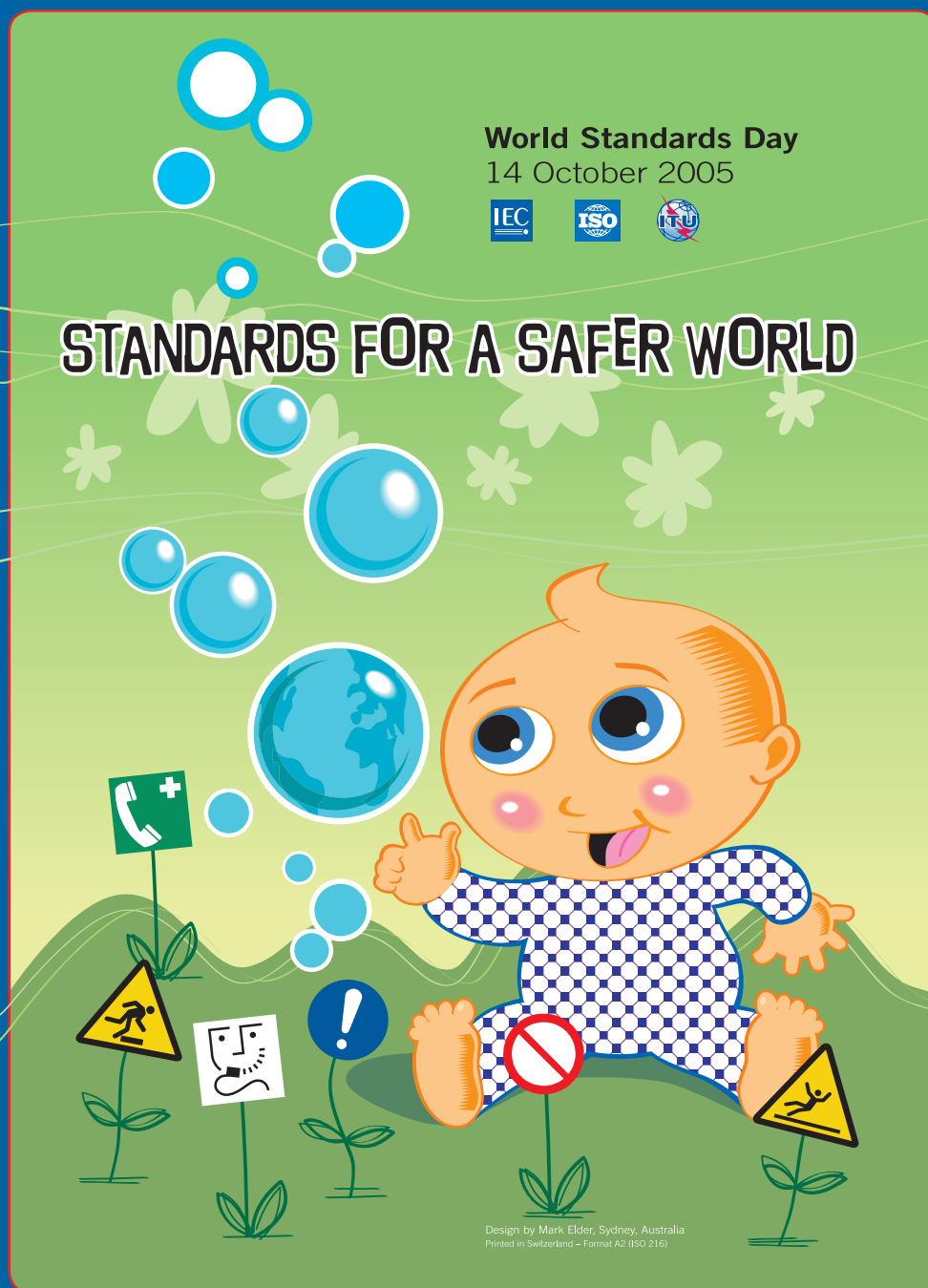


# ISO Focus

The Magazine of the International Organization for Standardization

Volume 2, No. 9, September 2005, ISSN 1729-8709



- **Gathering of standard makers**
- **World Trade Report 2005 highlights ISO's key role**





**ISO Focus** is published 11 times a year (single issue: July-August). It is available in English.

Annual subscription 158 Swiss Francs  
Individual copies 16 Swiss Francs

#### *Publisher*

Central Secretariat of ISO  
(International Organization for Standardization)

1, rue de Varembe  
CH-1211 Genève 20  
Switzerland

Telephone + 41 22 749 01 11  
Fax + 41 22 733 34 30  
E-mail [gasiorowski@iso.org](mailto:gasiorowski@iso.org)  
Web [www.iso.org](http://www.iso.org)

*Manager*: Anke Varcin

*Editor*: Elizabeth Gasiorowski-Denis

*Artwork*: Pascal Krieger and  
Pierre Granier

*ISO Update*: Dominique Chevaux

*Subscription enquiries*: Sonia Rosas  
ISO Central Secretariat

Telephone + 41 22 749 03 36  
Fax + 41 22 749 09 47  
E-mail [sales@iso.org](mailto:sales@iso.org)

© ISO, 2005. All rights reserved.

The contents of *ISO Focus* are copyright and may not, whether in whole or in part, be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without written permission of the Editor.

ISSN 1729-8709  
Printed in Switzerland

Cover photo: Marc Elder, Australia.

ISO Focus September 2005

# Contents

**1** *Comment* Ziva Patir, ISO Vice-President  
(technical management), Securing the safety of our society

**2** *World Scene*  
Highlights of events from around the world

**3** *ISO Scene*  
Highlights of news and developments from ISO members

**4** *Guest View*  
Tamotsu Nomakuchi, President and CEO of Mitsubishi Electric Corporation

**7** *Main Focus*

## Standards for a safer world



- World Standards Day – Standards for a safer world
- Advisory Group on security
- Improved ISO/IEC 17799 heralds new series on information security management systems
- Biometrics: global challenges and customer needs
- Container security seals
- Safer ships: lifesaving and fire protection at sea
- Safe machine operations
- High ambitions for a new robot safety standard
- Providing fire containment standards for today and tomorrow
- Image safety – new biological risks in the IT age
- Consumers depend on safety standards
- Protecting vital sites with new clean fire extinguishing systems
- Management of food safety in the supply chain
- Managing security in the whole supply chain

## **38** *Developments and Initiatives*

- Putting Passion into Practice – the Standard Makers' third ISO Conference

## **43** *New this month*

- World Trade Report 2005 highlights ISO's key role
- ISO 9000 and leading agricultural seed researcher and producer

## **45** *Coming up*

## Securing the safety of our society

**S**ecurity is understood as the antidote of danger, risk, damage, injury or death – whether they result from human negligence or violence, industrial activities or from natural disasters – and it implies that dire measures need to be taken in order to prevent or reduce the occurrence of such threats.

On 11 September 2001, the world experienced a tremendous “wake-up call”. It has today become clear that there must be a change in the way security issues are dealt with, including the need for an evolution of the respective roles of government, the private sector and society, as well as for the behaviour of citizens.

While acts of terrorism have drawn the world’s attention to counter-ing human malevolence, security is not restricted to this aspect; it addresses a wide spectrum of measures to help prevent the daily occurrence of injuries, caused by everything from physical accidents at home, at work or in transportation to aggressions, environmental deterioration or hazardous activities, from unsafe toys for children to the safety in cars as well as other threats related to the evolution of society. With the pervasiveness of ICT and our growing dependence on their reliable operation, IT security has also become a major concern.

The need for International Standards has grown with the globalization and broadening of the concern for security and of the scope of standardization itself. ISO, the IEC and ITU have decided to devote this year’s World Standards Day to the theme, “Standards for a safer world”. As highlighted in the WSD message on page 7, the event is designed to raise awareness to the extent of this contribution, where it impacts and the scale of its importance.

Indeed, in ISO, we are not only still actively producing and updating standards related to the safety of consumer products or industrial equipment, but we

have also expanded to the management of security or the tools deployed globally to ensure it, such as biometrics or securing the global supply chain. In this way, we can contribute to improving the level of security worldwide and disseminate good practices, whilst avoiding creating new technical barriers to trade.

**“At ISO, we have both an obligation and a tool to contribute effectively to the global effort of providing greater security to society.”**

Our Advisory Group on Security has recently submitted its final report with 15 recommendations for implementation. These recommendations provide a strategic and systematic approach that will allow us to respond effectively to the evolving needs of society.

Moreover, our stakeholders expect standards, where they are needed, to be delivered in a matter of months, not years. The need for effective solutions at short notice requires the use of existing products and processes and adapting them for security purposes. For example, our Advisory Group on Security identified many existing International Standards for products and test methods that could be used in relation to security. There is also an opportunity to adapt existing products and technologies from the Defense Industry for civilian security solutions.

Finally, with the development of trade and the fact that both natural disasters and violence know no frontier, international solidarity and collaboration is indispensable. Developing and implementing internationally accepted standards for security requires, more than ever, the involvement of the world community: this is precisely what the ISO

System enables. It is encouraging to note that an extensive array of security-related standards exist or are under development, thanks to the strong partnership between government and inter-governmental organizations on the one side, and the private sector on the other.

So as we think about standards for security, we must consider our strategic plan, whose vision is to bring a positive contribution to sustainable development, and implies making a balance between our present needs and the well being of future generations. By optimizing resources and, above all, using International Standards, we will be in a position to contribute effectively to global security efforts and achieve a safer and more secure world for all people, from all walks of life in society – today and tomorrow.

