

# Main Focus



On the road  
to safety

# Comment

## ISO paves the road to traffic safety management systems

**A** “human catastrophe” is the description often made of the global traffic safety situation, with more than one million fatalities each year.

The World Health Organization (WHO) projects that by 2030, the fifth most common reason for loss of health will be an injury generated within the road transport system. This forecast is not only catastrophic, but also tragic since most of these deaths can be avoided or, at the very least, dramatically decreased. Unfortunately, there is not enough being done to apply existing knowledge and manage the actions taken. What's more, too much is either blamed on the individual, or on the ineffective measures used. This inaction or lack of knowledge can and must be changed.

While in the past traffic safety has been considered a matter between a country and its citizens, we now understand that there is another level of engagement in all societies. Today, the transport industry, together with the automotive industry and a number of others, are collaborating within their organizations or between their organizations and their stakeholders. They are cooperating on transferring knowledge, and bringing together evidence-based strategies and countermeasures that will improve their market situation, increase safety at work, reduce costs, etc.

ISO's endeavour to develop a management system for all those stakeholders that use the road transport system, or that have a major impact on the safety of road transport systems, is a landmark initiative. By bringing together all the common knowledge that has been developed over the years, ISO's management system for road traffic safety is the answer to reducing injuries and deaths on our roads.

The future ISO 39001 will also help to improve the migration process of traffic safety technology into our vehicles. New vehicles across the world, for example, will be equipped with advanced safety systems to support the user to take the right action, and if needed, to control the vehicle in critical situations. This migration process, which is the strongest trend in traffic safety, will be market driven and will spread quickly around the world. This is expected to significantly reduce the number of crashes and injuries.

**“We can look forward to a major breakthrough of traffic safety across the world.”**

The importance of the new management standard cannot be overstated. It will have a modern view on what we should be doing, that is, to eliminate health losses on the road. What's more, it will serve as a tool to avoid ineffective solutions and to concentrate on the most important issues to improve safety. It's a milestone in the history of traffic safety and will enable thousands and potentially millions of organizations to secure their activities in the road transport system.

Some 30 countries worldwide are involved in the development of the standard, and a number of liaison organizations including WHO, the World Bank, the United Nations Economic Commission for Europe (UN/ECE), the Organisation for Economic Co-operation and Development (OECD)/International Transport Forum (ITF) and the Global Road Safety (GRSF).

Some of these organizations share their aspirations in this edi-

tion of *ISO Focus* for the future ISO 39001, including why they are participating in its development. If we can achieve the same success with ISO 39001 as we have with, for example ISO 14001, we can look forward to a major breakthrough of traffic safety across the world.

While actions taken on the country level will have a major impact on the development of traffic safety, swathes of organizations will play a growing role to diminish a major public health problem across the world. Once again, ISO will be the meeting point for such a process.

I encourage you all to come on-board – your participation will ensure that all interests are well represented.



*Claes Tingvall*

Chair of ISO/PC 241, *Road traffic safety management system*

# Guest View

# Mark L. Rosenberg

**D**r. Mark Rosenberg is Director of the Global Road Safety Forum, a programme of the Task Force for Global Health. He also serves as President and CEO of the Task Force, a non-profit public health organization working to build coalitions to promote global health and human development. Prior to leading the Task Force, Dr. Rosenberg served 20 years with the Centers for Disease Control and Prevention (CDC), including early work in smallpox eradication, enteric diseases, and HIV/AIDS. He was instrumental in establishing CDC's National Center for Injury Prevention and Control (NCIPC) and became the first permanent director in 1994, serving as Director and Assistant Surgeon General until 1999.

Dr. Rosenberg has done research and consulted widely – with the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the World Bank – on effective collaboration in global health, and is the lead author of Real Collaboration: What Global Health Needs to Succeed (2009). Dr. Rosenberg is a member of the Institute of Medicine, where he served seven years on the Board on Global Health. He was also co-editor-in-chief of the International Journal of Injury Control and Safety Promotion.

Dr. Rosenberg was educated at Harvard University, where he received his undergraduate degree as well as degrees in public policy and medicine. He completed a residency in internal medicine and a fellowship in infectious diseases at Massachusetts General Hospital, a residency in psychiatry at the Boston Beth Israel Hospital, and a residency in preventive medicine at the CDC.



**“Road traffic deaths are both predictable and preventable. For this reason, we should no longer call them accidents.”**

**ISO Focus:** What are the objectives of the Global Road Safety Forum?

**Dr. Rosenberg:** The Global Road Safety Forum (GRSF) is a programme of the Task Force for Global Health, a non-government organization located in Atlanta, Georgia, USA. With the ultimate goal of saving lives and turning around an epidemic that threatens to kill 75 million people by 2050, the GRSF has worked in the role of advocate, facilitator, and convenor of global and regional partnerships and forums on road safety. GRSF helped to bring road safety to the attention of

the United Nations (UN) and helped to organize two sessions of the UN General Assembly focusing on this issue.

In 2008, the UN General Assembly passed a historic resolution calling for the first ever global ministerial conference on road safety in Moscow, Russia, in November 2009. GRSF also worked to help Latin American and Caribbean countries to collaborate to stop this epidemic, and has brought together stakeholders in the region for three Stakeholders Forums on Road Safety.

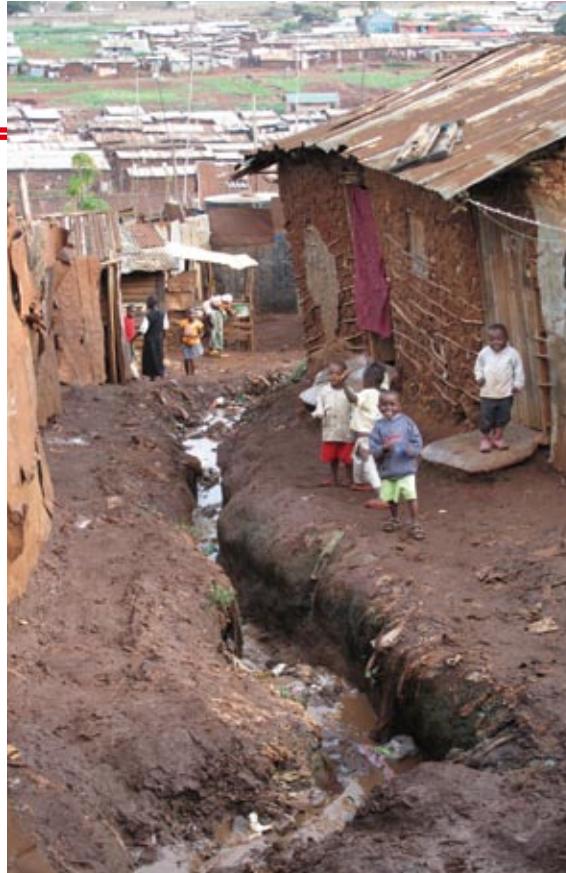
GRSF also works to build capacity for road safety at the country level, and is working to improve the safety of children on the roads of Uruguay, and explore ways to help build the technical and managerial capacity of developing country governments' lead agency for road safety.

From its inception, the GRSF aims to generate widespread demand for road safety, build political will, and mobilize the resources needed to respond to the global epidemic of road traffic injuries and deaths. It does this through building coalitions, working closely with the UN General Assembly, WHO, UNICEF, UN Development Programme, the World Bank, foundations, non-government agencies, and the private sector. In 2008, the GRSF decided to focus more on regional- and national-level coalitions and let the UN Road Safety Collaboration (UNRSC) take the lead in organizing road safety forums at the global level.

The UNRSC has undertaken several initiatives, including developing a series of manuals on good practice; creating a web-based database on road safety legislation; completing and updating a series of resolutions on road traffic signs and signals adapted in the European region; following-up on regional stakeholder meetings; and establishing of an annual World Day of Remembrance for Road Traffic Victims.

**ISO Focus:** Over 90% of the deaths in road accidents occur in low-income and middle-income countries, which are also hardest hit by the financial pressure resulting from road traffic crashes. To what extent does enacting and enforcing appropriate legislation contribute to decreasing the considerable economic and social costs caused by road traffic crashes? What is your opinion on this, in terms of both developing and developed countries? Can you please comment on the benefits of International Standards?

**Dr. Rosenberg:** Our biggest threat in road safety is not from people who speed, not from people who drive drunk, and not from pedestrians who are not careful where they are going. Our biggest threat is from fatalism, the sense that nothing can be done to prevent road traffic deaths and injuries, the sense that these are just a part of life that



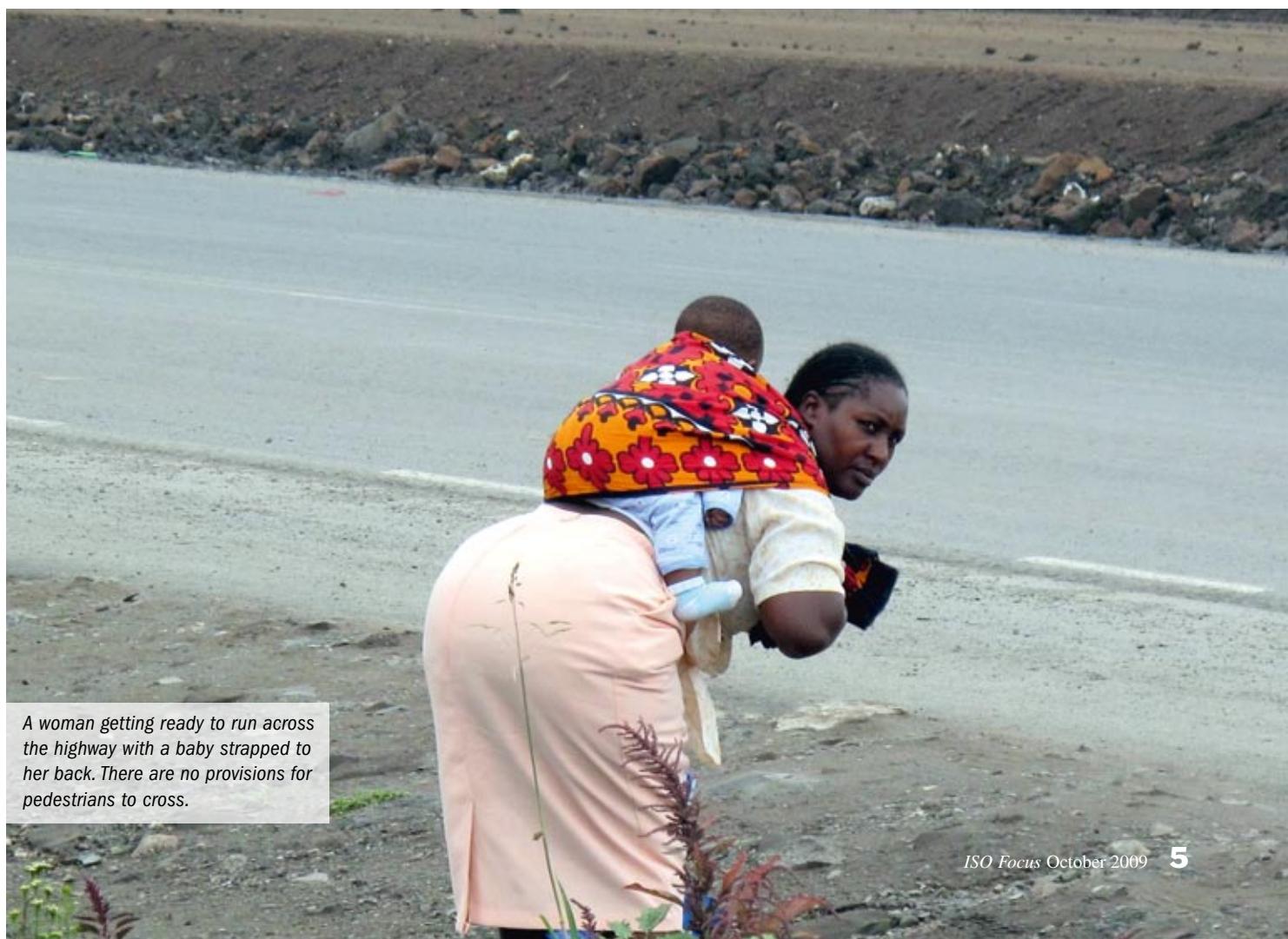
*When residents of Nairobi's huge slum, Kibera, leave the slum for work in the city they must cross multiple lane highways with no provisions for safe pedestrian crossing.*

will inevitably increase as a country becomes more and more motorized. In fact, we know that this is not true. For this reason, we try never to use the word "accident" because accident implies that a collision or injury was completely unpredictable, and if it is not predictable then it is not preventable so why even try to prevent these injuries and deaths?

### **"90% of the fatalities are in poor and middle income nations."**

We believe that road traffic deaths are both predictable and preventable. For this reason, we should no longer call them accidents. To emphasize that point, we developed a fine system for getting rid of the word accident: whenever someone uses it, we fine them a dollar. It used to be just 25 cents but the cost has gone up.

But this fine system alone won't bring about the changes that we need. It



*A woman getting ready to run across the highway with a baby strapped to her back. There are no provisions for pedestrians to cross.*

## Guest View

has been demonstrated many times over that the right policies and legislation, if rigorously enacted and enforced over a sustained period, can prevent road traffic injuries. Enforcement of speed limits and rules against drinking and driving, enforcement of helmet and seat belt laws, and policies for safe roadway construction all have helped to reduce the social and economic costs of road traffic crashes and injuries. This has been demonstrated in both developed and developing countries.



First UN Stakeholders Global Road Safety Forum at the UN, New York City, April 2004.

One of the most dramatic and impressive demonstrations of this has been the impact of Sweden's Vision Zero. It has demonstrated that a concerted effort that addresses the whole road safety system can both predict and prevent road traffic crashes.

About 35 years ago, there were 137 children killed on the roads in Sweden; four years ago there were 11; three years ago there was one. The important question for us is how do we describe the types of policies and standards, the kind of system management that brought this about. If we could translate these into a set of International Standards that could be used by developing and developed countries alike, they could avoid having to reinvent the wheel and save many lives.

**ISO Focus:** By 2015, road crashes will be the leading cause of death for children aged 5-14 in the developing world. What are some of today's major obstacles towards road safety becoming a mainstream development issue? What role could ISO standards play in overcoming some of these obstacles?

**Dr. Rosenberg:** There are a number of reasons why road safety does not get onto the agenda of most development agencies.

