

Main Focus

munication Union (ITU) begins to work on category four, the ISO/TC 122/104 JWG addresses the RFID application standards where technology meets user requirements. In this way, the standards developed are cooperative and complementary, rather than competing and conflicting.

Overcoming challenges

There are challenges when user requirements introduce variables that may influence the decisions of an applications committee such as the JWG. Certain packaging materials and package contents have the effect of erratically reflecting, absorbing, or otherwise detuning radio waves. In such cases, what might have been a single application at the beginning of a project becomes more complex and may require a “default” technology, while permitting specific alternatives with trading partner agreements.

Additionally, the interaction between products, containers, and conveyances will introduce new opportunities for developing conveyance standards, such as ISO/TC 204, *Intelligent transport systems*, and ISO/TC 8, *Ships and marine technology*.

So the popular western advertisement of a helpdesk knowing that a truck is on the wrong road because the RFID tags on the boxes told them so, may be a bit misleading. It will be a while before boxes will talk to pallets which will talk to containers that talk to trailer chassis that talk to tractors that enable satellite communications to prevent the cargo from going down the wrong road.

Today, and in the foreseeable future, the various media of automatic identification and data capture techniques will work together, using common data standards and principles of interoperability to provide a synergistic means of tracking items throughout the supply chain from creation, to consumption, to recyclability, to re-use. ■



The world's most human-like test dummy to improve vehicle safety

by the WorldSID Task Group¹⁾

In the field of automotive safety testing, the efforts of the ISO World Side Impact Dummy (WorldSID) Task Group are nearly complete. After eight years of intensive worldwide design and testing efforts, and an expenditure of over USD 14 million, the Task Group

– supported by individuals from 45 organizations in Europe, Asia-Pacific, and the Americas – has completed its goal of developing a technologically-advanced and human-like side impact dummy, which is now ready to contribute to improved worldwide vehicle safety. The dummy design is complete, all design details have been published in an ISO standard, dummy production is on-going, and the development of an expanded “family” of different dummy sizes has begun.

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Superior to other dummies

It could be said that cars are designed to protect crash dummies and not humans, because many of the design decisions related to safety are based on tests with crash dummies. To establish a link between the crash dummy and the human occupant it simulates, a primary design requirement for a crash test dummy is the ability to predict the probability of human injuries in vehicle impacts.

Human injuries however, are complex events dependent upon a variety of parameters. Head injuries can be caused by acceleration, while chest injuries tend to depend upon rib deflections. Leg bone fractures, on the other hand, are related to forces and moments. In order to provide engineers with accurate injury predictive data, a dummy must be biofidelic; i.e. it must duplicate the mass, stiffness, and deflection characteristics of the human body. In this respect, the WorldSID has proven itself to be the world's most human-like test dummy.



The WorldSID overall biofidelity performance rating is 7.6 (on a 10 point maximum scale) when evaluated according to ISO/TR 9790, *Road vehicles – Anthropomorphic side impact dummy – Lateral impact response requirements to assess the biofidelity of the dummy*. In comparison, other currently used side impact dummies,

USDOT-SID, EuroSID-1, ES-2re, and ES-2, have ratings of 2.3, 4.4, 4.3, and 4.6 respectively.

In addition to its superior overall biofidelity rating, the WorldSID has “fair” to “good” ISO biofidelity classifications in each of the six evaluated body regions including the head, neck, shoulder, thorax, abdomen, and pelvis. Such localized biofidelity is equally as important as the overall rating. For example, a dummy such as the USDOT-SID, – which is not able to predict abdomen injuries, or the ES-2, which has poor abdominal biofidelity, doesn't provide the engineer with the information needed to properly locate arm rests. Recent test results showed that in identical tests, the WorldSID abdomen, with good biofidelity and deflection measurement capabilities, was able to identify injury potential not identified by the ES-2 and ES-2re dummies.



Both hardware and documentation now available

No matter how advanced and needed a tool is, it cannot be used in worldwide regulatory testing until the physical dummy and all aspects of the design documentation are available to the international automotive safety community. The WorldSID meets both of these requirements. The WorldSID has been in

production since March 2004. Dummies may currently be ordered from either of two independent dummy manufacturers. The dummy is available with or without a variety of sensors and internal data recorders depending upon the needs of the individual user.

“The WorldSID has proven itself to be the world's most human-like test dummy.”

In addition, with the December 2005 publication of ISO 15830, all aspects of the WorldSID design became available to all interested parties. ISO 15830:2005, which has four parts under the general title, *Design and performance specifications for a 50th percentile male side impact dummy (WorldSID)*, consists of nearly 500 pages of design, use, and calibration specifications, plus 400 fabrication drawings and CAD files, which include all of the design details, material specifications, and performance standards required for the fabrication of the WorldSID.

The “WorldSID family”

It has long been recognized that vehicles must be designed to protect a variety of different-sized passengers, including large males, mid-sized males, small females, and children of various ages. Following completion of the initial WorldSID design which is representative of a 50th percentile male vehicle occupant, efforts shifted to expand the “family”.

Under the direction of a European development project, a 5th percentile female WorldSID is being developed. Following the general design concepts and biofidelity of the mid-sized male, the initial 5th percentile female dummy design is complete and a prototype dummy has been fabricated. Initial testing of the

5th percentile female is currently underway. As was done with the mid-sized male design, the small female prototype will be subjected to a series of rigorous biofidelity and vehicle tests at a variety of test labs, with the test results and suggestions from test engineers forming the basis for design improvements which will be implemented prior to proceeding with full production.

“The future for the regulatory use of the WorldSID and the resulting improvements in vehicle safety looks bright.”

Future prospects

The next significant step for the WorldSID would be the inclusion of the WorldSID in a national regulatory test procedure. Towards that end, the Task Group is working with test labs around the world to finalize positioning instructions which will include step-by-step instructions on how to position the WorldSID in a vehicle prior to testing. In addition, the US auto industry has petitioned the United States National Highway Traffic Safety Administration (NHTSA), which is currently performing evaluation tests of the WorldSID, to federalize the WorldSID as a first step towards its use in US regulatory testing.

With the completion of the mid-sized male WorldSID, and the beginning of an expanded WorldSID family, the future for its regulatory use and the resulting improvements in vehicle safety looks bright – for the entire family. ■

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Biometric standards

Rising to the challenge of technology innovation

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Biometrics

For decades, biometric technologies were primarily used in law enforcement applications. Currently, they are required in many public and private sector applications worldwide to authenticate a person's identity, secure national borders and restrict access to secure sites including buildings and computer networks. Biometric technologies are found in identification cards and loyalty programmes, associated with the management of welfare programmes.

Diverse environments such as amusement parks, banks, mobile devices, passport programmes and driver's licences, colleges and school lunch programmes are already using biometric technologies for these personal authentication and identification applications.

International biometric standards support the mass market adoption of biometric technologies by helping customers achieve higher levels of security and interoperability in personal authentication and identification applications using biometric-based open systems solutions. Large worldwide organizations such as the International Civil Aviation Organization (ICAO) and the International Labour Office (ILO) of the United Nations (for the Seafarers Identification Credential program) have already adopted some of the standards developed by ISO/IEC Joint Technical Committee JTC 1, *Information technology*, subcommittee SC 37, *Biometrics*. Customer adoption of biometric standards was previously reported in the September 2005 issue of *ISO Focus* (Volume 2, No. 9), *Biometrics: global challenges and customer needs*.