One thing has become very clear. We need to continue working together in order to create a safer world. At ISO, we have both an obligation and a tool to contribute effectively to the global effort of providing greater security to society. Let us meet the challenge together.



**Ziva Patir**  
*ISO Vice-President (technical management) and Director-General, Standards Institution of Israel*



# World Scene

## Pacific Area Standards Congress

The 28<sup>th</sup> meeting of the Pacific Area Standards Congress (PASC), a forum to strengthen international standardization programmes for countries in the Asia-Pacific region, was held in Nagoya, Japan, between 21 and 23 June 2005.

ISO President Masami Tanaka attended the event, and provided an update on ISO's progress towards Horizon 2010, the *ISO Code of Ethics*, the *ISO Five Year Action Plan for Developing Countries*, and the *ISO Policy of Global Relevance*.



The PASC meeting highlighted the importance of the strong relations and synergies between ISO, IEC and the ITU and encouraged the organizations to continue to work towards closer collaboration, with particular focus on the issue of intellectual property rights policy.

A special session was held on "Standards for a Safer World," which included presentations addressing the 2004 tsunami disaster and recommendations encouraging standards development experts to work closer with seismology and tsunami experts. It was agreed that sharing between PASC members of information on early warning systems and disaster recovery could be crucial in the areas of environment, accessibility, unexpected serious events, and metrology.

In parallel to the meeting, Professor Masami Tanaka was presented with the Inaugural PASC Meritorious Service Award for 2005 for his outstanding work as PASC Standing Committee Chair from 1995 to 2000 and for his tireless

work in standardization at national, regional and international levels.

The meeting was hosted by Japanese Industrial Standards Committee (JISC), ISO member for the country.

## Codex Alimentarius Commission addresses relations with ISO

The Codex Alimentarius Commission held its 28<sup>th</sup> session in Rome from 4 to 9 July 2005. It had explicitly on its agenda the issue of its relations with ISO. Delegates recognized and welcomed the expanding collaboration and the need for close coordination.

ISO Secretary-General, Alan Bryden, presented the broadening scope of ISO's activity in the area of food products and foodstuffs, covering test and analytical methods, management aspects, such as ISO 22000 and related standards on food safety management and product traceability, or the toolbox of ISO standards on conformity assessment.

The relevance of this work to the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), which ISO had had the opportunity to present to the WTO SPS Committee a few days previously, was also underlined, Alan Bryden took the opportunity of the Codex meeting to also meet Mr. Jacques Diouf, the Director General of the Food and Agriculture Organization. This latter organization is, with WHO, one of the two parent organizations of the Codex Alimentarius Commission.

The current and potential collaboration between FAO and ISO is important in domains that range from agricultural equipment to sustainable agri-

(Left to right) Jacques Diouf, Director General of the FAO with Alan Bryden, Secretary-General of ISO.



culture, from forest management to food safety, from the promotion of the use of the ISO 14000 series to consumer information and protection.

## Excellence in education supported by ISO standards

The Arab Academy in Alexandria, in collaboration with EOS, the Egyptian member of ISO, organized on 27-29 June a regional conference entitled "Quality in education: the path to excellence". Attended by over 250 participants from 10 countries, it focused on examples and modalities for implementing quality management in educational institutions.

Indeed, education is both a key to economic development and, concerning higher education, a subject for increasing international competition. National schemes for the accreditation of faculties and curricula are expanding, as was illustrated by the examples of Italy and Egypt. More and more, these schemes promote the use of the ISO 9000 series as the core element of management systems for educational institutions.



(Left to right) Alan Bryden, Secretary-General of ISO; Dr. Mahmoud Eisa, President, Egyptian Organization for Standardization and Quality Control (EOS); Dr. Sherif El-Araby, Dean, Productivity and Quality Institute, Arab Academy for Science and Technology.

The ISO Secretary-General's key note address focused on the use of ISO 9001 and the specific International Workshop Agreement related to education (IWA2), as well as on ISO 10015 which provides Guidelines for the satisfaction of training needs in organizations.

On the occasion, Alan Bryden signed a MoU with the Arab Academy, represented by its President, Prof. Dr. Gamal El Din Mokhtar Mokhtar, to initiate collaboration, in coordination

with AIDMO, on the provision of training services and material to the Arab region in relation to the promotion of standardization.

## Cooperation within EuroAsian countries



The 27<sup>th</sup> meeting of the the Euro-Asian Council for Standardization, Metrology and Certification (EASC), an intergovernmental body of the Commonwealth of Independence States (CIS), was held in Chisinau, the Republic of Moldova, on 20 to 22 June 2005.

Presentations included updates on EASC work in the area of harmonization of technical regulations and interstate standardization, metrology, conformity assessment and accreditation.

Mrs. Béatrice Frey, Head, Bureau of the Secretary-General, ISO Central Secretariat, gave a presentation on the progress made to date of the *ISO Strategic Plan 2005-2010* and identified areas where members of EASC could play an important role. She also noted that an increasing number of EASC members are interested in adopting ISO standards and translating them into Russian, in an effort to avoid duplication and unnecessary barriers to trade.

In examining the draft "Agreement on the fundamentals of harmonization of technical regulations in the CIS member states", EASC members recognized the importance of greater harmonization and adopted 60 interstate standards that have been harmonized with International and European standards.

Mr. Gregory Elkin, Head of the Federal Agency on technical regulation and metrology of the Russian Federation, ISO member for the country, was elected President of EASC.

For more information, contact Béatrice Frey: [frey@iso.org](mailto:frey@iso.org)

# ISO Scene



© ISO

## New technical committee on nanotechnologies

ISO has established a new technical committee on nanotechnologies (TC 229). The decision was among those taken by the organization's Technical Management Board (TMB) at its June 2005 meeting in Geneva, Switzerland.

The scope of the committee identifies specific standardization work such as classification, terminology and nomenclature, basic metrology, characterization, including calibration and certification, risk and environmental issues. Test methods include approaches for determining physical, chemical, structural and biological properties of materials or devices for which the performance, in the chosen application, is critically dependent on one or more dimension of <100nm. Test methods for applications, and product standards are to come within the scope of the technical committee.

The proposal for the new field of technical activity was submitted by the British Standards Institution (BSI), ISO member for United Kingdom, who has been assigned the secretariat, with Dr. Peter Hatto (United Kingdom) acting as its Chair.

ISO/TC 229 is required to submit within a maximum of 18 months a draft business plan for review by the TMB. Its first meeting is expected to be held in November 2005.

## SII celebrates

On the occasion of the 60<sup>th</sup> anniversary of standardization in Israel, the Standards Institution of Israel (SII) organized, in the last week of May, a series of events to underline and promote its contribution to national economic development and to international standardization. In particular, an international conference on "Standardization and Quality" was attended by over 350 participants from more than 20 countries.

Keynote presentations were made by Dr. Torsten Bahke, Director of DIN Deutsches Institut für Normung and ISO Vice-President (policy) as well as by Dr. Mark Hurwitz, President and CEO of The American National Standards Institute (ANSI). ISO Secretary-General highlighted the *ISO Strategic Plan 2005-2010*. An update was given on developments in ISO/TC 176, *Quality management and quality assurance*, and ISO/TC 207, *Environmental management*, together with presentations of the need and prospects for integrated management systems standards.



Other events were associated to make the celebration complete and communicative: an open house at the SII facilities, the presentation of the Israel National Quality Awards and an International Conference on homeland security held in Jerusalem.

The celebrations were hosted by Ziva Patir, Director-General of SII and ISO Vice-President (technical management).

## New ISO working group on risk management

ISO has established a working group designed to develop general guidelines for principles and implementation of risk management.

Risk management is a key business tool within both the private and public sector around the world. Sound and effective implementation of risk manage-



© ISO

ment is part of best business practice at a corporate and strategic level as well as a means of improving operational activities. It is widely understood that, to be truly effective, risk management must become part of the

culture of the organization and be part of everyday business practice.

There are a number of risk-related standards published by ISO and other standards bodies as well as

many standards that refer to risk management processes, but there is no central ISO document that provides a consistent approach. Although the concept of risk terminology has been defined in ISO/IEC Guide 73, there is not yet a clear concept of risk or the management of risk.

There is a need to develop an International Standard which provides the concept of and guidelines for implementing risk management.

The working group, under the TMB, will be chaired by SA

(Australia) and the secretariat is to be provided by JISC (Japan). It is charged with developing a document that provides principles and practical guidance on risk management. The future guidelines are envisaged to apply to all organizations, regardless of type, size, activities and location, and should apply to all type of risk.

## ISO Secretary-General visits PSI



Following his participation in the SII conference on standardization and quality, ISO Secretary-General visited PSI, the Palestine Standards Institute, which has recently upgraded its membership in ISO to correspondent member.

High level contacts with Government Officials and representatives of the Palestinian economy were organized, as well as visits to several industrial plants in Ramallah and Bethlehem, covering several sectors: food processing and beverages, stone products, telecoms, as well as the Palestinian Trade Board and an incubator for IT start ups. PSI, which covers standardization, metrology and certification, has increased its staff to almost 90, and is providing a wide range of services and assistance to the Palestinian economy.

PSI wishes to enhance its role as the "go between" its stakeholders and international standardization. Increased and targeted participation in ISO, as well as associated training needs were considered during the discussions of the ISO Secretary-General with the Chairman of PSI, Eng. Mazen Sonokrot, who is the Minister for Economy, and the Director General, Mazen Abusharia.