First, it primarily affects developing countries – 90% of the fatalities are in poor and middle income nations. What happens in these places happens out of the sight of the developed countries. In addition, the developed countries are actually doing better and better in terms of reducing road traffic injuries and deaths, and when this happens the people in these countries tend to forget about this problem.

Second, road traffic injuries happen one or two at a time, thus not drawing the kind of attention that would be given to the crash of a jumbo jet with 300 people on board – even in a country like India where there may be as many as 700 deaths per day – equivalent to two jumbo jets.

Third, we have inadequate metric systems to accurately quantify the problem; estimates in many countries are as much as ten times too low. The lack of reliable metrics also hampers our ability to demonstrate the effectiveness of our interventions.

Fourth, in many developing countries the majority of the victims are frequently vulnerable road users, very often those too poor to have cars, and bilateral aid agencies and governments currently do not take the needs of the urban poor into account in their infrastructure development strategies; instead they are focused on improving motorized transport and often ignore the impact of new roads on the vulnerable road users. Their approach to building roads assumes the majority of road users are using motorized transport.

In Kenya, where we have been looking at this problem in more detail, the majority of road traffic victims are pedestrians and users of non-motorized transport, the urban poor looking for and

going to and from their work. The lack of attention paid to their needs not only results in needless deaths and injuries but also in a vicious circle of poverty where the costs are borne by families of the victims who are most frequently the family's wage earner.

Fifth, we are fatalistic and have become anesthetized, thinking that there is nothing that can be done, that road traffic incidents are just "accidents," just a part of development – the price of mobility we all must bear.

**"We must take all road users into account, pedestrians, as well as drivers, poor as well as rich."**

Sixth, the issue of safety falls through the cracks and no one ministry takes ownership of road safety. Most people assume that road safety "belongs" to the ministry of transport, but the priority for the ministry of transport is usually road construction and their goal is to move more goods and vehicles farther and faster. They are usually busy with this and don't have time for safety. When a transport ministry does pay attention to safety it is usually air safety, or railroad safety, or maritime safety – areas where governments often perceive a collective governmental responsibility; not road safety where the responsibility for safety is usually put onto individual drivers and road users. Sometimes when a ministry of transport does have responsibility for road safety, it is limited to developing policies, not enforcing them.

Ministries of roads usually focus on building more roads or repairing damaged roads, not building safe roads or upgrading old roads to make them safer. Police pay more attention to catching criminals and preventing violence than to catching traffic violators. And ministries of health these days have their hands full taking care of the infectious diseases – including HIV/AIDS, tuberculosis, and malaria – that have traditionally been the main



Front cover of the Global Road Safety Crisis Report from the First UN General Assembly meeting on the global road safety crisis and the First UN Global Road Safety Stakeholders' Forum.



The 1<sup>st</sup> Latin America and Caribbean Stakeholders' Forum on Global Road Safety held in San José, from left, **Karla Gonzalez**, Costa Rican Minister of Transport; **Oscar Arias Sánchez**, President of Costa Rica; and **Mark Rosenberg**, Director of Global Road Safety Forum.

focus of public health ; they don't have time to take on a problem that, initially at least, seems to be under the control of other ministries.

Seventh, and finally, all of these obstacles have an effect on politicians – always faced with many competing priorities – that keeps them from seeing the road safety issue as an issue they want to commit to and lead. Without political will, the issue does not rise high on the development agenda.

ISO standards that are backed by data and evidence can help to overcome every one of these obstacles. Coming with evidence of effectiveness, they can help bring attention to the problem as a solvable problem, with solutions that can work in developing as well as developed nations.

International Standards suggest that the collection and analysis of road safety data are an integral part of any road safety system, and that even if they occur one or two at a time, we know how to and must track these events; and we must do this accurately if we want to be able to improve our systems.

International Standards make it clear that we must take all road users into account pedestrians, as well as drivers, poor as well as rich. Standards, and the results that they have helped to achieve in countries like Sweden, show that they can be incredibly effective.

What could be stronger proof that road traffic deaths don't have to happen than the accomplishments of Vision Zero? To translate the developments that made Vision Zero a reality into a set of standards is to put into everyone's hands the tools and knowledge to guarantee that road traffic deaths can be prevented. If ISO

standards can help to lay out the roles and responsibilities of each ministry or sector for road safety, they can help to draw on the potential contributions of each ministry, rather than leaving this issue where it might never become a priority.

Finally, a set of International Standards speaks to politicians because it gives them a clear target, a clear rationale, and a proven-effective way of reaching that target. This is what will make them stand up and take notice.

**ISO Focus:** What is your view on how ISO project committee ISO/PC 241, which is charged with developing a road traffic safety management system (ISO 39001), can contribute to halting and reversing the current global trend of increasing road traffic deaths and injuries?

**Dr. Rosenberg:** If the future ISO 39001 provides guidance on developing, nurturing, and sustaining a management system for road traffic safety, it will go a very long way to stopping the current epidemic of road traffic deaths, an epidemic that is out of control and quickly getting worse in developing countries.

The lack of management capacity is probably the single most important missing ingredient in road safety in low- and middle-income countries. Countries often know what they ought to do, but don't have the capacity to do it. The lead agency that is so often highlighted as an important component of road safety is really a metaphor for management capacity, the critical link for successful implementation or for the effective delivery of effective road safety measures.

The future ISO 39001 can make it more likely that a country can develop the management capacity it needs. It will be important, however, to go beyond just writing the standard and really provide support for its implementation.

**ISO Focus:** How do you perceive ISO's efforts to develop specific standards such as crash test dummies, air bags, motorcycle safety, tyre and rim performance, and driver licenses, just to name a few, that may contribute to improving road safety?

**Dr. Rosenberg:** It is important to look at all components of the system as a whole, because every part matters. For example, Uruguay recently passed a national law requiring seat belts for all passengers in all cars. But when we looked at the stock of cars, a majority of both old and new cars did not have the appropriate hardware for safely installing seat belts.

So the legislation by itself would have been ineffective; or worse, it might have led to installation of two-point restraints in the rear seats which might have actually increased the risk of serious injury to child passengers. This is a point that Claes Tingvall makes over and over: all parts of the system contribute to the outcomes we want so the standards must address all parts of the system (see Comment by Claes Tingvall on page 1).

**ISO Focus:** What new International Standards would the Forum like to see coming out of ISO? Are there areas for which you would like to see more or different standards?

**Dr. Rosenberg:** The Global Road Safety Forum emphasizes the value of looking at the conditions that make our roads unsafe for pedestrians as well as motorists. Pedestrians and vulnerable road users make up a majority of the road traffic injury victims, but most infrastructure design is based on the needs of the motorists and doesn't take the safety of pedestrians into account. There are frequently no provisions made to allow pedestrians and non-motorized traffic to cross dual or multi-lane roadways, and no barriers to keep mini-buses off pedestrian pathways or sidewalks. It would be nice to see ISO standards for these conditions. ■



**On the road to safety**

# Taking action on road safety

by *François Abram, former Technical Programme Manager, ISO Central Secretariat*

**S**ince the alarm sounded by His Excellency Fuad Mubarak Al-Hinai, Permanent representative of the sultanate of Oman to the United Nations, at the April 2004 UN General Assembly and repeated by Mr. Kofi A. Annan, the then Secretary-General of the United Nations (UN), road safety has come to the top of the international agenda.

The World Health Organization was entrusted by the UN with leading the campaign against road traffic crashes – and thus reduce the number of people killed and injured in road-traffic crashes all over the world. Several international governmental organizations, such as the World Bank, and non-governmental organizations, including ISO, joined forces to tackle this ambitious, difficult and complex task, which is nonetheless necessary and urgent.

## About the author



**François Abram** served as Technical Programme Manager at ISO Central Secretariat for almost 40 years. During his professional career at ISO, he was in charge of the transport sector, including road vehicles, aerospace, shipping, freight containers, and ensured close liaison with many international organizations. From 2004, he represented ISO in the UNRSC contributing to the development of ISO activities in the road safety area. Mr. Abram, who was an active contributor of *ISO Focus*, provided valuable support to the realization of this *ISO Focus* issue. Mr. Abram sends his warmest thanks to all.

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## First Global Ministerial Conference on Road Safety

On 19-20 November 2009, the Government of the Russian Federation will host the First Global Ministerial Conference on Road Safety. The Ministerial Conference – requested by the UN General Assembly – represents a historic opportunity to make progress on addressing an important public health problem. The Ministerial Conference is expected to convene as many as 1 000 participants including Ministers of Health, Transport, Education, Foreign Affairs and others; representatives of United Nations agencies; leaders from non-governmental and civil society organizations; representatives from private companies; and many other of the world's leading road safety experts.

The objectives of the Ministerial Conference are to :

- Draw attention to the need for action to address the large and growing global impact of road traffic crashes, in particular in low- and middle-income countries
- Review progress on implementation of the "World Report on Road Traffic Injury Prevention" and the UN General Assembly resolutions
- Provide a high-level global multisectoral policy platform to share information and good practices on road safety
- Propose a number of actions for the future, including a discussion of the resources needed to fulfill these actions.

The programme will feature statements from dignitaries, plenary presentations on best practices and panel discussions on a wide range of road safety related topics. A road safety exhibit will also be held in conjunction with the Ministerial Conference. It is hoped that the outcomes of the Ministerial Conference will feed into preparations for a Decade of Action on Road Safety which may be decided upon by the UN General Assembly in 2010.

## "Road safety has come to the top of the international agenda."

A number of international initiatives have proved successful, among them the 2<sup>nd</sup> UN Stakeholders Global Road Safety Forum<sup>1)</sup> and a UN special session<sup>2)</sup>. Road safety campaigns have been organized in many regions and countries worldwide. And the UN Road Safety Collaboration (UNRSC), with some 60 organizations including ISO, has already met 10 times in various parts of the world.

Despite the efforts made, road crashes account for 1.3 million fatalities each year. The number of people killed is on the increase particularly in

low- and middle-income countries. It is crucial that governments commit to implementing a series of specific and attainable actions, including the setting of ambitious road casualty reduction targets. The sharing of know-how and experience is also needed.

Now, a unique occasion to address these issues is coming up. The UN General Assembly approved last year a Global Ministerial Conference on Road Safety, which will meet in Moscow, Russia, in November 2009 (see Box above). It will no doubt be an opportunity for the international community to review the progress made, and agree on a map for the coming years.

1) Geneva, Switzerland, April 2007.

2) New York, USA, March 2008.

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### In the driver seat of best practice

ISO standards are powerful tools for promoting good practice. With the support of the automotive industry and its users, ISO has devoted a lot of effort to the preparation of International Standards in the field of vehicle design and equipment (with more than 200 in the field of road safety), and in close cooperation with WP.29 – the World Forum for Harmonization of Vehicle Regulations.

ISO's efforts to develop a road traffic safety management system (ISO 39001) will constitute yet another valuable contribution. The goal is to provide a structured, holistic approach to road-traffic safety as a complement to pertinent programmes and rules. The future ISO 39001 will employ a process approach, including the plan-do-check-act cycle and continual improvement. It will provide an internationally harmonized tool for all interested in auditing the effectiveness of road safety programmes, analyzing accident black spots and providing funding or awarding prizes for road safety.

In addition to ISO 39001, ISO is active in a multitude of areas such as intelligent systems, medical equipment, computerization of documents such as driving licences, anti-counterfeiting tools, and fraud countermeasures and control.

At its meeting in Rome, Italy, in May 2009, the Commission for Global Road Safety approved the following recommendation :

*“2. Governments should commit to attain the Decade goal by implementing a five pillar Action Plan designed to (1) build management capacity, (2) influence road design and network management, (3) influence safety design, (4) influence road user behaviour and (5) improve post-crash care.”*

Here again, ISO is able to support these and other initiatives with the development of International Standards. The publication of ISO 39001, for example, will play a key role. It will serve to extensively promote the existing rules (standards and regulations) developed by competent organizations on a much broader scale than ever seen today. ■

### WHO's role in preventing road traffic injuries

by Dr. Etienne Krug, Director, Violence and Injury Prevention and Disability, WHO

Road traffic injuries are a major public health problem and a leading cause of death, injury and disability around the world. Nearly 1.3 million people die each year, and between 20 and 50 million more are injured as a result of accidents involving vehicles. More than 90% of the deaths occur in low- and middle-income countries, which have less than half of the world's vehicles. Road traffic injuries are the leading cause of death for people between 15 and 29 years of age.

Beyond the impact on those directly affected, road traffic crashes have an enormous detrimental effect on the economies of many countries. Globally, losses incurred as a result of traffic injuries are estimated to be more than USD 518 billion, while at the national level they cost governments between one percent and three percent of their gross national product

and place a huge strain on the health-care services of many countries.

### Catalyst for action

The “World Report on Road Traffic Injury Prevention”, published jointly by the World Health Organization (WHO) and the World Bank (WB) in 2004, helped catalyze action at an international level towards addressing the problem of road traffic crashes. It stresses the role of diverse sectors of society in the prevention of these injuries and describes the fundamental concepts of prevention, the magnitude and impact of injuries, major determinants and risk factors, and effective intervention strategies. The report serves as both an advocacy tool and a technical document containing six major recommendations on actions countries can take to address the problem.

Following the report's publication, the United Nations adopted resolution 58/289, entitled “Improving global road safety”, which recognized the need for the UN system to support efforts to address the global road safety crisis. The resolution invited WHO, working in collaboration with the UN regional commissions, to act as coordinator on road safety issues within the UN system. It also underlined the need to further strengthen international coopera-



The World Health Assembly endorses a resolution recognizing road safety as a pressing health and development issue.



**On the road to safety**



**"Pedestrians, cyclists and riders on motorized two-wheelers account for almost half of global road traffic deaths."**

*The new "Global Status Report on Road Safety" finds that almost half of those killed on the world's roads are not protected by the shell of a car.*

tion for road safety issues, taking into account the needs of low- and middle-income countries. Further UN General Assembly resolutions and a World Health Assembly resolution have called upon member states to prioritize road safety as a public health issue and take effective steps towards reducing road traffic injuries.

## **United Nations Road Safety Collaboration**

In accordance with the mandate conferred upon it by the General Assembly, WHO has worked closely with the UN regional commissions to coordinate the United Nations Road Safety Collaboration (UNRSC), a group comprised of UN and international road safety organizations. The broad support for this collaborative effort is reinforced by the swathes and diverse range of organizations from the transport, health and safety sectors.<sup>1)</sup> As of June 2009, the group is comprised of approximately 60 agencies working in international or regional road safety.

