that objectively track what goes on in vehicles before and during a crash as a complement to the subjective input we get from victims, eye witnesses and police reports. The NTSB considers this so important that it places 'automatic crash sensing and recording devices' high on its list of 'Most Wanted' transportation safety improvements."

IEEE 1616 builds on more than a decade of MVEDR research and

development. Major studies in this field include those by the Department of Transportation (USDOT), the National Highway Transportation Safety Administration (NHTSA), the Federal Motor Carrier Safety Administration (FMCA), the Federal Highway Administration, the Transportation Research Board (TRB), the National Academy of Sciences (NAS), and many of the world's automotive, truck and bus manufacturers.

"This body of research has taught us to appreciate the significance of MVEDRs," says Tom Kowalick, co-chair of the IEEE P1616 Working Group and president of Click, Inc. in Southern Pines, N.C. "In providing essential crash information, these devices can help accelerate the deployment of emerging safety technologies, such as collision-avoidance systems, driver-assisted technologies, onboard vehicle diagnostic systems and advanced medical response capabilities."

Highway vehicles are the only major mode of transportation in the U.S., which includes air, rail, marine and pipeline transport, without an adequate event data recorder standard. IEEE 1616 rectifies this.
"The working group that formed the standard met 13 times in the past two years, drawing experts from industry and government from across the U.S.," says Kowalick. "Given the dramatic growth of electronic components in motor vehicles, we integrated advanced communication and information technology in the standard. The technical nature of this material made the IEEE a natural choice for taking the lead in forming the standard."

IEEE 1616 has many potential benefits in many sectors, including:

- Automotive industry: Provide design data based on a large number of crashes of differing severities. Also, provide early evaluation of system performance and vehicle design and allow for the global harmonization of safety standards.
- Insurance industry: Help identify fraudulent claims, which exceed $20 billion annually. Also, improve risk management, expedite claims, decrease administrative costs and give insurers needed data to subrogate claims and recover expenses.
- Government: Help promulgate and evaluate standards, identify problem injuries and mechanisms, stipulate injury criteria and investigate defects. Give state and local officials crash information on problem intersections and road lengths.
- Research: Help those in human-factors research better understand such areas as the man-machine interface, crash and injury causation, and the effects of aging, medical conditions and fatigue.
- Medical providers: Help with the on-scene triage of crash victims, improve diagnostic and therapeutic decisions, allow automatic notification of emergency providers, and aid in the organization of trauma and EMS resources.
- The public: Help create better policies, vehicle design, emergency response and roadway design. Also act to improve driving habits, lower insurance costs, decrease fraud and reduce the number of crashes.

The IEEE 1616 Working Group is developing another MVEDR standard to ensure that brake and transmission data is recorded uniformly in motor vehicle event data recorders. This standard, IEEE P1616a, "Standard for Motor Vehicle Event Data Recorders (MVEDRs) - Amendment 1: Brake and Electronic Control Unit (ECU) Electronic Fault Code Data Elements," will require units to store a history of time-stamped fault codes synchronized with other on-board MVEDR devices.

IEEE P1616 and IEEE P1616a are sponsored by the IEEE Vehicular Technology Society. Information on this Working Group and its activities is available online at: http://grouper.ieee.org/groups/1616/home.htm.

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