## Tamotsu Nomakuchi

**D**r. Tamotsu Nomakuchi is President and Chief Executive Officer of Mitsubishi Electric Corporation.

Dr. Tamotsu Nomakuchi, who received his MSc from Kyoto University, began his career as a research scientist at Mitsubishi Electric's Central Research Laboratory in 1965. In 1975, he received his PhD in Engineering from Osaka University.

Dr. Nomakuchi was elected corporate vice president, General Manager of Information Technology R&D Center in 1995 and promoted to corporate senior vice president, Corporate Research and Development in 1997. After serving as executive vice president, Information System and Network Services, he became President and Chief Executive Officer of Mitsubishi Electric Corporation in April 2002.

**ISO Focus:** If you were to describe the Mitsubishi Electric Group in a nutshell, what would you say?

**Tamotsu Nomakuchi:** Mitsubishi Electric was established in 1921 and now has consolidated sales of about 32 billion US dollars. The company is expanding its business in the following fields: energy and electric systems, industrial automation systems, information and communication systems, electronic devices and home appliances. The company has about 100 000 employees in its consolidated global terms, and operates in over 34 countries. Mitsubishi Electric is especially committed to making strong business-

© Mitsubishi Electric Corp.



**"Standards must be internationally acknowledged, to ensure compatibility and guarantee interoperability."**

es even stronger. The company focuses on such areas as satellites, elevators and escalators, automotive electric and electronic products and factory automation products.

Mitsubishi Electric is in the process of becoming a conglomerate of highly competitive electric-electronic businesses, with its unity stemming from interconnecting synergies.

**ISO Focus:** How does Mitsubishi Electric, that designs and develops equipment and products for personal, public and industrial use in a broad range of industries, ensure and demonstrate the safety of both its users and its workforce? What benefits do you see for your Company from International Standards to support design, marketing, trade and communication in this area?

**Tamotsu Nomakuchi:** To tackle the issue of safety within the company, we have established company-wide procedures associated with quality assurance that ensure strict compliance – both inside and outside the company – with any quality-related laws, standards or technical criteria,

including product safety. We look to establishing safety and reliability by making full use of related technologies and the International Standards during the developing, designing and manufacturing processes.

In addition, we have established product safety management activity and quality diagnosis as company-wide regulations so as to ensure product safety, and to take action to prevent the occurrence of product defects as well as any recurrence of such. We have also streamlined product safety regulations within each business group and for factory lines, and, through regular and periodic inspections of product safety management, we have striven to make sure our products are safe.

To give a specific example: in the area of home appliances, we ensure



Mitsubishi Electric Corporation Headquarters, in Tokyo, Japan.

safety through risk assessment based on ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*, ISO 14121, *Safety of machinery – Principles of risk assessment*, and ISO 12100, *Safety of machinery – Basic concepts, general principles for design*. As the top-ranking standard within safety standards in the home appliances field, we have put in place the fail-safe design standard, that reestablishes any malfunction to bring it in line with the standard's safety criteria. This standard seeks to ensure development of reasonably safe, free-from-hazard products that may cause injury or damage to users.



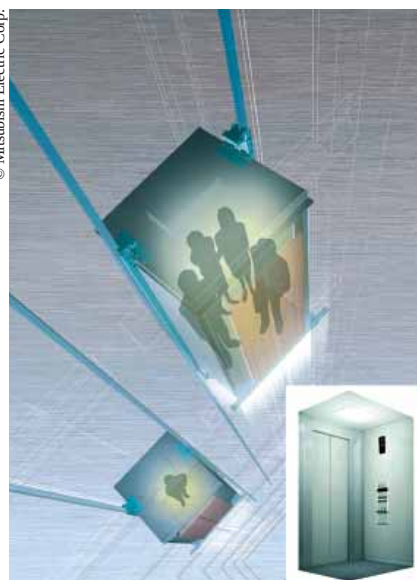
Laser processing machines.

**ISO Focus:** With the growing convergence of ICT and electronics, how do you view the cooperation between IEC, ITU and ISO, developed in the context of the World Standards Cooperation? IEC and ISO have successfully joined forces in the area of Information Tech-

**Tamotsu Nomakuchi:** In recent years, there has been a tendency for businesses to spread into new areas and to develop internationally. In view of this evolution, standards must be internationally acknowledged so as to ensure compatibility between operating techniques



Large-scale display systems.



Machine-room-less elevator AXIES.

nologies (cf. JTC1) and in the area of conformity assessment where they have developed a comprehensive tool box of International Standards and Guides relating to first, second and third party conformity assessment. Would you encourage further synergies?

and systems and to guarantee interoperability between systems. It is our sincere hope and expectation that IEC, ITU and ISO will cooperate and promote together, under the framework of World Standards Cooperation (WSC), activities that help develop International Standards and to establish evaluation criteria. This will result in the creation of standards that enable compatibility and interoperability.

Information and communication technologies (ICT) are foundation technologies that support many social activities, and have led the growth and development of the Internet. In this field as well, International Standards have played a major role.

Due to the massive spread of the Internet, information systems are now largely inter-connected, enabling the rapid distribution of individual and organizational information. In such an environment, measures to enable information security are essential.



## Guest View

ISO/IEC 15408 – the standard that enables objective evaluation of the quality of information security – sets out seven grade evaluation levels; in certain cases today, procurement at private and government levels is contingent upon acquisition of the ISO/IEC 15408 certification. Our company has been awarded ISO/IEC 15408 certification for systems in the financial field; acquisition of this certification for products and systems may in the future become necessary in other fields, as well.

An information security management system (ISMS) based on ISO/IEC 17799, *Information technology – Security techniques – Code of practice for information security management*, has been introduced and promoted in Japan together with the country's personal data protection Act. Much in the same way that ISO 9000 and ISO 14000 have been broadly utilized, ISMS will become increasingly accepted in the future.

**“We are eager for ISO, IEC and ITU to continue making efforts to create guidelines related to patent policies and frequently asked questions.”**

**ISO Focus:** *The incorporation of patented technologies in standards is crucial, especially in the area of information technologies. ISO and IEC have a common policy on this matter [i.e. that International Standards may contain patented technologies, but that they should be made available under reasonable and non-discriminatory (RAND) conditions] and are working on the convergence of our policy with that of ITU. What are your views on this?*

**Tamotsu Nomakuchi:** In most cases, technical standards in the area of information technologies include intellectual property rights (IPRs), which may perhaps encourage competition-restrictive practices by taking advantage of IPRs with a view to using them in an adverse way. We therefore recognize that this issue will become



Communications Satellite Platforms  
DS2000.

increasingly important to our industry in the future. In order to address this issue, it is essential for all standardization bodies to streamline their rules and regulations when working with IPRs relating to technical standards. We welcome the recent studies that have reviewed patent policies among ISO, IEC and ITU. These studies mark the beginning of a new era.

We are eager for ISO, IEC and ITU to continue making efforts to create guidelines related to patent policies and frequently asked questions (FAQs) with a view to helping in their implementation, as well as to investigate measures for overcoming obstacles that restrict the spread and use of technical standards because of IPR-related competition-restrictive practices. We look forward to seeing measures such as clarification of reasonable and non-discriminatory (RAND) conditions, investigation of IPRs in the early stage of developing standards, and/or the confirmation of intent to join patent pools.

**ISO Focus:** *How have ISO International Standards – such as ISO 14000 for environmental management – helped Mitsubishi Electric to grow and progress as well as to implement its procurement policy?*

**Tamotsu Nomakuchi:** Regarding ISO 14001, operation of the PDCA (Plan, Do, Check and Act) Cycle in accordance with the ISO standard is extremely helpful for improving performance and ensuring observance of the law. With regard to performance, from the viewpoint of MET (M: Material, E: Energy and T:

Toxicity), we have established and promoted specific targets in the following areas: effective utilization of resources; efficient use of energy; and reduced use of substances potentially harmful to the environment. In November 2004, ISO 14001 was revised and, in response to this revision, we will continue to increase and promote our contribution to the environment. For our company, environmental management is of the utmost importance; we must fulfil our social responsibility. We have reduced the envi-

ronmental impact by making full use of our company's technologies and products. Secondly, we have developed an environmental business by giving feedback and know-how to businesses and clients. Such activities result in a synergy between environmental management and environmental business.

Our company promotes universal design and ecology, and provides top products that are both user-friendly and eco-friendly. With the concept of universal design, hyper-eco products and hyper cycle technology after use, we are striving to improve the safety and user-friendliness of our products, as well as to reduce their impact on the environment.

**ISO Focus:** *What new areas of standardization would the Mitsubishi Electric Group like to see coming out of ISO?*

**Tamotsu Nomakuchi:** For sustainable development at a global level, it is vital to reduce the environmental burden through toxic substances control, energy saving, and the promotion of recycling. As I mentioned above, Mitsubishi Electric Group puts stress on this point and is developing continuous activities. In this area, where all countries and firms are required to conduct cooperative activities based on a general agreement, necessity for International Standards will be rapidly getting higher. We would greatly like to expect ISO's continued leadership, in cooperation with IEC and ITU as well as other standards organizations. ■



# Main Focus

World Standards Day Message ● 14 October 2005

## Standards for a safer world

**W**e all want to live in a safer, more secure world. But earthquakes and hurricanes, floods, transportation and domestic accidents, epidemics and industrial disasters still account for many thousands of deaths and injuries each year, in addition to material and social damage. International Standards offer widely accepted and recognized solutions to prevent and respond to these threats. The role that standards can play in preventing or mitigating such human and material losses is increasingly recognized and their use is rising as a consequence.