ISO, as a member of the UNRSC since 2005, brings a unique perspective with its International Standards, in particular with the development of an International Standard for road traffic safety management systems.

The goals of the UNRSC are:

- To facilitate international cooperation
- To strengthen global and regional coordination among UN agencies
- To implement UN General Assembly Resolutions 58/289, 60/5 and 62/244
- To implement the recommendations contained in the world report, thereby supporting national road safety programmes.

A number of objectives to meet the goals have also been identified, including:

- Supporting assessments of the road safety situation and existing national facilities to address the problem
- Developing guidance and support for effective road safety interventions
- Disseminating good practices
- Providing capacity development on road safety issues
- Advocating and encouraging the demand for road safety
- Strengthening global and regional coordination on road safety
- Improving the safety of UN fleets for all road users.

## **Pedestrians, cyclists at risk**

WHO has also recently completed the first global assessment of road safety. The results, published in the "Global Status Report on Road Safety", confirm that road safety is still a major public health issue, particularly in low- and

1) UN organizations, governments, non-governmental organizations, donors, research agencies and the private sector.

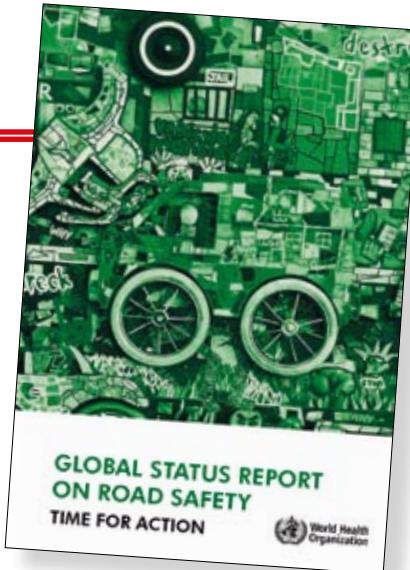
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middle-income countries where road traffic fatality rates are highest.

Providing the first global analysis of road traffic deaths according to the type of road user, the results show that pedestrians, cyclists and riders of motorized two-wheelers account for almost half of global road traffic deaths. The results presented here suggest that many countries, despite the international endorsement of the 2004 "World Report on Road Traffic Injury Prevention", have yet to fully implement its recommendations, including the enforcement of comprehensive laws that address key risk factors and the establishment of systems to collect reliable data.

The standardized methodology employed in collecting data for the global status report means that the countries can use this information to compare their road safety situation with other countries. At a global level, such assessments are important to enable the international road safety community to measure global progress towards reducing traffic injuries.

The timely publication of the global status report will provide the platform for discussion at the upcoming Ministerial Conference on Road Safety, in Moscow, Russia, in November 2009. The report's key findings should



be considered in international discussions, such as:

- The need to give more attention to protecting vulnerable road users
- Strategies for making national road safety legislation more comprehensive
- Strengthening enforcement of these laws.

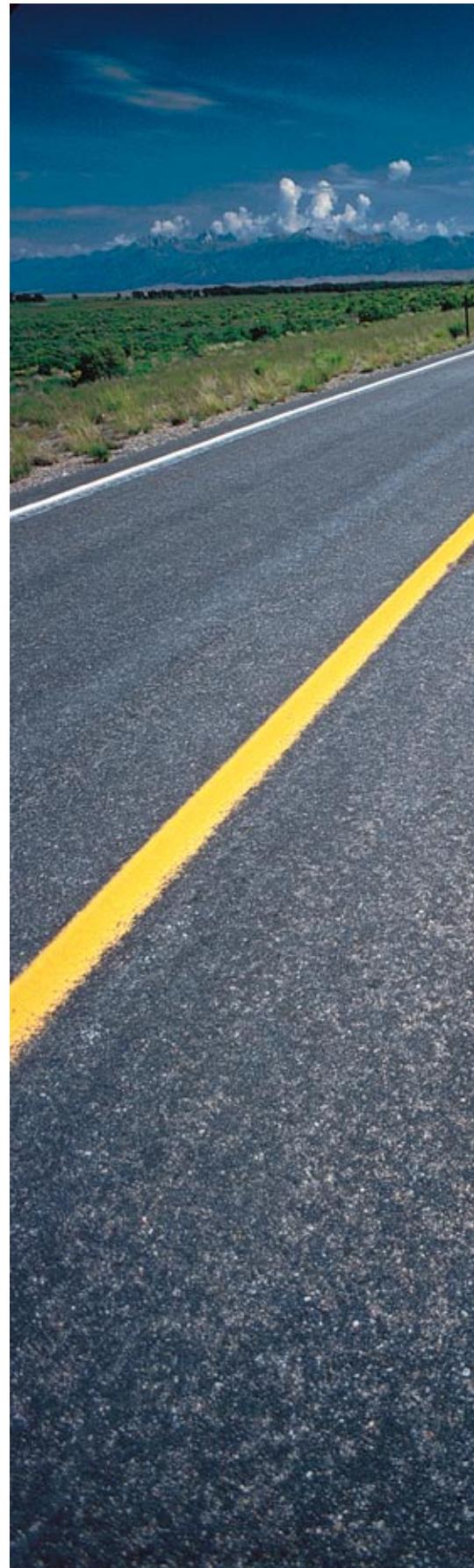
WHO has worked for many years at the national level to provide technical support to countries implementing road safety programmes. For example, WHO works closely with governments in Cambodia, Mexico, and Vietnam to identify and address key risk factors in road traffic injuries, including drinking and driving and the use of helmets and seat belts.

WHO will continue to work at both the international and national levels. At the country level, this will involve using the data from the global status report to help identify where action is needed in particular countries, as well as working with national governments to provide the technical support for planning and implementing responses. At the international level, WHO will continue to work to facilitate cooperation and support road safety advocacy and policy efforts.

*For more information about WHO's work in road safety, see: [www.who.int/violence\\_injury\\_prevention/road\\_traffic/en/](http://www.who.int/violence_injury_prevention/road_traffic/en/)*

*To download the "Global Status Report on Road Safety", see:*

**[www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2009/en/](http://www.who.int/violence_injury_prevention/road_safety_status/2009/en/)**



## About the author



**Dr. Etienne Krug** is Director of the Department of Violence and Injury Prevention and Disability (VIP) of the World Health Organization, since his

appointment in October 2000. Dr. Krug holds a degree of Medical Doctor from the University of Louvain near Brussels, Belgium, his native country, and a Masters Degree in Public Health from Harvard University, USA.

Prior to joining WHO, Dr. Krug held several positions working on violence and injuries prevention and served as a Director for *Médecins Sans Frontières* (MSF) in various low-income countries.



## Rules of the road – Clear, compulsory and crucial

by Eva Molnar, Director,  
Transport Division, United  
Nations Economic Commission  
for Europe

We are all familiar with the appalling numbers of dead and injured from traffic accidents. But to put these tragic numbers into perspective, consider that unless the current trend is reversed, the number of people killed in the next 15 to 20 years will equal that of the last 60 years' major wars put together<sup>1)</sup>. Put another way, road crashes will claim three times more lives over the next 60 years than wars have done since the end of World War II. This is clearly unacceptable.

### From awareness to political commitment

During the past decade, a great deal of effort has been concentrated on addressing this dire prognosis by raising awareness about the importance of road safety. Has this goal been achieved? By and large, yes. But there is a difference between awareness and commitment. To narrow and eventually eliminate this gap, far more involvement from civil society is needed. Citizens' votes should reflect support for those who will take action. For this to happen, road safety awareness must penetrate the whole society.

This is of course easier said than done. Here at the United Nations Economic Commission for Europe (UN/ECE) we are attempting to reach the younger – and often most vulnerable – road users through the world of sports. As athletes are powerful role models for the young, collaboration between UN/ECE and the International Basketball Federation (FIBA) is designed to instil a sense of respect for traffic rules in young road users – similar to how athletes must respect the rules of their sport.

### The Vienna Conventions:

Convention on Road Traffic (1968)

Convention on Road Signs and Signals (1968)

European Agreement supplementing the 1968 Convention on Road Traffic (1971)

European Agreement supplementing the 1968 Convention on Road Signs and Signals (1971)

Protocol on Road Markings, Additional to the European Agreements supplementing the 1968 Convention on Road Signs and Signals (1973).

### From rules to respect

Just as we cannot play basketball without rules, we cannot participate in road traffic without observing the rules.

Most of the standard rules that apply in road traffic come from the Vienna Conventions. These are the multilaterally recognized minimum rules, or the legal lingua franca, for traffic safety (see **Box above**). Among other provisions, they include:

- A set of internationally agreed road traffic regulations
- Road signs, signals and markings
- Uniform safety requirements for driver's licences, motor vehicles and other internationally accepted regulations.

The Vienna Conventions exist to improve the efficiency and safety of road traffic. These conventions are regularly revised and updated to introduce stricter safety requirements and technological developments. These instruments provide governments with the legal basis and the technical rules and regulations for their national highway codes.

<sup>1)</sup> Since the end of the Second World War in 1945 there have been more than 250 major wars, in which over 23 million people have been killed.

## Main Focus

Just over one third of the world has signed the conventions. The goal, however, is to make them universal, and a great deal of work remains. In addition, many countries that ratified the 1949 agreements on road traffic and on road signs and signals have not joined the new, more modern 1968 conventions.

Another challenge is to ensure the adequate implementation of the conventions. We are acutely aware that improved mechanisms to monitor implementation should be developed. The UN/ECE Road Traffic Safety Forum (WP.1) has put this issue on its agenda and expects to launch a simple and efficient monitoring mechanism within a year.

### **"We cannot participate in road traffic without observing the rules."**

Road traffic rules address the behavioural aspect of road safety. But road users also benefit from regulations and standards on other aspects, including road infrastructure, vehicles, tyres and other vehicle parts, as well as protective helmets for motorcyclists.

Regulations for vehicles and parts are processed through a global negotiating mechanism, the World Forum for Harmonization of Vehicle Regulations (WP.29), managed by UN/ECE, which produces globally harmonized regulations. ISO, in close cooperation with WP.29, prepares International Standards in the field of vehicle design and their equipment – with more than 200 for road safety.

The value of the international public policy achieved through WP.29 is demonstrated by the fact that these technical regulations are among the most effective tools for governments to improve vehicle safety. Among these are regulations on brakes, tyres, lighting and signalling devices, safety belts, child restraint systems and crashworthiness.

One would assume that once governments agree upon these technical regulations, consumers can be sure that products in official trade are made accordingly. While this is usually the case – since industry representatives actively participate in the debates before governments decide – the sad truth is we cannot blindly trust in adherence to the rules and implementation of the World Forum's regulations.

## Vehicle related legal instruments

Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals granted on the Basis of these Prescriptions (1958)

Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles (1998)

Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the Reciprocal Recognition of Such Inspection (1997)

reduction targets". The objective is to assist low- and middle-income countries in developing regional and national road traffic casualty reduction targets, and to provide them with examples of good road safety practices that will help achieve the targets by 2015. As a minimum level, the expected outcome of the project is that road safety improvement targets are set nationally, sub-regionally, and regionally so that changes – hopefully improvements – can be monitored and the most effective interventions undertaken.

## From wise words to enabling environments

Expert knowledge is crucial. But even the most experienced of experts are doomed to fail if there is no enabling environment where they can fight their daily battle for more efficient enforcement, better roads and safer vehicles. This includes:

- Strong leadership – with a real champion

## About the author



**Eva Molnar**, an economist, is the Director of Transport in the United Nations Economic Commission for Europe (UN/ECE). Prior to this, she was the Sector Manager

for Transport in the World Bank, Europe and Central Asia Region and for several years a guest lecturer at the Budapest University of Economics and Technical Sciences. Previously she worked as an infrastructure and management consultant for several years and for more than 10 years, she held different senior positions in the Hungarian Transport Ministry. During this time, she was the CEO of Kapos Volan, a road transport company in Hungary, as well as a member of the supervisory boards of different transport enterprises, like the Austro-Hungarian railways, Raberbahn.



**On the road to safety**

- Strong institutions with good governance, preferably with a national road safety council in charge of coordination
- Adequate, predictable and reliable long-term funding.

Countries that have been the most successful in improving road safety can be considered as prototypes for the enabling environment. In these countries, the results are beyond road traffic safety. They can be proud of their well-functioning roads and highway management, traffic police, healthcare systems, statistics and overall law enforcement. In addition, these countries have also given birth to a new area of consultancy, specialized in road safety. We have also seen that safe roads are efficient roads that reduce costs to commerce associated with delays and financial losses. Countries with high road safety standards are also countries with a high competitiveness index.

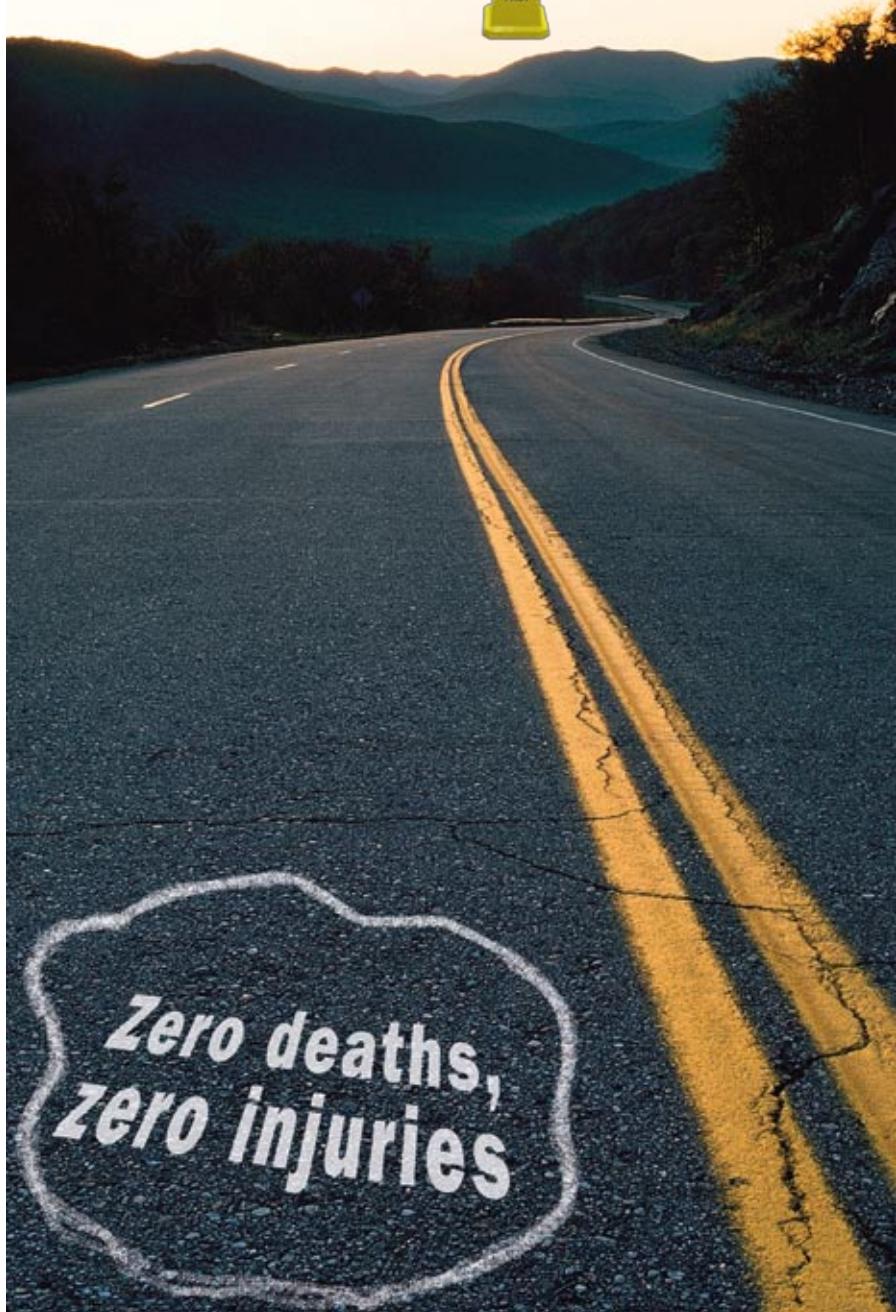
### All the king's horses and all the king's men...