### **"Standards for a Safer World"**

is the theme of this year's Worlds Standards Day to be celebrated on 14 October 2005. The International Standards produced by the world's leading international standards-setting organizations – International Electrotechnical Commission, the International Organization for Standardization and the International Telecommunication Union – provide a valuable safety net.

The three organizations' procedures and areas of expertise ensure that the world's leading experts from industry, government, academia and society work together to develop International Standards that contribute to building a safer, more secure world. Their International Standards are thus based on a double level of consensus: amongst stakeholders and across countries.

The IEC, ISO and ITU offer a portfolio of thousands of International Standards specifically focusing on safety and security and relating to such diverse areas as:

- Products, systems and the global supply chain;
- Medical technologies and telemedicine;



*Mr. Renzo Tani,  
IEC President*



*Prof. Masami Tanaka,  
ISO President*



*Mr. Yoshio Utsumi,  
ITU Secretary-General*

- Measurement of the effects of nuclear radiation or electromagnetic emissions on the human body;
- Means to monitor illicit trafficking of radioactive material;
- Biometric technology for identifying people and protecting access to sensitive areas;
- Effective communications following a natural disaster or during an emergency;
- Cybersecurity and protection of the integrity of fixed and mobile communication networks.

IEC, ISO and ITU standards developed at the international level are available for use at the national and regional levels to meet societal, market and regulatory needs. They assist in disseminating best practices and new technologies, while avoiding new barriers to trade that national security and safety regulations may create.

For those technologies involving electricity, electronics and related technologies, the IEC produces both product-specific standards (for example, for electrical batteries or laptop computers) and system standards (for example, functional electrical safety in a factory system). Product standards enable goods to be certified to internationally recognized safety standards. Typical hazard abatement measures include protection against electric shock, excessive temperatures

and fire, ensuring that equipment does not have sharp edges or moving parts, and protection against the effects of electromagnetic emissions on the human body.

Just a few of the many fields where ISO International Standards ensure safety include construction, transportation, safety in the home or at the workplace. From safety in buildings, including emergency, fire and alarm systems, to standards that help to protect car drivers and passengers (such as child restraint systems, anti-locking braking systems and airbags), to various aspects of food safety and quality (including a new food safety management system), to machinery safety standards, ISO standards help make the world a safer place. For its part, ITU is taking a leading role in the area of cybersecurity, developing standards that will help to combat cyber crime, including protection against identity theft. In the non-cyber world, ITU is working on standards that will allow the prioritization of calls in a disaster situation. This means that in an emergency, telecommunications networks can be effectively cleared of non-urgent calls. The new phenomenon of telemedicine, whereby doctors and surgeons located in different facilities can communicate and administer treatment remotely, is also possible thanks to ITU's real-time multimedia standard.

Implementation of IEC, ISO and ITU International Standards at the national and/or regional level are helping make the world a safer place. The standards currently under development by the three organizations address the new safety and security challenges of the 21<sup>st</sup> century. Together, the IEC, ISO and ITU are working to produce the "Standards for a Safer World".

*Biography of the artist Overleaf* →

### Biography of Mark Elder



Trained in fine arts, photography and design, Mark Elder has worked as graphic designer for over twenty years. Most of this time was spent as an art director in the magazine industry both in Sydney and London. He has worked on, at one time or another, nearly every publication that you can think of in such areas as lifestyle, motoring, music, health, gardening, to name a few.

For the last fifteen years, he has been running his own design company, *Look Serious Design*, specialising in developing designs for new businesses, new publications and ideas that interest him. He has worked with clients in Indonesia, Singapore, London and Los Angeles. As well as designing, he has written a book, TV commercials, an award winning short film as well as countless articles on travel, humour and men's issues for *Elle*, *Cleo*, *GQ*, *Body+Soul* and *The Sun Herald*. His article on anorexia in boys is now part of the Australian curriculum for high school students.

As well as being a classically trained percussionist his other interests are travelling and photography. He is presently the Corporate Creative Director with SAI Global, Australia. In his spare time, he is writing another book, working on a series of paintings for an exhibition, helping friends launch a new magazine and studying psychology. ●

## Advisory Group on security

**A**t its meeting in September 2003, the ISO Council, recognizing that events in recent years had placed the subject of security high on the list of government priorities as well as a concern of the general public, requested that an inventory be developed of ISO standards relevant to the field of security and that the Technical Management Board (TMB) also be engaged in this activity. As a consequence, the TMB established a high-level Advisory Group on security (AGS).

The AGS met extensively by teleconference, but also held two physical meetings, in New York in June 2004 and in Geneva in September. Its final report and recommendations were considered by the Technical Management Board at its meeting in February 2005 and subsequently were made available to all ISO member bodies.

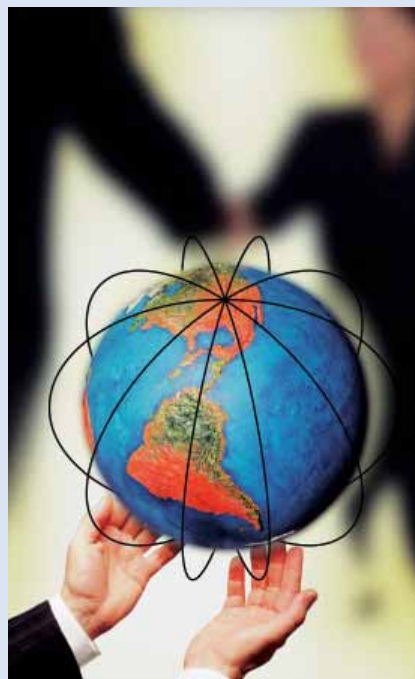
In its report, the AGS noted that current ISO work on security had resulted almost entirely from bottom-up efforts

by its security-relevant technical committees and it was considered that this needed to be supplemented by a more strategic, top-down perspective. As a consequence, and recognizing that similar considerations had been undertaken in the International Electrotechnical Commission (IEC), it was agreed to establish a joint ISO/IEC Strategic Advisory Group on security to provide ongoing strategic oversight of security-related standardization work in both ISO and IEC. The group has also been asked to charter a subgroup to develop guidance for ISO and IEC committees on the inclusion of security aspects in standards.

As part of its deliberations, the AGS members had been requested to consult widely with stakeholders in their countries and many of the stakeholders had indicated that they lacked knowledge about what security standards exist and how to obtain them. As a result, the ISO Central Secretariat has been requested to make available a Web portal providing access to the inventory of security standards and linking to similar portals of other organizations. It is expected that the portal will be available by the end of 2005.

Most of the remaining AGS recommendations related to particular aspects of security and have been referred to the relevant ISO committees. These deal with such subjects as management of security, threat/vulnerability assessment (which will be addressed in a new initiative to develop a standard for the broad field of risk management), built infrastructure protection, protection and equipment for first responders, personal identification, cybersecurity, healthcare, resources and transportation systems.

A particularly urgent need was seen for an emergency preparedness standard and a proposal is expected in the next few months to develop an International Workshop Agreement (IWA) on this subject. ■





## Improved **ISO/IEC 17799** heralds new series on information security management systems

by Ted Humphreys, Convenor  
ISO/IEC JTC 1/SC 27, WG 1

**T**he newly published ISO/IEC 17799:2005, *Information technology – Security techniques – Code of practice for information security management*, is a revised, improved version of the standard that has become the international benchmark. It will be followed later this year by the new ISO/IEC 27001, *Information security management systems – Requirements*, intended for management system certification.

Every organization has assets essential to its survival. Arguably, information in its various forms is one of the most important assets, be it printed, stored electronically, posted or e-mailed, shown on film or spoken.

For most businesses, information security may be essential to maintain competitive edge, cash flow, profitability, legal compliance and commercial image. But many businesses and most non-business organizations may hold information as their *only* asset. An absence of information security may threaten their integrity and, therefore, very existence.

The 2002 Computer Crime and Security Survey<sup>1)</sup> of 503 computer security practitioners in the United States indicated that the threat from computer crime and other information security breaches continues unabated – and that the financial toll is mounting.

According to the survey's findings, 90 % of respondents detected computer security breaches within the 12 months covered by the survey, 80 % acknowledged financial losses due to computer breaches, and 46 % (223 respondents)

reported their resulting financial losses as totalling USD 455 848 000<sup>2)</sup> (excerpt from “Business standards: IT security — securing your business advantage”, *ISO Management Systems*, July-August 2003).

### Improved protection guidelines

With exploitation of these computer vulnerabilities accelerating at an alarming rate, the work of Joint Technical Committee, ISO/IEC JTC 1, *Information technology*, Subcommittee 27, *IT Security techniques*, Working Group 1, *Requirements, services and guidelines* has become timelier than ever.

In view of the critical need for the business world to protect the confidentiality and integrity of information, the ISO/IEC working group has developed an improved version of the joint ISO/IEC standard that has become the burgeoning e-commerce community's international benchmark for information security management.

Just published, the revised ISO/IEC 17799:2005, *Information technology – Security techniques – Code of practice*

*for information security management*<sup>3)</sup>, integrates the latest developments in the field to maintain it as the international standard code of practice.