...are needed to win the battle of degenerating road safety conditions. It is a shared responsibility that requires cooperation among several sectors and several institutions at both national and international levels.

The UN/ECE working parties, particularly the Road Safety Forum (WP.1) and the World Forum (WP.29), will continue to offer a place where representatives of governments, businesses and other international organizations, governmental and non-governmental alike, can openly discuss and share information to support road safety policies and regulations.

On behalf of UN/ECE, I can confirm our commitment to continued cooperation with ISO.

Behind the cold statistics lies the most important fact: the enormous human tragedy caused by road traffic crashes. Behind each of these numbers is a family with lost hope for a better future, children that must fight harder to gain access to opportunities because of disabilities, mothers that will need to work two or three jobs because their husbands are dead or disabled, and parents that will never stop weeping for lost children. ■



*by Eric Howard, Chair,  
OECD/ITF Joint Transport  
Research Centre Working Group*

**T**he “Global Status Report on Road Safety”, published by the World Health Organization (WHO), highlights the effects of inadequate safety levels on the world’s road networks. The report, an assessment of road safety in 178 countries, concludes that approximately 1.3 million people die annually, and between 20 and 50 million sustain injuries. Globally, losses due to road accidents are estimated at USD 518 billion, or

about one percent to three percent of gross national product (GNP). This exceeds the development assistance received globally by low- and middle-income countries. Its conclusions include:

- Injuries related to road traffic remain an important international public health problem, particularly for low- and middle-income countries
- Significantly more preventative action is needed to make road travel safer.

The Organisation for Economic Co-operation and Development (OECD)/International Transport Forum (ITF)

## Main Focus

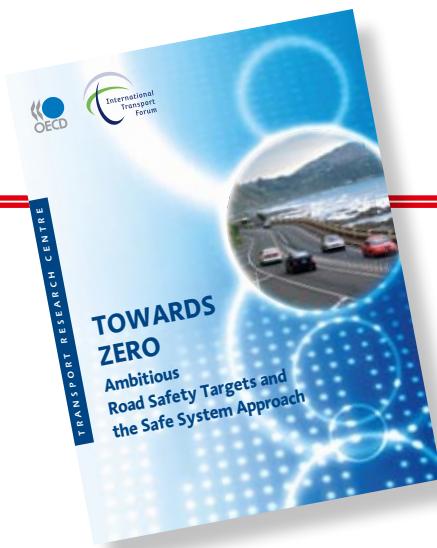
report “Towards Zero : Ambitious Road Safety Targets and the Safe System Approach”, a three-year study developed by representatives of 22 countries, the World Bank, the WHO, and the FIA Foundation<sup>1)</sup>, was launched at a “High Level Road Safety Seminar” jointly sponsored by the OECD/ ITF Joint Transport Research Centre, in Paris, France, in September 2008.

The OECD/ITF report considers recent road safety trends in OECD/ITF countries and compares fatality trends across regions of the world. It reviews progress by countries against a published ITF road safety target for 2012 and concludes that “*the fact that some countries are on track to meet the target demonstrates that targeted reductions in trauma can be achieved with adequate political will, institutional organization and sufficient allocation of resources*”. It then sets out best international road safety practices applicable to the setting and achievement of ambitious targets.

**“The fact that some countries are on track to meet the target demonstrates that targeted reductions in trauma can be achieved.”**

The report’s key recommendations include:

- Adopt a highly ambitious vision for road safety
- Set interim targets to move systematically towards the vision
- Develop a “safe system” approach, considered essential for achieving longer-term targets and thinking
- Exploit proven interventions for early gains
- Conduct sufficient data collection and analysis to understand crash risks and current performance while guiding improvement
- Strengthen the road safety management system
- Accelerate knowledge transfer



- Invest in road safety
- Foster commitment at the highest levels of government.

The OECD/ITF report acknowledges the considerable barriers to be addressed in most countries (for example, achieving legislative initiatives and tougher police enforcement) to win community and government acceptance of required behavioural changes. These are not minor challenges.

For the longer term, the report concludes that a clear vision and strengthened institutional management arrangements are needed, and that all countries should embrace the safe system approach.

The vision to be adopted is the ultimate elimination of death and serious injury on the road.

### The safe system approach

The safe system approach is a fundamental shift in road safety thinking, which is necessary to move towards ultimate elimination of death and serious injury. It reframes the ways in which road safety is viewed and managed.

Its aim is to support development of a transport system better able to accommodate inevitable human error. This is commonly achieved through better management of crash energy, so that no individual road user is exposed to crash forces likely to result in death or serious injury.

While extensive efforts are required to achieve alert and compliant road users, a key strategy is road network improvements (referred to as forgiving infrastructure). These upgrades are best undertaken in conjunction with reviews of posted speed limits, which should be set in response to the level of protection offered by the road infrastructure and modern vehicle safety features.

A focus on addressing the interactions between system elements – including roads, vehicles and travel speeds – is essential to making the road transport system fundamentally safer.

The safe system approach recognizes that the responsibility for safe operation of the network is shared between many individuals and organizations. This includes agencies and companies that provide roads, set speed limits, make laws, provide vehicles, make land use planning decisions affecting traffic flows and roadside access, use the network, enter contracts for transport services, enforce compliance, employ drivers, operate the emergency health system and more.

This breaks away from a “blame the road user” emphasis and is a key feature of a safe system approach.

The OECD/ITF report calls for road authorities to develop a deep-

1) The FIA Foundation was established in 2001 by the *Fédération Internationale de l’Automobile* (FIA), the non-profit federation of motoring organizations and the governing body of world motor sport.

### About the author



**Eric Howard** is an international strategic road safety advisor and is recognized as an expert on strengthening road safety management capacity within governmental institutions, the development of effective road safety strategies based on a safe system approach and the necessary change management skills required to deliver this.

This follows 25 years experience at senior executive management level within government in Australia, including seven years as general manager, road safety with VicRoads, the lead government road safety agency in Victoria, Australia.

Eric Howard chaired the OECD/ITF JTRC Working Group which prepared the report, “*Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*”, published in late 2008.



## On the road to safety

er understanding of the relationships between crash rates and levels of protection provided against fatal and serious crash outcomes (including speed limits) on given stretches of road. This requires a sound understanding of key factors involved in crash causation and outcome severity.

The safe system approach seeks to build upon opportunities for improved alignment of road safety policy with other societal goals. For example, important synergies exist with environmental protection and energy conservation policies, with occupational health and safety policies that target safer work-related driving, and with broader transport and travel policies that seek to improve travel cost efficiency.

Approaches that involve all system designers – motivating them to support improved system safety as well as providing tools to assist in that task – are essential.

## Institutional management

Institutional management functions are key competencies within governmental road safety agencies because they impact the capacity to deliver change in the way the network operates, through both governmental and non-governmental actors. They underpin road safety success in a jurisdiction and offer an explanation for much of the observable differences in road safety performance among otherwise similar jurisdictions.

Overcoming the barriers to community and governmental acceptance requires competent government officers, enabling legislation and systems, inter-agency coordination, clarity of the lead agency role, supportive funding, knowledge transfer, and research and development. Practitioners also require suitable tools to be available to guide the development, implementation and monitoring of necessary interventions.

Then there are the many and varied needs of organizations outside the government sector which face many of the same management challenges, and

2) Towards Zero: Ambitious Targets and the Safe System Approach, OECD/ITF, (2008).

3) Towards Zero: Ambitious Targets and the Safe System Approach, OECD/ITF, (2008).

should be encouraged to play a much greater role.

The safe system approach seeks to consolidate the road safety improvements achieved in recent decades and to generate further gains. In doing so, it explicitly adopts a results-focused approach<sup>2)</sup>, forces reconsideration of the nature of interventions, and relies on a systematic refocusing of institutional arrangements to implement those interventions.

to behave safely despite education and information efforts.

Both approaches argue that as long as inappropriate behaviours are likely, system designers must strive to protect all road users from the impact of those behaviours.

A safe system approach is one where the community demands and expects safety improvements. This can be summed up as a “stronger safety culture” where the number of traumatic events is constantly dropping.



Photo Pierre Gravier

## International trends

Sweden has pioneered and followed a safe system approach known as Vision Zero since 1997, based on four elements: ethics, responsibility, a philosophy of safety, and creating mechanisms for change.

Vision Zero recognizes the need for programmes to curb inappropriate user behaviours. Similarly, the innovative “sustainable safety” approach of the Netherlands describes the road user as the weakest link in the transport chain, unpredictable and not to be relied upon

The impact of the Swedish and Dutch road safety visions on other countries has been profound: While the escalated level of ambition (zero deaths and serious injuries) represents a radical shift within the road sector, these targets can be viewed as consistent with the safety expectations acceptable in other modes of transport (for example the aviation and rail sectors). What was initially seen as radical and unachievable has increasingly become the benchmark for acceptable road safety results<sup>3)</sup>.

The safe system has been adopted by other countries, including Norway

## Main Focus

and the Australian states and territories. It is likely to form the basis for the next Canadian road safety strategy slated to take effect from 2011.

It is being considered for formal adoption in other countries and has been actively promoted by members of the OECD/ITF JTBC Working Group in their professional roles, in recent road safety capacity reviews, under the auspices of the World Bank Global Road Safety Facility in countries including Argentina, Armenia, Bangladesh, Bosnia and Herzegovina, Indonesia, Montenegro, Serbia, and Ukraine. The WHO, the FIA Foundation, the International Road Assessment Programme (iRAP) organization and the Global Road Safety Partnership have also actively promoted the safe system.

### ISO's contributions to road safety

The rationale for the development of the future ISO 39001 for road traffic safety management systems is to provide organizations active in road safety with the means of increasing and promoting their related safety standards. The standard will be set at a level of principles and systems, and will provide an opportunity to integrate safety into commercial and non-commercial decision making.

For governments, ISO 39001 will provide a further opportunity to engage more partners on safety. For public and private organizations, the standard will provide an important opportunity to promote safety systems as a point of difference and excellence.

The standard's requirements would be generic and intended for application by all organizations regardless of type, size or products and services provided. The categories of companies and organizations that have been identified as most relevant are those influencing:

- The design, building and maintenance of roads and streets
- Design and production of cars, lorries and other road vehicles including parts and equipment
- Companies working with the transport of goods and people
- Companies generating significant flows of goods and people
- All organizations with personnel working in the road transport system.

### "ISO standards have contributed to road safety improvement over the decades."



Photo Pierre Granier

Potential early adopters were identified as transport and haulage companies, rental car companies and local governments organizing the transport of goods and people. The extent of the application depends on factors such as the road-traffic safety policy of the organization, the nature of its activities, products and services, its location and the conditions in which it functions. The management system documentation would be tailored to the needs of the organization.

Considerable effort is being applied in the development of the standard to maximize the alignment with the OECD/ITF report principles, particularly the important role of the World Bank country road safety management framework, endorsed in the report as pivotal in achieving improved road safety outcomes.

ISO standards have contributed to road safety improvement over the decades. The future ISO 39001 will substantially increase that contribution by providing high-level guidance for all organizations in the community wishing to play a part by directly contributing to the ultimate elimination of death and serious injury on the world's roads.



**On the road to safety**

# Championing safe, clean and affordable transport

by Tony Bliss, Lead Road Safety Specialist, Sustainable Development Network, World Bank Group

The World Bank Group has championed road safety in low- and middle-income countries for more than three decades. Unprecedented growth in motorization, and the adverse effects of road crashes are now bringing road safety to the forefront of the development agenda. As part of the World Bank Group's transport business strategy for 2008 – 2012, *Safe, Clean and Affordable Transport for Development*, road safety is becoming mainstreamed in transport investment operations.

## The stakes are high

Development aims to reduce poverty and promote higher living standards for all, with an emphasis on improved access to infrastructure services, health and education, and on people's ability to participate in the economy and society. This inclusiveness is central to country development strategies, which aim to improve aggregate economic performance, and address the priorities of education and health, as well as social and stakeholder participation. Poverty can be understood as the inability to achieve basic prescribed standards in these priorities. In this regard, the sheer scale of the historical and projected health losses from road crashes alone puts road safety on the development agenda.

By 2050, the world's population is expected to reach nine billion people, from a current population of six billion, with almost all this increase in low- and middle-income countries and predominantly urban areas. Unless new measures are taken, higher rates of road traffic injuries and death must be anticipated. Over the



**"Improved road safety management is the highest priority in low- and middle-income countries."**

first 30 years of this century, for example, it is estimated that more cars will be produced in the world than during the first hundred years of motorization.

What's more, road traffic injuries will be the second biggest cause of healthy life years lost for men by 2030, and the biggest cause of healthy life years lost for children aged between 5 and 14, from 2015 to 2030. These sombre statistics underpin the priority the World Bank Group is now giving to improving road safety performance in low- and middle-income countries.