ISO/IEC 17799:2005 is a code of practice for information security management. It is not a certification standard and was neither designed, nor is it suitable for this purpose. It will be followed in the last quarter of the year (publication currently expected in November 2005) by the specification standard ISO/IEC 27001, *Information security management system (ISMS) requirements*, which can be used for certification.

1) The survey is conducted by the Computer Security Institute with the participation of the San Francisco Federal Bureau of Investigations (FBI) Computer Intrusion Squad.

2) Refers to those respondents who were willing and/or able to quantify their financial losses.

3) ISO/IEC 17799:2005, *Information technology – Security techniques – Code of practice for information security management*, costs 200 Swiss francs and is available from ISO national member institutes membership (these are listed with full contact details on ISO's Web site: [www.iso.org](http://www.iso.org)) and from ISO Central Secretariat ([sales@iso.org](mailto:sales@iso.org)).

© ISO



### International language

The revised ISO/IEC 17799:2005 is the most important standard for managing information security that has been developed – it establishes a truly international common language for information security for all organizations around the world to engage with each other to do business.

### “Information security may be essential to maintain competitive edge.”

It provides organizations with many state-of-the-art additions and improvements in information security best practice. For example, better management of security arrangements with external businesses, outsourcing and service providers, enhanced incident handling capability, dealing with problems of patch management, mobile devices, wireless technologies and harmful mobile code via the Internet, improvements in best practice managing human resources and several other new features.

The new version addresses the security of information in its widest sense, providing best business practice, guidelines and general principles for implementing, maintaining and managing information security in *any* organization, producing and using information in *any* form.

ISO/IEC 17799:2005 identifies the controls that form the starting point for information security. It covers the critical success factors, the organization of information security, asset management, human resources, physical and environmental security, communications and operations management, information systems acquisition, development and maintenance, incident management, business continuity management and compliance. It is destined to become an essential tool for organizations of every type and size, whether public or private.

Here are some of the drivers for this revised edition of the Code of Practice, highlighting its new features that address the latest business requirements.

### What users think of ISO/IEC 17799

*Has ISO/IEC 17799 been valuable to users ?  
What do they expect from the revised version ?*

*Here is some feedback from organizations around the world about benefits they have experienced from implementing the best practice given in this standard, to support the economic well-being of their businesses.*

#### Microsoft: ‘An invaluable toolset’

“The ISO/IEC 17799 standard, in particular, the newly revised version, is an invaluable toolset for the information security professional. This standard provides them with a universal approach of communicating information security management best practice, a way to ensure consistency of practice, and a means to establish and raise the baseline for managing information security risk in their environment.”

*Meng-Chow Kang, CISSP, CISA and Chief Security & Privacy Advisor,  
Asia Pacific Region, Microsoft.*

#### Fujitsu: ‘Much more user friendly’

“The 2000 version of 17799 provided management with a tool to ensure that all important areas of information security were included in security control programmes including best practice advice to deal with the risks of third party access from suppliers, outsourcing arrangements and service delivery. The new 2005 version makes it much simpler to develop internal standards because the requirements are now clearly and consistently described for each control. We plan to start using it in our ISMS work as soon as possible because it is much more user friendly.”

*John Snare, Fujitsu Australia.*

#### PCCW: ‘has benefited extensively’

“By continuously enhancing its strategic and operational approach to the consistent management of information security, PCCW has benefited extensively from using the structured approach contained within ISO 17799. With the release of the new version, including the new multiple controls, the tightening of existing controls and the alignment of the new simplified structure, ISO 17799:2005 will allow PCCW to immediately enhance and further lead the industry in applying world best information security practices to the protection of its information assets.”

*Dale Johnstone, Information Security Governance Risk Management,  
PCCW Limited, Hong Kong.*

### Business drivers and requirements

Several changes to business environments and new ways of doing business were important in driving the development of the revised ISO/IEC 17799:2005. We recognized :

- the growing dependence on the use of external services and the management of service delivery ;
- changes to the risks and threats facing businesses ;

- new and emerging technologies and greater connectivity, and the impact this has on protecting information ; and
- growing security requirements for regulatory compliance.

**“The new version provides best business practice for managing information security in *any* organization.”**

### External services

The revised edition introduces a number of improvements and updates and additional best practice provisions.

The business world is more dependent on external services for its outsourcing, off-shoring, networking and Internet hosting needs than ever before – and more business is being carried out with clients, business partners and supply chains using various on-line and networking arrangements.

While providing business efficiency and better information sharing in highly competitive markets, it also makes access to organizational systems easier and increases the vulnerability of sensitive and critical information.

ISO/IEC 17799:2005 extends best

practice to external services to address today's business demands, and has also introduced new service management controls aimed at securing the availability and accessibility of external services.

### Human resources

Another revision addresses the critical area of information security and employees. Irrespective of how good the security technology may be, people can be exploited and thus compromise security. ISO/IEC 17799:2005 improves best practice in three key areas:

#### 1. Prior to employment

- the recruitment process;
- employee references and screening, and
- contracts, terms and conditions of employment.

#### 2. During employment

- allocating roles and responsibilities;
- giving access rights and establishing user accounts; and
- training and awareness, including applying procedures and reporting incidents.

#### 3. At termination of employment

- removing access rights and user accounts, thus preventing later access to the organization's systems and processes;
- removing physical access, e.g. cancellation of entry passes; and
- return of assets such as information, papers, storage media, software and laptops.

### Threats and vulnerabilities

ISO/IEC 17799:2005 also acknowledges a number of threats and vulnerabilities that have emerged recently, including:

- *Management of software patches* – in recognition of the increasing risk of new software being exploited before patches can be introduced to counter the problem.
- *Potential problems of mobile code* – addressing the need for control of mobile software code to avoid breaches of information security, including unauthorised use or disruption of business systems, networks, or applications.
- *Pervasive use of mobile devices and wireless networks* – awareness that those sharing wireless networks can gain access to mobile devices, laptops and business information.

### Helping organizations worldwide

ISO/IEC 17799:2005 is intended to provide organizations around the world with new best practice improvements and enhancements to help them:

- provide greater customer confidence and assurance that their systems and services are “fit for purpose”;
- make more profitable use of their investment in information security as a business enabler;
- enhance management control of business information assets and information security risks;
- make improvements to internal security policies and procedures operations, and to security arrangements with suppliers and service providers;
- achieve compliance with applicable national and international security requirements.

### About the author



**Ted Humphreys** is the Convenor of ISO/IEC JTC 1/SC 27, WG1, which is responsible for managing projects such as ISO/IEC 17799, ISO/IEC 13555 and ISO/IEC

18044. Ted Humphreys is Director of XiSEC Consultants Ltd, a UK company providing Information Security Management consultancy services around the world. He has been an expert in the field of IT and telecommunications security, information security and risk management for more than 27 years. During this time he has worked for major international companies (in Europe, North America and Asia), and organizations and institutions such as the European Commission and the OECD.





### Complementary and supportive standard

While ISO/IEC 17799:2005 is a code of practice for information security management, it is not applicable to management system certification. However, the complementary and supportive standard ISO/IEC 27001, *Information security management systems – Requirements* is designed for this purpose.

Publication of the ISO/IEC 27001 ISMS is expected in November 2005. The specification standard is a revised version of BS 7799 Part 2:2002 (ISMS), which has been used for certification for the past seven years. Both use the *Plan-Do-Check-Act* process model as featured in ISO 9001:2000 and ISO 14001:2004, and are based on the same certification process as the QMS and EMS standards.

### International certification activities

Already over 1300 organisations in over 50 countries have had their ISMS certified. The figure is rising by around 80-100 per month and it is expected that certification to ISO/IEC 27001:2005 will accelerate this growth via some 45 accredited certification bodies involved in the process.

A free access register, available on the ISMS International User Group Web site ([www.xisec.com](http://www.xisec.com)), provides details of the certificates to be registered and/or modified/deleted. This information is submitted regularly by all the accredited certification bodies involved.

### The ISO/IEC 27000 series

ISO/IEC 17799:2005 and the future ISO/IEC 27001 are part of the ISO/IEC 27000 series of standards being developed by JTC 1/SC 27. There is a proposal to allocate the number ISO/IEC 27002 to ISO/IEC 17799 in 2007. Currently, SC 27 is developing ISO/IEC 27003 and ISO/IEC 27004, aimed at providing supporting guidance for ISO/IEC 27001.

The creation of a family of ISMS-related standards is intended to mirror the approach adopted by the ISO 9000:2000 series of QMS standards – and thus ISO/IEC 27001 will serve information security as ISO 9001:2000 does quality. ■

© ISO



## Biometrics: global challenges and customer needs

by Fernando L. Podio, Chair,  
ISO/IEC JTC 1/SC 37

**B**iometric technologies are able to establish or verify the personal identity of individuals against previously acquired data. Used alone, or together with other authentication technologies such as tokens and encryption, biometric technologies can provide higher degrees of security than other technologies employed alone, and can also be used to overcome their weaknesses. Biometrics is defined as the automated recognition of individuals based on their

behavioural and biological characteristics. Hand and facial features, fingerprints and iris patterns are examples of biological characteristics. Behavioural characteristics are traits that are learned or acquired, such as signature verification and keystroke dynamics. Biometric technologies are ready to pervade nearly all aspects of the economy and our daily lives.

Although for many years biometric technologies have been used mainly in law enforcement, they can be now found in all levels of government functions, in national defence applications and in commercial fields ranging from financial transactions to visitor authentication in amusement parks. World events in the last few years have further increased global interest in highly secure personal authentication using biometrics. National security priorities have led to the use of biometrics in machine readable travel documents, employee

identification badges, and other secure applications.