## Priority to high-risk countries

In addition to country investment operations, recent World Bank activities include partnering with the World Health Organization (WHO) to publish the World Report on Road Traffic Injury Prevention, supporting the Make Roads Safe campaign of the Commission for Global Road Safety and their proposal for a Decade of Action for Road Safety 2010 – 2020, with a 50 % fatality reduction target.

Among other World Bank activities is the establishment of the Global Road Safety Facility to fund global, regional and country road safety capacity building initiatives, and guidelines to implement the World Report recommendations through the conduct of road safety management

## Main Focus

capacity reviews and related specification of lead agency reforms, investment strategies and safe system projects.<sup>1)</sup>

Bold measures are being called for, and the World Bank Group is committed to making a sustained and effective contribution. Meeting the 50 % reduction target for the proposed Decade of Action for Road Safety would save an estimated five million lives and avoid 50 million serious injuries, with a social benefit of USD three trillion. From this viewpoint, the successful implementation of the proposed Decade of Action for Road Safety would be one of the most significant global public health achievements of the 21<sup>st</sup> century.

The World Bank Global Road Safety Facility is the first funding mechanism established to address the growing global road safety crisis. It provides significant support to strategic partners such as the WHO, the Global Road Safety Partnership, the International Road Assessment Programme, the International Road Federation, the Road Traffic Injuries Research Network, the Global Traffic Safety Police Network (RoadPol) and the Harvard Initiative for Global Health. It is also funding capacity building initiatives at country and regional levels to accelerate and scale up country road safety investment operations.

Over the last 50 years, road safety management systems have evolved in high-income countries. The challenge for

low- and middle-income countries will be to benefit from the lessons learned, to avoid the unnecessary and unacceptably high level of deaths and injuries experienced in high-income countries. This will require a rapid and decisive shift to the safe system approach, which aims to eliminate road deaths and serious injuries, rather than chart a fatalistic pathway that accepts these impacts as an inevitable price of economic progress.

### In comes ISO's management system standard

The reach and influence of ISO are extensive. ISO plays a vital role in global development by promoting the adoption of harmonized standards which help reduce trade costs, expand trade flows, enhance environmental sustainability, and improve life quality. ISO also contributes to improving road safety through its standards for vehicles and transport supply chain management, and with the launch of an ISO road traffic safety management systems standard.

### "The development of ISO 39001 is very timely."

The future ISO 39001 offers exciting potential to support the achievement of improved global road safety outcomes over the coming decade and beyond. For this reason, the World Bank Group and its road safety partners are participating in the development of ISO 39001, and are deeply committed to its sustainable success. Improved road safety management is the highest priority in low- and middle-income countries, and systematic procedures are called for to address current management capacity weaknesses.

ISO 39001 concerns the management of safety in a variety of organizational contexts including countries, states, provinces and cities, as well as large and small corporations and other business, public and community entities. It is strategically aligned with the World Bank Group's emphasis on road safety management systems and promotion of the safe system approach which, in terms of its goal and safety design principles, seeks to eliminate road deaths and injuries.

The development of ISO 39001 is very timely. It presents both opportunities and challenges. The opportunities relate to the emphasis being given to the systematic management of road safety results. The core elements of a road safety management system are the same for any entity and relate to its goal and the organizational functions and measures delivered to achieve this goal.

Systematic management of road safety requires actions that deliver improved results in a dynamic, iterative process of continuous improvement. The focus on results drives the management system, holds it together and gives it purpose. This sustained level of organization and ambition will be required in the public and private sectors and in civil society if the fatality reduction targets for low- and middle-income countries being proposed for the Decade of Action for Road Safety are to be achieved. ISO 39001 will be a powerful tool to assist this process.

However, the challenges concern the tailoring of the tools to meet the differing levels of organizational complexity across the broad road safety partnership evident within any particular country. ISO 39001 should provide the impetus for small and large organizational entities to systematically improve their safety performance. It should ensure that its functionality is user-friendly and adaptable to the different scales of organizational structures and resources encountered.

Over time it could evolve to meet more specialist needs, such as systematic network safety engineering policies and practices and general deterrence road safety policing, as well as covering more familiar procedures for corporate vehicle fleet safety. These opportunities and challenges are currently being addressed, and the World Bank Group and its road safety partners welcome this important ISO initiative and look forward to its speedy and effective implementation. ■

### About the author



**Tony Bliss** is the Lead Road Safety Specialist in the Sustainable Development Network of the World Bank Group and is responsible for the development

and promotion of multi-sectoral strategies to improve road safety results in low- and middle-income countries. He led the design and establishment of the Global Road Safety Facility, which is funding global, regional and country capacity building initiatives, and developing associated policies, tools and procedures.

1) Bliss T & Breen J (2009). *Implementing the Recommendations of the World Report on Road Traffic Injury Prevention. Country Guidelines for the Conduct of Road Safety Management Capacity Reviews and the Specification of Lead Agency Reforms, Investment Strategies and Safe System Projects*. The World Bank Global Road Safety Facility, Washington DC.



## Building the world's safest roads

by Dr. Kash Ram, Director General, Road Safety and Motor Vehicle Regulation, Transport Canada

**T**raffic collisions are a leading cause of death and long-term disability, making road safety a significant social, health and economic issue. On average, one person is killed every three hours and one is injured every 2.6 minutes in Canada. That being said, fatalities have been cut by more than half from their 1973 peak, while the number of registered motor vehicles has increased by almost 80% during the same period.

Canada has nearly 900 000 kilometres of roads – enough to circle the globe 22 times. These roads cover 10 provinces and three territories and range from small rural back roads that are not travelled frequently, to multi-lane highways in constant use. In addition, Canada's extreme weather conditions create a wide range of driving challenges. These elements, and multiple levels of government with complementary jurisdiction over roadways, road users and vehicles, mean that managing an effective and effi-

cient road safety programme poses a challenging yet profoundly important task.

### The partnership approach

Partnership is the key to road safety management in Canada. Unlike many other countries, the ability to regulate road safety is a responsibility shared by federal, provincial and municipal levels of government.

A collaborative approach is imperative to improving safety.

At the federal level, Transport Canada regulates the manufacture and importation of motor vehicles and motor vehicle equipment, and regulates the safe operations of interprovincial bus and trucking companies. Transport Canada develops safety standards, regulations and test methods to ensure that all vehicles introduced into the Canadian market meet comprehensive safety requirements.

Transport Canada conducts research programmes to continually enhance its regulations and runs a compliance programme to ensure that its regulations are being respected by industry. It also maintains a national collision database and provides leadership and guidance to the provinces and territories in the areas of programme development and evaluation, research, analysis, and knowledge sharing. Through federal, provincial, territorial and municipal infrastructure programmes, the federal government contributes to the construction and rehabilitation of roads, and advances the usage of best practices regarding design and road safety within infrastructure projects.

Provincial and territorial governments administer driver and vehicle licensing, collect collision and exposure data, conduct research activities, and develop, implement and evaluate their road safety programmes. They enforce traffic safety laws via their police forces. They are also responsible for road design, construction and maintenance, as well as enforcement



### On the road to safety

of motor carrier regulations. Additionally, municipal governments are involved in road maintenance, traffic engineering and integrated safety initiatives with other community groups.

Because of this shared responsibility, partnership is not only a core value, but also a basic necessity for road safety delivery in Canada. For example, the collision database that is maintained and operated at the federal level relies on information collected by the provinces, territories and their agencies, including police forces and hospitals.

Much like the development of an ISO standard, many stakeholders have to work together in a participatory and collaborative manner to serve the best interests of the public. The Canadian Council of Motor Transport Administrators (CCMTA) is one of the mechanisms for this cooperation, and the information and resource sharing that is needed to make this happen.



### Road Safety Vision 2010

Making Canada's Roads the Safest in the World

### About the author



**Dr. Kash Ram** is Director General of the Road Safety and Motor Vehicle Regulation Directorate of Transport Canada. The Directorate is responsible for establishing safety standards for new and imported motor vehicles, and for enforcing these standards. The Directorate also works with road safety partners to advance the goals of Canada's national plan for road safety.

Dr. Ram has a BSc in chemical engineering from the University of Ottawa, an MSc in chemical engineering from the University of Waterloo and a PhD in fuel science and engineering from Pennsylvania State University. Dr. Ram has held previous positions at Industry Canada, Environment Canada and National Defence Canada.

## Main Focus



### A platform for collaboration

The CCMTA is a non-profit organization made up of representatives from provincial, territorial and federal governments. It also has associate members with expertise and interests in road safety, including representatives from the police, the healthcare community, industry, public safety organizations,

and research and development groups. Its purposes are:

- To share and exchange information
- To promote awareness and education of road safety
- To pursue harmonization of road user, motor carrier and driver and vehicle licensing regulations and policies

- To develop national models of motor vehicle transportation programmes.

The CCMTA is accountable to, and makes recommendations to, the Councils of Deputy Ministers and Ministers responsible for Transportation and Highway Safety. The Council of Ministers has the responsibility for programme/project approval with CCMTA being responsible for carrying out its direction.

CCMTA acts as a forum that helps prioritize initiatives, develop common directions, and mobilize the human, financial and material resources to improve road safety in Canada. It also facilitates the sharing of successes and lessons learned so that efforts are not duplicated. Other committees that report to the Councils of Ministers and of Deputy Ministers include the Vehicle Weights and Dimensions Task Force, Engineering and Research Support Committee and Policy and Planning Support Committee.

Transport Canada encourages and supports uniform national standards and guidelines for roadway design, and works towards this objective with its provincial, territorial and municipal partners through the Transportation Association of Canada (TAC). TAC is a national centre of transportation expertise, which mandate is to provide a neutral forum to gather and exchange relevant ideas and information on technical guidelines and best practices.

Through ongoing research, TAC develops and improves guidelines and best practice documents for use by road engineering practitioners. Its focus is on safe, secure, efficient and environmentally and financially sustainable transportation services in support of Canada's social and economic goals.

In addition to working with other levels of government through CCMTA and TAC, Transport Canada supports a collaborative relationship with its regulated bodies, particularly the 5 000 manufacturers and importers of motor vehicles, tyres, and child restraints and booster cushions.

The complexity of the issue, combined with competing requirements for resources at all levels of government, requires that we collectively find effective solutions to improve road safety and achieve our vision of having the safest roads in the world.



## On the road to safety

### An ambitious vision

One of the major achievements of CCMTA has been the development of a national vision for road safety. Canada's inaugural vision was created in 1996. That vision, which is in essence a combined vision and road safety plan, was subsequently updated in 2001. The current vision, entitled "Road Safety Vision 2010", addresses the major traffic safety issues affecting Canadian road users: use of seat belts and child restraints, impaired driving, speed and intersection-related collisions, high-speed rural roadways, collisions involving commercial vehicles, high-risk drivers, and vulnerable road users.

Its overall goal is a long-term aspiration of having "the safest roads in the world". The quantitative objective is to achieve a 30 % decrease in fatalities and serious injuries due to traffic collisions by 2010. There are also several sub-targets to address the key road safety issues noted above. This vision has spurred road safety stakeholders across Canada to action. It has led to significant improvements in road safety, and decreases in fatalities and injuries. However, there are still several persistent contributing factors to fatalities and serious injury, such as impaired driving, lack of seat belt use and excessive speed. The CCMTA is in the process of developing the successor plan to this vision.

### Integrated approach

Our vision remains the same, but how we get there is evolving. Canada is moving towards a holistic approach, which integrates the driver, the vehicle, the road and environmental conditions, to achieve the most effective solutions.

**The driver :** Awareness is key to implementing change. Transport Canada, in cooperation with others, is embarking on the development of a social marketing strategy to realize changes in behaviours and/or related attitudes. Canadian provinces and territories have also been involved in developing regulations and programmes to address key behaviours.

For example, some provinces now have regulations prohibiting the use of hand-held cell phones while driving. Last year, the Canadian Global Road Safety Committee, which is an organization of road safety advocates, hosted its first annual Day of Remembrance for road crash victims. In 2008, our focus was drinking and driving. This year, the focus of the day is raising awareness of the impact of deaths and injuries resulting from road collisions.

### "A collaborative approach is imperative to improving safety."

**The vehicle:** Regulations have been developed to require additional safety features for new vehicles. For example, a new regulation was tabled this year, which requires that all new vehicles manufactured in or imported to Canada after 1 September 2011 be equipped with electronic stability control (a crash avoidance system).

**Infrastructure:** Through the Building Canada Fund and other infrastructure programmes, the federal government is contributing to the construction and rehabilitation of Canada's road network. Transport Canada's Road Safety

group promotes research and works with road safety practitioners on a national and international level to encourage continued development of guidelines, best practices and implementation of well-known road safety treatments, such as roundabouts and rumble strips.

Transport Canada is also initiating a cultural change within its own organization. We are shifting from an operations-level approach to a system-wide approach, by implementing a safety and security management system (SSMS) as a way to identify and mitigate risks before they occur.

### The contribution of International Standards

In collaboration with the Standards Council of Canada, Transport Canada contributes to improving road safety through active participation in the development of International Standards for road vehicles, and in the future, ISO International Standard for road traffic safety management systems. It is our belief that ISO International Standards could contribute to the worldwide advancement of road safety and a decrease in fatalities and injuries resulting from road collisions. ■



# One-stop-shop for a smooth ride

**Hundreds of ISO standards routinely contribute to reducing injury and death on the world's roads. Below are just a few examples.**

## Intelligent transport systems

Intersection support (ISO/TS 13184\*), Cruise control (ISO 15622, ISO 22179)  
Collision / traffic warnings (ISO 15623, ISO/TS 15624)  
Manoeuvring aids (ISO 17386, ISO 22840\*), Lane change aids (ISO 17387),  
Low speed following (ISO 22178)  
Priority systems for emergency vehicles (ISO 22951)  
Safety and emergency calls / notifications (ISO 24978, ISO/TR 25109\*, ISO/TR 26682\*)

## Driver risks

Visual demand (ISO 16673)  
Suitability of information and control systems (ISO 17287)

## Child restraint

ISOFIX (ISO 13216\*\*)  
Reducing misuse risk (ISO 13215\*\*)  
Performance evaluation (ISO/PAS 13396\*)  
Child seat detection system (ISO/TS 22239\*\*)

## Fuel safety (ISO 15501-1)

Tyres and rims  
Capabilities (ISO 10191)  
Wet grip (ISO 23671)  
Pressure monitoring (ISO 21750)

Pyrotechnic devices (e.g. for releasing airbags, pretension of seatbelts)  
Performance (ISO 19072\*\*)  
End of life activation (ISO 26021)  
Functional safety (ISO 26262\*)

Airbag testing (ISO 12097)

Seat belt anchorage (ISO/TR 1417)

Lights and signalling (ISO 303)

## Brakes

Quality assurance (ISO 15484)  
Tests (ISO 6597)

Protective glazing (ISO 3537, ISO 15082)



### Injury prevention

Vehicle impact (ISO 6487), Occupant restraint performance (ISO 6546)  
Injury risk assessment (ISO/TR 7861), Traffic accident analysis (ISO 12353\*\*)  
Neck injury criteria (ISO/TR 13330\*)

### Heavy commercial vehicles

Brakes (ISO 20918, ISO 21069)  
Obstacle detection (reversing) (ISO/TR 12155)

### Bicycles

Safety requirements (ISO 4210, ISO 8098)  
Tyres (ISO 5775\*\*)

### Motorcycles

Rider crash protection (ISO 13232\*\*)  
Brakes (ISO 8710)  
Lights (ISO 11460)

### Pedestrian protection

Head crash tests (ISO 14513, ISO 16850)  
Biofidelity of leg crash tests (ISO/TR 15766)

### Glossary

TS - Technical Specification  
TR - Technical Report  
PAS - Publicly Available Specification

\* under development

\*\* multi-part standard

## Main Focus



### An ISO standard for road traffic safety management

Road accidents are one of the most common causes of injury and death. However, even serious events can be prevented by systematic and evidence-based interventions.