With the rapid dissemination of biometric technologies, it is important to recognize that enterprise systems and applications based upon consensus-based international biometric standards are more likely to be interoperable, scalable, usable, reliable, secure, and economical – than proprietary systems.

### Data interchange formats and other open systems standards

The establishment of ISO/IEC JTC 1/SC 37, *Biometrics* in June 2002 offered the IT community and end-users an international venue to accelerate and harmonize formal international

biometric standards. SC 37 successfully brought together a wide range of interests among IT organizations, the biometric industry, security experts and end-users of multiple biometric-based identification and verification applications. The JTC 1 subcommittee currently has twenty-two participating members, five observer members and established liaisons with eleven organizations including other JTC 1 subcommittees, an ISO TC, and outside organizations; SC 37 is currently responsible for the development of thirty projects/subprojects.

**“Biometric technologies can be now found in all levels of government functions, in national defence applications and in commercial fields ranging from financial transactions to visitor authentication in amusement parks.”**

As shown in the accompanying chart, SC 37’s work programme includes the following types of biometric standards:

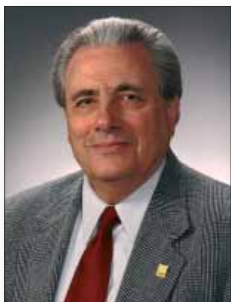
- **Biometric data interchange standard formats** promote the exchange of biometric data in standardized formats among multiple vendors and applications. They define either biometric image formats or template formats. SC 37 is developing these formats for a number of modalities.
- **Common Biometric Exchange Formats Framework (CBEFF)** defines a data structure that is a requirement for conformance to all the data interchange standards. It defines meta-data that describe biometric data in the structure, enabling applications to decide their interest in the particular data without having to decode it. It includes, for example, the identification of the data format
- **Biometric performance testing and reporting standards** define standard

testing methodologies to test the performance of systems and devices. The goal is to provide tools for the understanding and prediction of real-world error and system throughput performance. Current development includes a principles and testing framework specification that presents the requirements and best scientific practices for conducting technical performance testing to determine error and throughput rates. The multi-part standard includes performance-testing methodologies for specific testing programs and for different testing methodologies, and also includes a framework for biometric device performance evaluation

- **Biometric interface standards** include the CBEFF standard described above, the BioAPI specification and related standards. The BioAPI specification defines an open system standard application program interface (API) that allows software applications to communicate with a broad range of biometric technologies in a common way. The related standards under development include a biometric archive specification, support for Graphical Users’ Interfaces, a BioAPI specification for systems with memory or computing power limitations, and a BioAPI interworking protocol enabling distributed components of a biometric system to talk to each other. A conformance testing methodology for BioAPI is also under development.
- **Biometric profiles for interoperability and data interchange** standards describe requirements for specific applications and identify base standards for specific domain(s) of use. They also identify mandatory requirements for each of these base standards and the optional characteristics and parameter values that should be considered mandatory for the specific application(s).

In addition to the projects described above, SC 37 is developing a **harmonized biometric vocabulary** and four technical reports:

### About the author



**Fernando L. Podio** is a member of the Computer Security Division of the Information Technology Laboratory at the National Institute of

Standards and Technology (NIST). For the past seven years he has been involved in biometrics research and standardization. He is currently responsible for the NIST Program on Accelerating the Development of Critical Biometric Standards & Associated Conformity Assessment Activities. He is Chair of ISO/IEC JTC 1/SC 37, *Biometrics* and he also chairs the International Committee for Information Technology Standards Technical Committee M1, *Biometrics*. He is the co-chair of the Biometric Consortium which is an organization of over one thousand members from Government, industry and academia.

Computer Security Division, Information Technology Laboratory, NIST  
100 Bureau Drive, MS 8930  
Gaithersburg, MD. 20899-8930

E-mail: [fernando.podio@nist.gov](mailto:fernando.podio@nist.gov)



- Cross jurisdictional and societal aspects of implementation of biometric technologies – Part 1: *Guide to the accessibility, privacy and health and safety issues in the deployment of biometric systems for commercial applications* and Part 2: *Practical application to specific contexts*;
- Multi-modal and other multi-biometric fusion;
- A biometric tutorial;
- Biometric performance testing and reporting – Part 3: *modality-specific testing*.

ISO in June 2005 published the first three International Standards developed by SC 37: ISO/IEC 19794-4, *Information technology – Biometric data interchange formats – Part 4: Finger image data*, ISO/IEC 19794-5, *Information technology – Biometric data interchange formats – Part 5: Face image data* and ISO/IEC 19794-6, *Information technology – Biometric data interchange formats – Part 6: Iris image data*. One additional standard should be published within the next several weeks: ISO/IEC 19794-2, *Information technology – Biometric data interchange formats – Part 2: Finger Minutiae Data*. Several other standards projects are at, or very close to, the FDIS ballot stage.

### Large customers' adoption

Since its inception, SC 37 has responded to its customers' needs for International Standards by rapidly developing a first generation portfolio that includes technically sound consensus standards. What is remarkable is that many of the standards developed by SC 37 are already being adopted by major global customers such as the International Civil Aviation Organization (ICAO)<sup>1</sup> and the International Labour Office (ILO)<sup>2</sup> of the United Nations prior to the formal approval of these specifications as International Standards.

ICAO's adoption of these standards is an important contribution to international travel, as well as to the biometric and ID management industries. It is expected to significantly impact the use

**“...the trend toward accessing a number of services through portable devices such as personal digital assistants and cellular phones presents new challenges for biometric-based personal authentication standards development.”**

of biometrics for machine-readable travel documents. SC 37 has established a strong working relationship with ILO. In March 2004, the ILO governing body approved a Technical Report (SID 0002) which specifies the use of several SC 37 draft standards and offered their Technical Report to SC 37 for use in the development of a biometric application profile for the seafarer's ID. In addition to SC 37, two other JTC 1 subcommittees are

supporting the ILO on the seafarer's ID (SC 17 – *Cards and Personal Identification* and SC 31 – *Automatic Identification and Data Capture Techniques*).

1 ICAO adopted a global, harmonized blueprint for the integration of biometric identification information into passports and other Machine Readable Travel Documents (MRTD). Facial recognition was selected as the globally interoperable biometric for machine-assisted identity confirmation with MRTD. ICAO requires conformance to the face recognition standard developed by ISO/IEC JTC 1/SC 37. Other ISO/IEC JTC 1/SC37 standards required by ICAO are the fingerprint data interchange formats, the iris recognition interchange format, and the Common Biometric Exchange Formats Framework (CBEFF).

2 ILO's requirements for the seafarers' ID card include the use of two fingerprint templates to be stored in a barcode which will be placed in the area indicated by ICAO's 9303 standard. ILO requirements also specify the use of some of the standards approved or under development in ISO/IEC JTC 1/SC 37, specifically finger minutiae and finger image data interchange formats and CBEFF.

© OSI





### Strong personal authentication and enhanced security

Biometric technologies can be used in enterprise-wide network security infrastructures, secure electronic financial transactions and many other applications requiring strong personal authentication. The world's highly mobile workforce and the trend toward accessing a number of services through portable devices such as personal digital assistants (PDAs) and cellular phones presents new challenges for biometric-based personal authentication standards development.

Through the work of SC 37, new and highly secure authentication applications based on open biometric standards are now becoming possible. Many

technological approaches are being proposed and developed to meet the needs of highly secure authentication applications. Standardization of these solutions based on the emerging biometric standards will require strong collaboration between biometric and security experts. This close collaboration is expected to result in harmonized, technically sound, standard-based solutions that will meet customers' needs.

A summary of the standards under development within SC 37 is shown in the accompanying chart. SC 37 is concurrently addressing approximately 30 parallel standards development projects/subprojects. During 2004 it finalized four biometric data interchange standards (finger minutiae, finger image, iris image and face image). Three have been published

and an additional one awaits publication as an International Standard. SC 37 has also rapidly advanced additional documents to FDIS status – the BioAPI Specification, the Common Biometric Exchange Formats Framework (CBEFF) – Part 1 – *Data Element Specification* and the CBEFF Procedures for the Operation of the Biometric Registration Authority. It is anticipated that these standards will also be published during 2005. The completion of at least three other FDIS ballots is anticipated by the end of this year. ■

## ISO/ISO JTC 1/SC 37, Biometric Standards Development Portfolio

**Biometric data interchange formats for a number of biometric modalities** – finger minutiae data, finger pattern spectral and skeletal data, finger, face, iris and vascular biometric image data, signature/sign time series and processed dynamic data, and hand geometry silhouette data. An amendment of the face image data interchange format will address conditions for taking photographs for face image data.

**Biometric technical interface standards** include the BioAPI-Biometric Application Programming Interface standard (the BioAPI Specification), related standards (BioAPI Biometric Archive Function Provider Interface, the BioAPI GUI and BioAPI Lite), the Common Biometric Exchange Formats Framework – CBEFF (Data Element Specification, Procedures for the Operation of the Biometric Registration Authority, and Patron Formats Specification) and the BioAPI Interworking Protocol (BIP).