ISO is therefore developing ISO 39001, a management system standard for road traffic safety. The standard targets all organizations wishing to reduce death and serious injury related to road travel. With ISO 39001, these organizations will have to comply with established safety indicators such as speed, vehicle condition and driver awareness.

The standard will support organizations involved in designing and operating the road transport system by helping them define their own contribution to a safe road transport system, while communicating with other supplier of products and services. Vehicle manufacturers and suppliers to the automotive industry will be supported by interfaces that the rest of the road transport system can understand and define.

The standard, which will be fully aligned with other ISO management standards, is being developed by ISO project committee ISO/PC 241, *Road traffic safety management system*, which met for the first time in June 2008. It is expected that ISO 39001 will be published within the next four years.

ISO/PC 241 enjoys wide participation from some 30 country members and 10 organizations in liaison, including the World Health Organization, the World Bank, and the International Road Federation among other important players.

*In the next pages, four contributors from different fields and key organizations give us their views on the value of, and expectations for ISO 39001.*





**On the road to safety**

## Gabriel Kardos

*Fleet Safety Manager –  
Europe, Middle East & Africa,  
Johnson & Johnson*



Global road traffic safety management has become a paramount issue affecting the safety and well-being of our societies. The emergent challenge is to move away from the old axiom that all accidents result from human error and can be solved by educating road users, towards an all-encompassing systematic approach that embraces all aspects of road traffic safety management to reduce errors and counteract human mistakes.

A harmonized and collaborative approach is needed. And in today's globalized world, where traffic continuously crosses borders, it must address international needs and challenges. In this regard, the future ISO 39001, *Road traffic safety management systems – Requirements with guidance for use*, has the potential to influence organizational efforts to prevent injuries and save lives.

The standard will assist organizations throughout the world, whether governmental, non-governmental or private sector, to identify opportunity areas for road safety. It will also offer a foundation and framework to help them take the most effective actions that directly address issues or gaps for the betterment of road safety at the global level. The standard is expected to gradually change organizations behaviour and approaches towards road safety, with the overall aim of reducing serious injury and fatalities from road traffic accidents.

For many employees of Johnson & Johnson, the company vehicle is the workplace. Taking the safety and well-being of their employees very seriously, Johnson & Johnson has implemented a global fleet safety programme known as SAFE Fleet to address and mitigate road safety risks.

The future ISO 39001 standard will be a value-added tool that is sure to benefit existing fleet safety efforts and positively impact the safety of road users worldwide. Its completion and deployment is therefore enthusiastically awaited.



## Hilton Vorster

*Chairperson, International Road Federation (IRF) Safer Roads Working Group*



An ISO International Standard for road traffic safety management systems would:

- Promote the establishment of a lead agency/organization in each country to advance road safety including: traffic and safety legislation; vehicle and driver standards, road safety communication, education and promotion projects; infrastructure safety audits, critical offences law enforcement; training and refresher programmes for traffic personnel; a traffic information system for traffic records and the collection, analysis and evaluation of road traffic issues; research on road safety matters; road safety role-players and stakeholders and public/private partner-



ship agreements for road safety promotion and risk and cost sharing

- Promote self-regulation on road safety issues among national, provincial and local governments, organizations and the private sector
- Provide guidelines, directives, for example, target setting, collection, monitoring, evaluation and reporting of achievements and results on the above
- Ensure harmonization and standardization of road traffic safety management and promotion of issues on a global basis.

Among the contributions that ISO could make is the establishment of uniform definitions and requirements. For example, in South Africa a road fatality is considered to occur within six days of a crash, other countries state 10, 21 or 30 days. ISO standards would facilitate international comparison. It would set clear, comprehensive and detailed road safety performance requirements.

Although ISO should take the lead in developing standards for data collection, evaluation and reporting, IRF and other organizations are already responsible for the collection and provision of global road crash and traffic statistics and related initiatives.



## Main Focus



*President, Institute of Road Traffic Education, India*



Road traffic safety management is an integral part of the different components of traffic management which include: driver training and assessment; development of

road user behaviour through awareness and education; traffic engineering including audit of road safety, traffic enforcement and accident investigation; post-crash management; standards for traffic control devices, road geometrics and vehicles; and finally, the legislation itself.

Developed countries have built their standards based on years of research through which they have developed an inbuilt system of ongoing audit, keeping pace with technology in all the areas of human, road and vehicle development. This is evident from the fact that only 9% of the world's road fatalities happen in developed countries, which have 52% of the globe's registered vehicles.

On the other hand, in low- and middle-income group countries where rapid development is in progress, especially in road building, traffic management systems are hardly based on individual research. Rather, these are built from "cut and paste" standards and practices from the developed world, without any practical adaptation.

Developing ISO standards on each of the components of traffic management is crucial in order to attain road safety management in low- and middle-income group countries, which account for 90% of global road fatalities. Such standards should be attribut-

ed to systems, tools, equipments, practices and even research in all the areas mentioned above.

Care must be taken so that the final International Standards allow systematic adaptation to the needs, culture and prevalent systems of the individual countries, whether developed or developing.

transparency, a holistic and systematic approach, common definitions, and the possibility to exchange experiences in the matter of road traffic safety. Its implementation could help companies demonstrate their commitment to this cause. More importantly, its widespread adoption could help mold mindsets from all spheres to be increasingly conscious of road safety issues. The benefits are obvious, thus the idea of a management system standard for road traffic was born.

My future expectations are for ISO to promote information and best practice seminars to help disseminate ISO 39001, and that the standard can be available and accessible to all, everywhere in the world. ■



*International Strategist, Vectura Consulting AB, Sweden*



The idea of an ISO International Standard for road traffic safety can be traced back to a conversation I had in 2006 with Ms. Ziva Patir (former Chair of the ISO Technical Management Board). Discussing the far-reaching consequences of road traffic safety problems around the globe, which is one of the largest contributors to poverty, we considered the potential of a management system standard for tackling the problem of lack of road safety in the world.

Clearly, there is currently no global long-term systematic process approach to road safety. Moreover, common definitions are lacking and top management commitment is often absent.

An ISO management standard on road traffic safety would thus constitute a valuable asset for saving lives, suffering and a lot of unnecessary cost, through international acceptance and



Photo Pierre Granier



**On the road to safety**

## The world's best dummy

by Ken Wiley, Dynamic Research Inc., WorldSID Phase II Project Manager, and the WorldSID Tri-Chair Committee<sup>1)</sup>

**C**rash testing of cars is a critically important step in the design, development, and fabrication of safer cars and the improvement of road safety. The crash dummy is the most important piece of equipment used in these tests, and no dummy is better than the WorldSID 50<sup>th</sup> percentile male dummy.

For the last 12 years, engineers and technicians from around the world have diligently worked to design, test and refine the 50<sup>th</sup> percentile male World Side Impact Dummy, known as **WorldSID**. Working under the direction of ISO technical committee ISO/TC 22, *Road vehicles*, subcommittee SC 12, *Passive safety crash protection systems*, working group WG 5, *Anthropomorphic test devices*, the WorldSID Task Group produced the first dummy harmonized for worldwide use, and the most technically advanced.

The WorldSID 50<sup>th</sup> development process has included four distinct revisions of the dummy. The initial prototype was followed by a pre-production model and a production model, and a revision one model was recently completed. Each version has incorporated improvements based on extensive test experience with the dummy. Testing has included nearly 1 500 whole dummy biofidelity, vehicles, and component tests conducted in 16 different test labs in at least 10 different countries, including governmental agencies in Australia, Canada, Japan, and the USA.

1) Klaus Bortenschlager, Partnership for Dummy Technology and Biomechanics (PDB); Markus Hartlieb, Daimler; Suzanne Tylko, Transport Canada; Jack Jensen, General Motors; Akihiko Akiyama, Honda; Takeshi Harigae, Japan Automobile Research Institute (JARI).



WorldSID rib biofidelity pendulum impact test.

If a dummy is to provide engineers with information on potential human injuries, it must accurately replicate the size, weight, shape, and sitting posture of a typical human (referred to as "anthropometry"), it must respond to impacts like a human body ("biofidelity"), and it must have a means of measuring, collecting and recording physical parameters, such as impact forces, moments, deflections, rotations, and accelerations — all of which have been shown to be related to human injuries.

### **"The WorldSID Task Group produced the first dummy harmonized for worldwide use, and the most technically advanced."**

A recently completed multi-year WorldSID test programme conducted by the US National Highway Traffic Safety Administration (NHTSA) involved multiple dummies used in durability, repeatability, reproducibility, biofidelity, and full-scale crash tests. Results indicated good durability and improved anthropometry and biofidelity, leading NHTSA to conclude that in comparison to other dummies, "the WorldSID 50<sup>th</sup> male dummy is an improved side impact test dummy."

### **Improved anthropometry and biofidelity**

Under contract to the US government, the University of Michigan Transportation Research Institute performed an extensive study to quantify the size, weight, shape, and sitting posture of typical human automobile drivers. The results of this study (UMTRI-83-53-1) formed the basis for the WorldSID anthropometry design.

As shown in the overlay photo, the WorldSID is a nearly exact match to the average mid-size male driver as determined by UMTRI. The only differences are in the legs, due to the fact that the WorldSID includes shoes (the UMTRI model does not), which positions the dummy's feet and legs slightly higher than the shoeless model. With a WorldSID seated in a car, researchers can be confident that the dummy is a proper geometric representation of a human driver.

ISO/TR 9790:1999, *Road vehicles – Anthropomorphic side impact dummy – Lateral impact response requirements to assess the biofidelity of the dummy*, (see also ISO Focus, July/August 2004 issue) specifies procedures for evaluating side impact dummy biofidelity performance using a series of laboratory tests. Studied in the evaluation are six different body

## Main Focus

regions including the head, neck, shoulder, thorax, abdomen, and pelvis.

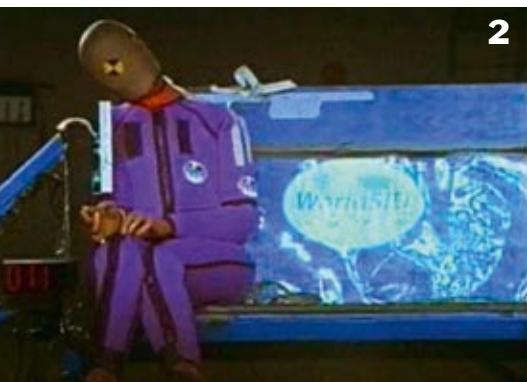
Based on the ISO/TR 9790 rating scale the WorldSID rating is 8.0 ("Good" on the 10-point scale). By comparison, other side impact dummies currently in use, USDOT-SID, ES2-re, EuroSID-1, and ES-2, have much lower ratings ranging from 2.3 to 4.6 (biofidelity details can be found in the 2009 Enhanced Safety of Vehicles article by Scherer et al.).

### Extensive data recording system

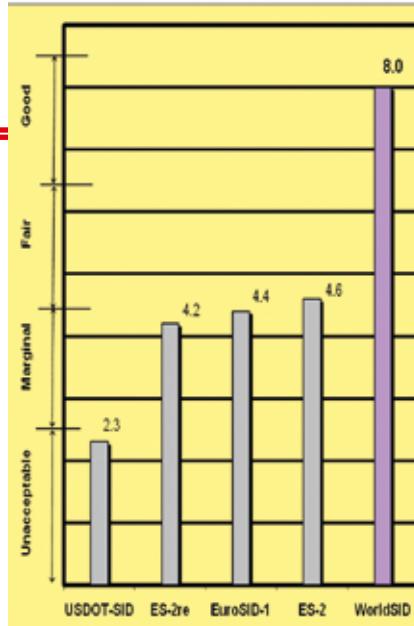
Human injuries are complex events dependent upon a variety of parameters. Head injuries can be caused by linear and rotational accelerations, while chest injuries tend to depend upon rib deflections. Leg bone fractures, on the other hand, are related to forces and moments. The WorldSID Task Group took advantage of the latest advances in miniaturized electronics to design an extensive electronic data collection and recording system for installation in the WorldSID. The WorldSID data collection system can record these types of potentially injurious loadings using a dispersed array of up to 224 electronic sensors, which are in turn wired to data recorders mounted within the dummy.



1



2



The WORLDSID's biofidelity is the best of any side impact crash test dummy to date and far exceeds the performances of others.

With the data system self-contained inside the dummy, WorldSID is free to move within the car during a test without the encumbrances of the large electronic umbilical cords required with older systems that utilise external data recorders. More data sensors distributed around different body regions provide researchers with an increased understanding of crash dynamics.