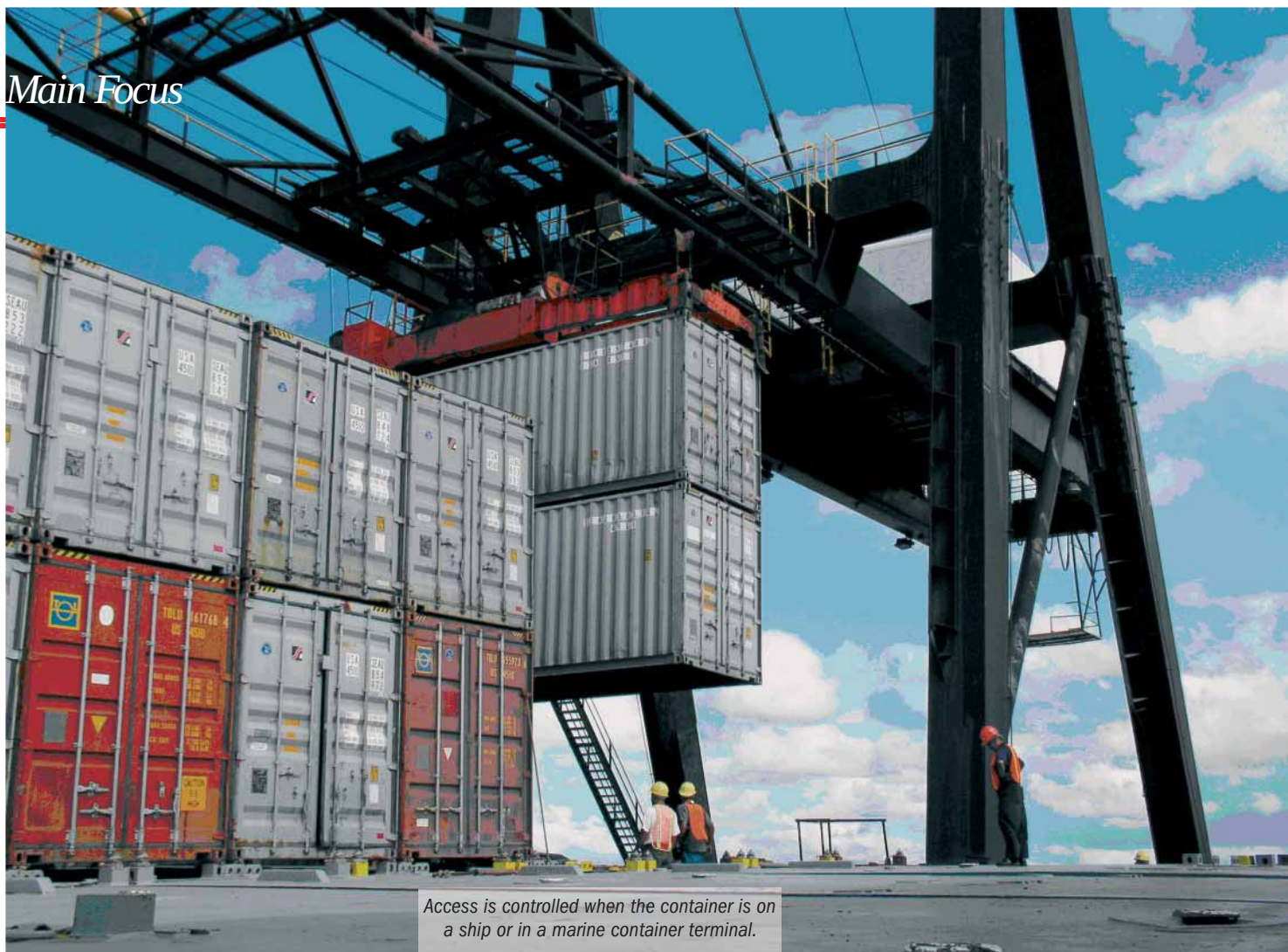
**Biometric Performance Testing and Reporting** – multi-part standard addressing principles and framework, testing methodologies for technology and scenario evaluation, performance and interoperability testing of data interchange formats and performance of biometric access control systems.

**Biometric Profiles for Interoperability and Data Interchange.** A multi-part standard is under development: Part 1: Biometric Reference Architecture; Part 2: Physical Access Control for Employees at Airports; and Part 3: Biometric Profile for Seafarers.

**Harmonized biometric vocabulary.**

**BioAPI Conformance Testing Methodology** includes methods and procedures, and test assertions for Biometric Service Providers, BioAPI Frameworks and biometric applications.

**Technical Reports on Cross Jurisdictional and Societal Aspects of Implementations of Biometric Technologies** (Part 1: Guide to the accessibility, privacy and health and safety issues in the deployment of biometric systems for commercial applications and Part 2: Practical application to specific contexts), Multi-Modal and Other Multi-Biometric Fusion, Biometric performance testing and reporting – Part 3: modality-specific testing and a Biometrics Tutorial.



Access is controlled when the container is on a ship or in a marine container terminal.

## Container security seals

by Mike Bohlman, Chair of ISO/TC 104, Freight containers

**A**pproximately 90 percent of the world's trade moves in containers. At any given time this equates to billions of dollars worth of inventory moving in freight containers either via truck, train, ship or barge. Last year an estimated 100 000 000 TEU (twenty-foot equivalent units) moved in international trade. It is estimated this will increase to over 150 M TEU by 2010.

Getting these goods safely to their planned destination and in good condition was the initial definition of freight security. This has changed. Today security includes both this safe delivery and the prevention of any unauthorized use or misuse of the cargo or the transport means.

ISO/TC 104, *Freight Containers*, has been actively working with the World Customs Organization on container seals and in a Joint Working Group (JWG) with TC 122 on the use of Radio Frequency Identification Devices (RFID) for marking and tracking at all levels within the transportation chain. This article addresses specifically ISO's work on container seals and their use on freight containers.

Container seals are typically affixed to the door end of the freight container. They are used to secure the freight container in a manner that provides an indication of tampering with the seal if an attempt is made to open the container doors. Different seal types provide evidence of tampering in different ways, from scratches or nicks on the body of the seal to a deformation of the locking mechanism.

## Container security needs

ISO/PAS 17712:2003, *Freight containers – Mechanical seals*, was established to address existing concerns and to meet the need for high quality security seals. It offers a set of recommendations to assist customs authorities, manufacturers and users of freight containers. It establishes uniform procedures for the classification of mechanical seal types as well as the acceptance and withdrawal of acceptance of mechanical freight container seals based on a defined series of tests. Use of ISO/PAS 17712 ensures better seal performance, a reduction in cargo theft, and a more secure transportation chain from container loader to consignee. In addition, a large increase in in-transit security can now come about because customs authorities have a basis to require use of a high security seal based on this new document.

Prior to ISO/PAS 17712, industry and governments were confronted with a number of challenges from the lack of a comprehensive standard for



mechanical seals. Container owners and shippers, for example, were unsure as to what type of mechanical seal was appropriate for the applications they had – and there was noticeable inconsistency in the strength of seals that purported to perform the same function. Governments, on the other hand, did not have a standard on which they could base a requirement to use seals. An all-encompassing standard was needed in order to promote in-transit security of freight containers.

Since its publication in 2003, ISO/PAS 17712:2003 has effectively established itself as the unique source of information on mechanical seals that are acceptable for securing freight containers in international commerce. It has been recognized as such by the World Customs Organization (WCO) in their latest framework of standards to secure and facilitate global trade; PAS 17712 promises to play a significant role in improving security measures taken

against terrorism, theft, smuggling and illegal immigration.

This work is not complete however. An annex to support ISO/PAS 17712 has been developed by ISO/TC 104 that sets out “Security Seal Manufacturers’ Best Practices”. The purpose of this annex is to ensure that all seals produced meet the required performance and strength parameters and that their distribution and use is in a controlled environment. Without this control of

## Standards for electronic seals

Building on the work with mechanical seals, the TC 104 is actively developing a series of standards for electronic seals. These seals will meet the structural standards that have now been set for mechanical seals and, in addition, add the alarm and data retention capabilities that can be achieved through electronics.

## About the author



**Michael Bohlman** is Director of Marine Services for Horizon Lines and Chair of ISO technical committee ISO/TC 104, *Freight Containers*. He is also Vice-

Chair of ICHCA International’s International Safety Panel, Chair of the Executive Committee of the International Vessel Operators Hazardous Materials Advisory Council (VOHMA) and Chair of the Board of Directors of the Chamber of Shipping of America (CSA). Michael Bohlman is a member of the American Maritime Association and the Maritime Association of the Port Authority of New York / New Jersey.

Additional information regarding ISO’s work on security and on mechanical and electronic seals can be directed to Michael Bohlman, who can be reached via email at [MBohlman@Horizon-Lines.com](mailto:MBohlman@Horizon-Lines.com) or via mail care of Horizon Lines, LLC, 1700 Galloping Hill Road, Kenilworth, NJ 07033, USA.



*Thousands of freight containers are delivered each day.*

**“The publicly available specification promises to play a significant role in improving security measures taken against terrorism, theft, smuggling and illegal immigration.”**

the seals and their use, security could be unknowingly compromised. This is so critical that TC 104 has agreed to publish a revised PAS 17712 to ensure these practices are immediately taken into account.