### Design and performance specifications

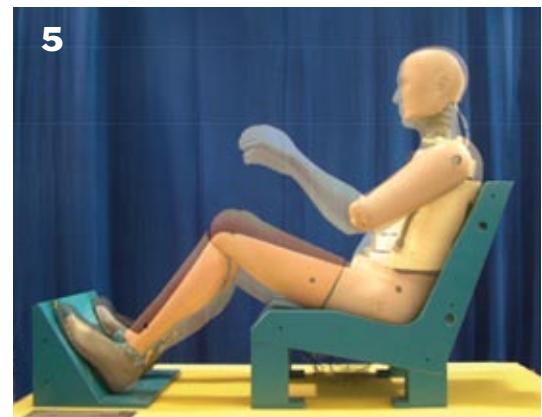
Even a technically superior dummy is of little use to the technical community if it is not well documented, easy-to-use and available. To ensure that the WorldSID is available to the worldwide research



3



4



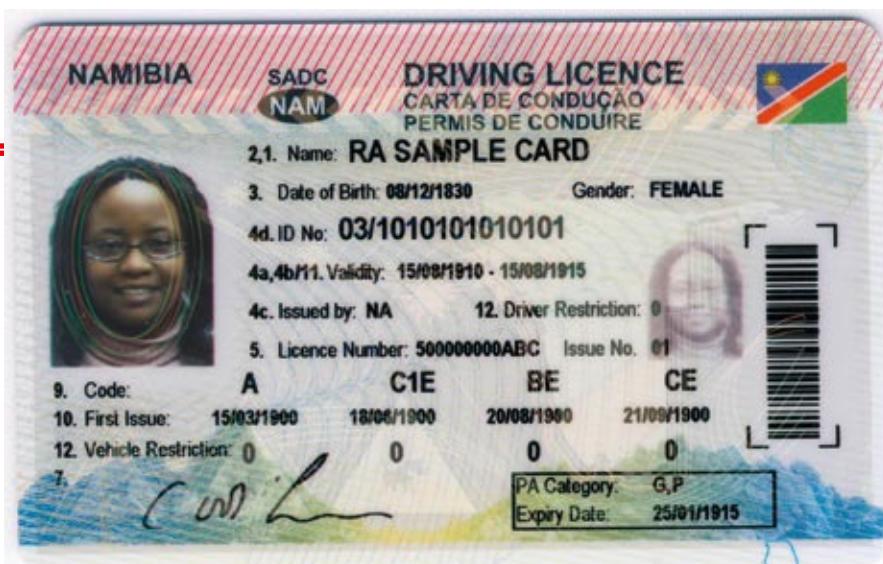
**1.** WorldSID during a full scale car air bag test. **2.** WorldSID side impact biofidelity sled test. **3.** WorldSID without a suit. **4.** WorldSID with test suit. **5.** Overlay of the WorldSID geometry and the UMTRI model.

community, the design details have been documented in ISO 15830:2005, which consists of four parts under the general title, *Design and performance specifications for a 50<sup>th</sup> percentile male side impact dummy* (WorldSID).

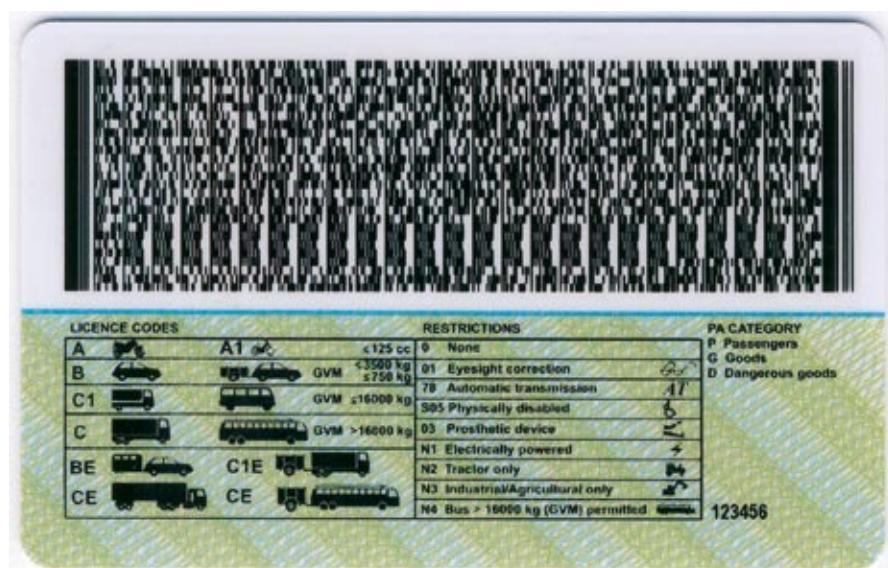
This documentation, consisting of nearly 500 pages plus 400 fabrication drawings and CAD files, includes all of the design details, material specifications and performance standards required for the fabrication of the WorldSID. ISO 15830 also includes an extensive user manual and detailed step-by-step seating position procedures.

In addition to the technical items discussed above, one should not underestimate the importance of worldwide dummy harmonization. Humans are physically similar worldwide, so it is logical to have a single crash dummy to test vehicle safety. However, cars sold in different regions of the world currently utilize different safety designs because they are tested with different dummies. The introduction of a single universal dummy for regulatory and consumer testing in all regions enables manufacturers to focus and coordinate design resources to improve occupant safety rather than engineering different safety designs using different dummies.

Even a dummy can see that. ■



An example of ISO-compliant driving licence. Above: front (portrait) side.  
Below: back (non-portrait) side.



## Spotting the fake – A new kind of driving licence

by Loffie Jordaan, Convenor,  
and Gerrit Fischer, Project  
Editor of working group  
ISO/IEC JTC 1/SC 17/WG 10,  
Motor vehicle driver licence and  
related documents

A driving licence serves as confirmation of the holder's ability to operate a vehicle safely in traffic. It certifies that the holder has been tested by an appropriate authority, was found to be competent, and is authorized to drive the class (size and type) of vehicle permitted on the licence under the condi-

tions stated on the licence (e.g. wearing glasses/contact lenses).

Confirmation that the licence was issued to the holder by the authority reflected on the licence is a critical requirement for law enforcement and for its recognition by another authority.

Based on the integrity of the licence document, other applications have developed over time. In some countries, the driving licence became the *de facto* identification document for financial transactions and border crossings, just to name a few.

### International vs. domestic

The United Nation Conventions on Road Traffic<sup>1)</sup> have been drafted and ratified by numerous member states of the United Nations (UN) with the objective of promoting safety in international



### On the road to safety

road traffic. Their maintenance has been assigned to the UN Economic Commission for Europe (UN/ECE) Transport Division in Geneva, Switzerland.

The conventions make provision for both an international driving permit (IDP) and a domestic driving permit (DDP). The IDP serves as a means of mutual recognition. Issued by the holder's home country issuing authority, it requests another country, which has ratified the conventions, to allow the holder to operate a motor vehicle as authorized domestically.

The IDP is essentially a translation of the DDP, using a globally recognized format and standardized vehicle categories. This facilitates global recognition and acceptance, regardless of the character sets, languages and vehicle category authorizations that appear on the DDPs. According to the convention, a UN member state may disqualify the holder of an IDP from driving in their territory by an appropriate recording in the designated area of the IDP.

**"Many countries are using ISO/IEC 18013 in their licence requirements."**

The problems and concerns reported with the current IDP include:

- Lacks integrity and can be easily copied, altered or simulated, making it difficult for law enforcement authorities to detect fraudulent licences from genuine documents
- In many countries, the IDP is issued by non-governmental authorities such as automobile associations, which do not query their respective government motor vehicle agencies to establish if the DDP presented is still valid
- There is no registry or directory of national motor vehicle agency addresses to enable inquiries and exchange of information among the agencies aimed at verifying the validity of a presented IDP
- Does not incorporate the ISO machine-assisted data storage technologies

1) Geneva (1949) and Vienna (1968).

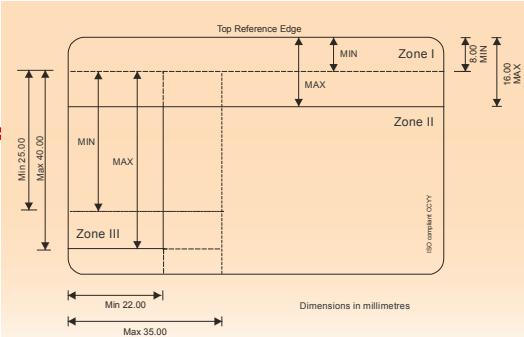
## Main Focus

- Suspension or cancellation of a DDP should result in the automatic suspension or cancellation of the IDP, however, current issuing practices do not facilitate this
- The IDP holder may circumvent disqualifications entered on their original IDP by obtaining a new IDP
- Validity of the IDP is currently limited to a maximum of one to three years, depending on the UN Convention followed.

## An innovative concept

Enter the ISO/IEC 18013 multi-part standard on *Information technology – Personal identification – ISO-compliant driving licence*. Its objective is to allow the issuance of one document which would serve both as an IDP and as a DDP. In addition, the standard facilitates global harmonization and interoperability of driving licences.

In practical terms, ISO/IEC 18013 has several benefits. It decreases the production cost of licences since vendors, who typically serve multiple issuing authorities, can standardize on production processes. It serves as a common standard underlying the regional and domestic exchange of driving privileges. And in today's world, where drivers regularly cross national borders, ISO/



Schematic layout of an IDL (not to scale).

IEC 18013 serves as a common platform for human-readable information and for machine-assisted storage, retrieval, reading and verification of data.

## How it works

ISO/IEC 18013 consists of four parts:

- **Part 1: Physical characteristics and basic data set** (2005). Specifies a minimum mandatory data set, a common layout for ease of recognition, and minimum security requirements. It allows for optional supplementary data elements (specific to national, community or regional needs)
- **Part 2: Machine-readable technologies** (2008). Prescribes requirements for the implementation of machine-readable technology on an ISO-compliant driving licence (IDL). Storing IDL data in machine-readable form supports international interchange by speeding up data input and eliminating transcription errors. Consequently, the automation and productivity of traffic law enforcement and other traffic safety processes can be improved. This part of ISO/IEC 18013 also allows issuing authorities to customize machine-readable data for domestic use. Apart from international interchange, the use of an IDL as a domestic driving licence allows domestic standardization. It also creates a domestic infrastructure capable of processing IDLs issued by other issuing authorities
- **Part 3: Access control, authentication and integrity validation** (2009). Prescribes requirements for implementing mechanisms that control access to data recorded in the machine-readable technology on an IDL, verifying the origin of an IDL, and confirming data integrity. Certain machine-readable technologies are vulnerable to being read without the knowledge of the cardholder, and to other means of unauthorized access (by entities other than driving licence or law enforcement authorities). Controlling access to IDL data stored in machine-readable form protects the data on the card from being read remotely by electronic means without the knowledge of the cardholder. Identifying falsified driving licences, or alterations to the human-readable data on authentic driving licences, presents a major problem for law enforcement authorities, both domestically and in the context of international interchange. Verifying the authenticity of an IDL and confirming the integrity of the data recorded allows driving licence and law enforcement authorities to distinguish between authentic IDLs and falsified or altered ones
- **Part 4: Test methods** (under development). When published, will prescribe compliance test requirements for the machine-readable data content, as well as for the mechanisms to control access to this data as specified in part 2 and part 3 respectively.

## About the authors



**Loffie Jordaan** is Convenor of working group WG 10, *Motor vehicle driver licence and related documents*, within ISO/IEC JTC 1, *Information technology*,

subcommittee SC 17, *Cards and personal identification*. After completing a degree in industrial engineering in 1995, Mr. Jordaan became involved in consulting to motor vehicle administrations. He has since, in this role, advised clients in Namibia, South Africa and the USA.



**Gerrit Fischer** is an industrial engineer, who after a short academic career and contracting stint, founded Fischer Consulting in 1988. Following numerous con-

sulting appointments by motor vehicle administrations in South Africa and the USA, he is recognized as an expert in the field of driving licences. He currently serves as Project Editor of ISO/IEC JTC 1/SC 17/WG 10, *Motor vehicle driver licence and related documents*.

**"ISO/IEC 18013 facilitates global harmonization and interoperability of driving licences."**



**On the road to safety**

## Adoption and use

ISO/IEC 18013 currently plays a role in various countries' driving licence programmes. Amongst others, many countries are using ISO/IEC 18013 in their licence requirements including the following:

- The USA and Canada: ISO/IEC 18013-1 forms the basis of the domestic USA/Canadian standard for driving licences – the American Association of Motor Vehicle Administrators (AAMVA) DL/ID card design standard. Although the AAMVA DL/ID card design standard incorporates unique domestic requirements, it allows issuing authorities to issue a card compliant with ISO/IEC 18013
- Several African countries use ISO/IEC 18013. The Namibian driving licence fully complies with parts 1 and 2 of ISO/IEC 18013. South Africa has a long history of synchronizing their driving licence with the ISO/IEC requirements. The most recent production contract requires full compliance with ISO/IEC 18013. In its procurement documentation, Kenya required driving licence cards to be compliant with ISO/IEC 18013
- A number of European countries are considering the incorporation of an integrated circuit into their driving licences. The standard according to which data must be stored is still to be specified by the European Commission. Leading members of the Association of European Vehicle and Driver Registration Authorities have indicated a preference to implement parts 2 and 3 of ISO/IEC 18013 for this purpose.

Compliance with ISO/IEC standards is voluntary. Use is at the sole discretion of the motor vehicle authority. But adopting ISO/IEC 18013 has demonstrated benefits in administering driving privileges and consequently in improving road safety.



## Intelligent solutions – Next generation warning and control systems

by Steven E. Shladover, lead USA expert to ISO/TC 204, WG 14, Vehicle/roadway warning and control systems

**N**ot only can intelligent transport systems (ITS) make travel more reliable and convenient, and reduce traffic congestion, fuel consumption and carbon emissions, they can also significantly improve road safety.

ITS refers to the application and integration of information technology to urban and rural surface transportation. By harnessing rapid technological advances, ITS can considerably enhance the performance of a road transport system.

International standardization of ITS enables the integration and interoperability of new technology with existing infrastructure. In this manner, International Standards are contributing to spreading this technology and know-

how, and facilitating its entry into new markets, resulting in significant social and economic returns.

### Detecting unsafe road situations

The technical committee developing standards for ITS is ISO/TC 204, *Intelligent transport systems* (see **box** overleaf). Within ISO/TC 204, working group WG 14, *Vehicle/roadway warning and control systems*, is especially dedicated to improving safety of road transport by detecting and responding to potentially unsafe interactions among vehicles, or between vehicles and the roadway infrastructure.

WG 14's standardization process is based on a fundamental technical understanding of road vehicles' mechanical and electrical systems, roadway infrastructure design and operations, remote sensor and wireless communication technologies, and the technical and economic maturity of all relevant subsystems.

However, the capabilities and preferences of drivers are the ultimate determinants of the safety gains that can be realized from use of vehicle/roadway warning and control systems. Therefore WG 14 also has to apply knowledge of the human factor aspects of these systems to determine what attributes

## Main Focus

should be required and/or prohibited by the standards.

### Distracted drivers

In recent years, there has been a growing recognition of the important role that driver distraction plays in road vehicle crashes. However, it has been difficult from societal and political perspectives to prevent drivers, through law enforcement alone, from engaging in distracting activities.

Given that drivers are likely to continue to be distracted (and fatigued or otherwise disabled), the most effective way of preventing crashes is through automatic independent sensor and warning systems that alert them to problems that they will otherwise disregard. With this in mind, WG 14 has been developing standards that define performance requirements and test procedures for virtually all of the driver warning and control assistance systems that have entered the market or are nearing market entry.

### Forewarned, forearmed

Some of the key standards developed (or being developed) by ISO/TC 204/WG 14, which contribute to improving road traffic safety, tackle the following areas.

### About the author



**Steven E. Shladover** is lead USA expert to ISO/TC 204, WG 14, *Vehicle/roadway warning and control systems*. Dr. Shladover is a Research Engineer at the California PATH Program of the Institute of Transportation Studies of the University of California at Berkeley, which he joined in 1989, after 11 years at Systems Control, Inc. and Systems Control Technology, Inc. Dr. Shladover received his degree in mechanical engineering from the Massachusetts Institute of Technology (MIT), where he began conducting research on vehicle automation in 1973.

California PATH Program of the Institute of Transportation Studies of the University of California at Berkeley, which he joined in 1989, after 11 years at Systems Control, Inc. and Systems Control Technology, Inc. Dr. Shladover received his degree in mechanical engineering from the Massachusetts Institute of Technology (MIT), where he began conducting research on vehicle automation in 1973.

## On par with technology

ISO/TC 204, *Intelligent transport systems*, was created in 1993 to develop standards for transport information and control systems (TICS) in the emerging field of intelligent transportation systems (ITS).

ITS employs information technology (electronic sensing, wireless communications, computing and automatic control) to improve the performance of road transportation systems. The new committee would focus on improving the efficiency, capacity, safety and cost effectiveness of road transport operations, while bringing together all stakeholders to achieve international consensus.

One of the earliest working groups created within ISO/TC 204 was WG 14, *Vehicle/roadway warning and control systems*. WG 14 develops standards for systems that warn drivers about potentially unsafe conditions, and which may also assist them in controlling the motions of their vehicles.

This innovative working group was created at a time when these systems were still in their infancy – not yet commercially available, and the subject of research and development by government, industry and academic teams around the world. Yet another example of standardization on par with technology!

#### Warning about forward collision hazards:

- Forward vehicle collision warning systems (ISO 15623)

#### Warning about side collision hazards:

- Lane departure warning systems (ISO 17361)
- Lane change decision aid systems (ISO 17387)
- Curve speed warning systems\*

#### Maintaining proper spacing to preceding vehicles, thereby helping to avoid forward collisions:

- Adaptive cruise control (ISO 15622)

- Low-speed following systems (ISO 22178)
- Full-speed range adaptive cruise control (ISO 22179) – see **box**, page 35
- Forward vehicle collision mitigation systems\*

#### Warning about parking collisions :

- Manoeuvring aids for low-speed operation (ISO 17386)
- Extended range backing aids (ISO/DIS 22840\*\*)

#### Avoiding side crashes:

- Lane keeping assistance systems\*

#### Warning about traffic signal violations:

- Cooperative intersection signal information and violation warning systems\*

For each of these systems, WG 14 has sought and achieved international consensus regarding the minimum necessary requirements and functions that ensure their effectiveness and performance.

The International Standards aim to improve safety, while gaining driver acceptance and remaining affordable to the potential purchasers of the systems (technically and economically feasible). The WG has also defined testing procedures for key functions and performance requirements, to verify compliance with the relevant standards.

The standardization work of ISO/TC 204/WG 14 provides a foundation for the development and widespread marketing of vehicle/roadway warning and control systems, which will improve road safety. Technology suppliers can use these standards when offering their products to system integrators and original equipment manufacturers. The latter can in turn take advantage of these standards when selling the systems to end users through a common terminology and the meaningful and relevant assurance that ISO standards represent performance and capabilities. ■

\* Preliminary work item (potential areas for future work).

\*\* Draft International Standard.

## ISO standard for cruise control systems promises safer and more enjoyable driving

by Elizabeth Gasiorowski-Denis,  
Editor of ISO Focus

Ever driven a long distance using your cruise control and still felt tired and stressed from constantly having to adjust the vehicle speed to match traffic flow? An ISO International Standard for full speed range adaptive cruise control is expected to reduce driver fatigue and stress on long commutes by automatically maintaining a safe distance from the car ahead regardless of its speed.

Full speed range adaptive cruise control (FSRA) technology improves the function of standard cruise control by adjusting the vehicle speed and distance to the vehicle ahead without any action on the part of the driver. If needed, the system will slow the vehicle down to a standstill. Once the road is clear, the system will re-accelerate the vehicle back to the set speed. The system applies to highway driving, both under free-flowing and congested traffic conditions.

*ISO 22179:2009, Intelligent transport systems – Full speed range adaptive cruise control (FSRA) systems – Performance requirements and test procedures*, will improve safety for all highway users by automatically adjusting vehicle speed and, in so doing, enhance driving comfort and convenience.

“Conventional cruise control is very useful, but can become a source of irritation when used in moderate or heavy traffic,” said Yoshimi Furukawa, Convenor of the ISO working group that developed the standard. “Traffic conditions can change quickly from slowing vehicles, or close cut-ins by other vehicles. The FSRA not only takes action when the distance to the vehicle in front changes, it also resumes the speed when the road is clear.”

The new standard covers the following aspects:

- Basic control strategy
- Minimum functionality requirements
- Basic driver interface elements
- Minimum requirements for diagnostics and reaction to failure
- Performance test procedures.

*ISO 22179:2009, Intelligent transport systems – Full speed range adaptive cruise control (FSRA) systems – Performance requirements and test procedures*, was developed by ISO technical committee ISO/TC 204, *Intelligent transport systems*, and is available from ISO national member institutes. It may also be obtained directly from the ISO Central Secretariat through the ISO Store ([www.iso.org/isostore](http://www.iso.org/isostore)) or by contacting the Marketing, Communication and Information department ([sales@iso.org](mailto:sales@iso.org)).



## Main Focus

# Uncovering eCall's potential – the European experience

by Bob Williams, former Head of United Kingdom delegation to ISO/TC 204, Intelligent transport systems

Each year 40 000 people die on the roads in Europe, and more than 1.7 million are injured. This casualty rate compares to that of a major war. European countries have therefore signed an agreement to halve the number of fatalities and injuries over a 10-year period. Among the initiatives to be implemented is eCall, an innovative automatic crash notification system.

With eCall emergency services can:

- Be immediately alerted
- Automatically receive location and key information about the vehicle



**"ISO 24978 will help make information provided by the vehicle understandable by the emergency and rescue services."**

- If the vehicle is equipped with detectors, learn the number of occupants
- Speak to the occupants of the vehicle.

### Immediate emergency action

How does it work? When sensors in a vehicle detect that there has been a crash, or if an emergency button is pressed, the vehicle will automatically contact the emergency services

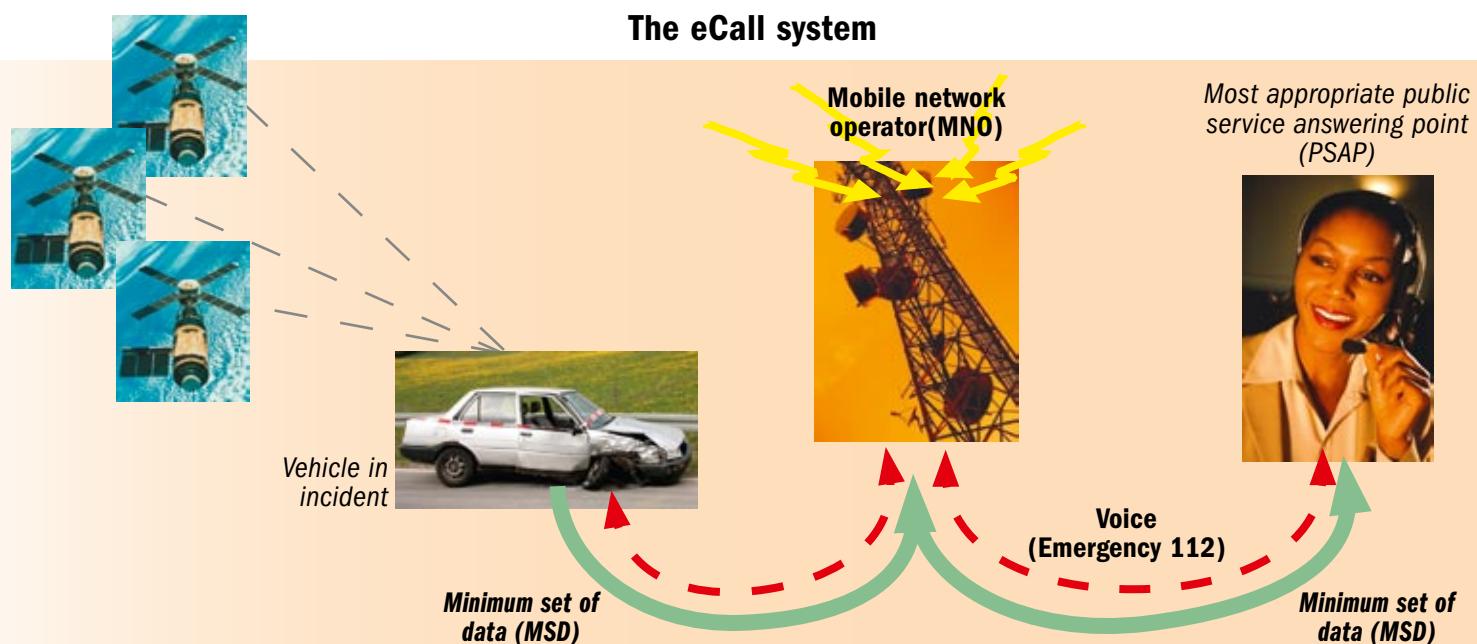
("112" in Europe), provide a standardized minimum set of data (and maybe additional useful information) and open a voice link between the rescue services and the occupants of the vehicle. The benefits of e-Call are clear and significant, particularly for incidents that take place in remote areas or far from the town centre.

The "golden hour" is the first hour after an accident, where there is a very strong correlation between getting treatment quickly and mitigation of deaths and injuries.

With eCall, emergency services will know exactly where the vehicle is located. This information will help victims, disoriented, in shock, not sure of where they are, or injured, to receive help. And in a serious accident, the occupants may not even be conscious. By making this information rapidly and automatically available to emergency services, it will be possible for rescue teams to arrive more quickly and with adequate support.

While waiting for their arrival, the rescue services will be able to talk to the vehicle's occupants (if they are conscious), reassure them, ascertain the extent of their injuries, give them advice on what to do until help arrives, and indicate how long it will take to get to them.

### The eCall system





## On the road to safety

### Putting it in motion

However, establishing and introducing eCall is a complex and lengthy process.

First, the meta-data for the “minimum set of data” to be sent through eCall must be agreed upon. In Europe, this “minimum set of data” is specified in the European Committee for Standardization (CEN) technical specification CEN/TS 15722:2009, *Road transport and traffic telematics – ESafety – ECall minimum set of data (MSD)*. CEN 15722, contains information such as the vehicle VIN identification (ISO 3779:1983), location, direction of travel, vehicle motive type (petrol, diesel, gas, hybrid, electric), time of incident, number of passengers, and other data.

Its metadata content, on the other hand, will be housed in registries, such as those conforming to the ISO 24978:2009, *Intelligent transport systems – ITS Safety and emergency messages using any available wireless media – Data registry procedures*.

### “The benefits of eCall are clear and significant.”

Developed by ISO technical committee ISO/TC 204, *Intelligent transport systems*, ISO 24978 will help make information provided by the vehicle understandable at the point of reception by the emergency and rescue services.

In Europe, it is envisaged that there will be both a pan-European system based on the use of mobile cell phone telephony and the 112 emergency number system, and a third-party support system for vehicles that are already equipped with commercial support communication systems – where the third-party service provider may use different means to connect to the vehicle, sense and receive incident information, filter out non-emergency calls, and will connect relevant calls to the emergency services and provide them with the minimum set of data, and establish a voice link between the emergency operator and the occupants

of the vehicle. These commercial services may use mobile phone networks, satellite phones or other connections. Generally providing a much wider range of support services, on a subscription or charged basis, eCall is just one of the services they support.



*Death and injury on Europe's roads.*

Standards are therefore necessary to establish the operating requirements for both the pan-European eCall system and for third-party support. High-level application protocols are also required to make the system work. Standards for these three areas are at an advanced stage of development for Europe. In the future, these may be proposed to ISO as a basis for the development of Interna-

### About the author



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an Telecommunication Standards Institute for 17 years. He was, until recently, Head of the United Kingdom delegation to ISO/TC 204. He convenes the working group in CEN that is developing eCall standards for Europe. He is the author of *Intelligent Transport Systems – Standards*, published by Artech House, 2008.

tional Standards on eCall, where it would be necessary to also take into account the different approaches to the network support in other countries.

Furthermore, European standards to provide quality of service categorization and other broad emergency services are also under development. Again, the intention is to offer these for adaptation into the wider international community at a later date.

### Building support

The standards, however, are only part of the story. While they ensure interoperability, so that eCall can work in any country in Europe and be understood by any emergency services operator, there is also a need to obtain political and administrative support in each of the 27 EU countries.

**“The development of International Standards will help spread the benefits of eCall throughout the world.”**

Identified as one of the major initiatives designed to halve road deaths and injuries over a 10-year period, the European Commission – Directorate General of the Information Society and Media (INFSO) – has been very active in this respect, taking the lead to encourage and bring together emergency services, automotive manufacturers, and mobile network operators, to obtain consensus to implement eCall.

Now that the decisions have been made as to the shape and form of European eCall, there is now an implementation platform initiative, lead by DG INFSO-eSafety, to get voluntary commitment from all parties, so that the Pan European system can be in place by 2012.

Although it will take several years before all cars are eCall equipped, the effort, work and time spent is worth the trouble, as it will result in significantly fewer deaths and injuries on our roads. The development of International Standards in this area will help spread these benefits throughout the world.