The electronic seal series of standards are being organized to address:

- the protocol that the seal will use to communicate with other devices
- how the seal will be used, i.e. application requirements
- the environment the seal must be capable of operating in
- how the data in the seal will be protected from tampering or unauthorized disclosure
- how the message sets will be structured for data transfer between an electronic seal reader and a host computer
- how the physical data will be structured



## Main Focus

Specific work is also underway in the ISO TC 104 – TC 122 JWG to develop a series of related standards using RFID in the areas of Application Requirements (ISO 17358), Freight Containers (ISO 17363), Returnable Transport Items (ISO 17364), Transport Units (ISO 17365), Product Packaging (ISO 17366) and Product Tagging (ISO 17367).

The current state of technology development for container tracking devices is RF tags for Automatic Equipment Identification (AEI). These have been standardized by ISO (ISO 10374) for several years. Tags based on this technology are in wide use in the United States' rail industry and in limited use by some containership operators, mainly for chassis identification & management. The usefulness of these Tags and this type of technology is limited by the need for and suitable placement of radio frequency transponders along the transportation route or at appropriate equipment checkpoints. It is also limited by the lack of a universal (worldwide) standard frequency on which these types of devices are to operate. Frequencies available for these types of devices in the United States are not available in other countries and vice versa. Cost (between 25 and 45 US Dollars per Tag) has also been a deterrent to wider adoption of this technology in shipping.

Even more expensive (about 10 times) and less widely used are satellite based tracking systems. Existing systems are based on either low earth orbit or geo-stationary satellites. Both are limited in that they require line of sight between the tracking device and the satellite. These devices work but have not been implemented because of their cost. Within a closed or semi-closed system like containership operations, tracking of individual containers is relatively straight forward. Whenever the container is in a marine yard or on a ship, the operator knows it and can control access to it. It is when the container is released to a trucker or placed on a railcar that it loses visibility and operators lose control over access to it.



*An easy process to defeat a seal.*



*Door can be opened but the seal is intact.*



*A more secure seal arrangement.*



*A more secure seal arrangement.*

**“Approximately 90 percent of the world’s trade moves in containers.”**

## Thwarting non-evident tempering

TC 104’s work on seals is a big step forward with regard to container security but the experts have shown that the best sealing provisions in the world are worthless if containers can be opened without touching the seal.

For this reason TC104 has been working to address how seals are used on freight containers, responding specifically to a need identified by both national and international authorities to improve the location of the seal on the container’s doors and subsequently improve the ability of the sealed doors to thwart non-evident tampering. TC 104 has just finished examining the design of the door end of the container from the aspect of improving security and making undetected entry into the container more difficult. As a result of this work a newly drafted requirement is about to be balloted as an amendment to the standards.

The current draft of this new requirement reads: “All door openings shall be fitted to accept an ISO compliant high security seal (see ISO PAS 17712) in a manner that precludes opening or gapping of the doors without first removing the seal. The design of the container shall be such that the door constrained by the seal must be opened before the other door can be opened. The mechanism in which the seal is fitted shall either be welded to a significant structural member of the container or otherwise be constructed so that the mechanism or seal cannot be removed and the door opened or gapped without first having to break the seal. Seal affixing mechanisms that do not meet these basic requirements shall not be fitted onto the container. The door hinges shall either be welded to the door panel or, if affixed with fasteners, affixed with TIR approved fasteners that are further protected from removal by a suitable shield or equivalent design feature. Hinge pins shall be welded in place or otherwise protected to preclude their removal.” ■



### Safer ships: lifesaving and fire protection at sea

by Kurt Heinz, Secretary,  
ISO/TC 8/SC 1, Life-saving &  
Fire Protection

It took a major disaster to focus the world's attention on the need for internationally recognized standards for safety at sea. It was the April 1912 sinking of the RMS Titanic after colliding with an iceberg in the North Atlantic, that led to the first International Convention for the Safety of Life at Sea (SOLAS) in 1914, requiring lifeboats for all on board, and a host of other safety measures. Although World War I prevented its ratification, it led to another SOLAS convention in 1929, and eventually the establishment of the International Maritime Organization (IMO), a specialized agency of the United Nations devoted to development of international legislation in pursuit of safety and prevention of pollution at sea.

### Destination or transportation?

In recent years cruise ships, especially, have continued to grow in size and complexity. Such ships operating and under development today are half again as long and three times the tonnage of the Titanic, and the number of persons on the largest is approaching 10 000. The ships have become destinations as much as transportation, continually adding features and amenities to provide a diverse and pleasurable experience for passengers on board. Passenger demographics have changed as well, with increasing numbers of children and the elderly enjoying the cruising experience. Finally, there is growing demand for cruises to remote or extreme locations far from search and rescue resources.

With all of these changes, it can be a challenge for the international reg-

ulatory regime to keep pace. In recent years, as IMO has taken up new wide-ranging initiatives to address such issues as the role of the human element in maritime safety, safety management systems, the development of ever-larger passenger ships, and most recently, maritime security, there has been a continuing need for development of technical standards in support of those initiatives.

### ISO frees IMO

This is where ISO/TC 8, *Ships and marine technology*, steps in. As the recognized single point of contact between ISO and IMO, the ISO/TC 8 and its subcommittees focus primarily on development of International Standards in support of IMO. TC 8/SC 1, *Life-saving and fire protection*, in particular supports the IMO subcommittees on ship design & equipment, and

### About the author



**Kurt Heinz** has served as Secretary of ISO/TC 8/SC 1 *Life-saving & Fire Protection* since 1996. A graduate of the United States Coast Guard Academy and a

registered professional engineer, he is primarily involved in development of national and international standards and regulations for life-saving equipment in the U.S. Coast Guard's Lifesaving & Fire Safety Standards Division in Washington, DC. He chaired the Working Group on Personal Life-saving Appliances at the last session of the International Maritime Organization's Sub-Committee on Ship Design and Equipment, and is currently Co-Coordinator of the Sub-Committee's Life-saving Appliances Correspondence Group.

**"Disclaimer":** The views expressed herein are those of the author and are not to be construed as official or reflecting the views of the Commandant or of the US Coast Guard.



## Main Focus

fire protection. In addition to allowing greater engagement in the process by the affected industries, and greater consideration of market factors, development of needed detailed technical standards within ISO frees IMO to concentrate its resources on adoption of high-level international legislation.

A premise of IMO regulations governing ship stability and fire protection is that a ship should be its own best lifeboat. But there are sometimes situations where abandonment of the ship is unavoidable. Obviously, the egress of perhaps thousands of passengers distributed throughout a large ship with many decks, potentially through smoke-filled passageways, to assembly stations for lifeboats and life rafts is a daunting task.

This requires the ship designer to give careful consideration to the layout and marking of the ship and its escape routes, which can be complicated by common design features of modern ships such as large, open atriums spanning numerous decks, and the variety of languages spoken by both passengers and crew. Several standards providing guidance in this process have been developed or are under development by TC 8/SC 1/ WG 3, *Fire protection*. ISO 15731, *Ships and marine technology – Low location lighting on passenger ships – Arrangement* specifies performance, installation, and maintenance of low-location lighting systems used to provide way guidance in smoke-filled conditions, and has been implemented internationally in IMO instruments.

### Signing and surviving

Surprisingly, there is little in the way of specific regulatory guidance for shipboard safety signs and unfortunately, bad examples abound. To fill this gap, a three-part standard, ISO 24409, *Ships and marine technology – Design, location, and use of shipboard signs for fire protection, life-saving appliances, and means of escape* is currently under development in liaison with ISO/TC 145/SC 2, *Safety identification, signs, shapes, symbols, and colours*. It aims to harmonize shipboard signing to the extent possible with



Redundant signs may hinder the safety of those onboard the ship.



Marine evacuation systems chutes are used to evacuate a large number of people within a 30-minute evacuation time.



Carnival Cruise liner "Ecstasy" (July 1998).

Good directional signs can help reduce the time needed to evacuate a ship.



standard shore-based signing systems, with which many if not most passengers will be familiar. Other significant standards under development in WG 3 address shipboard fire-fighters' outfits, breathing apparatus for fire-fighting and emergency escape, and point-type resettable flame detectors.

Unlike the "unsinkable" Titanic, which carried lifeboats for only about half the people on board, in the rare instances when a modern ship must be abandoned there are survival craft for everyone, with substantial excess capacity. Most of these survival craft are in the form of lifeboats, with the remainder consisting of inflatable life rafts stored uninflated in canisters.

**"Ships have become destinations as much as transportation, continually adding features and amenities to provide a diverse and pleasurable experience for passengers on board."**

Until fairly recently, life rafts were generally of the davit-launched type, suspended over the side under davits and boarded at the embarkation deck, then lowered to the sea by wire rope. However, because such life rafts are limited in capacity, and can only be launched one at a time, it can be difficult to achieve the 30-minute evacuation time required by SOLAS, as the number of persons on board increases. Consequently, in recent years there has been increasing use of marine evacuation systems (MES), where evacuees descend to a floating inflatable platform by either an inclined slide (like those used in aircraft), or a vertical fabric chute (like those sometimes used by fire-fighters to exit from tall buildings), then transfer from the platform to inflatable life rafts floating alongside. Typical capacity for an MES is on the order of 400 persons in 30 minutes, or as much as 8 x 50-person life rafts – and because the life rafts do not need to be suspended under load, fewer, larger life rafts can be used.

All photos courtesy of the author.

To ensure the safe and orderly flow of persons through an MES, effective communication between the top and bottom is essential, and required by SOLAS. However, in practice this has been accomplished by a variety of means, and with varying degrees of effectiveness. TC 8/SC 1/WG 1, *Life-saving appliances and arrangements*, has therefore recently taken up development of a new standard to specify the desired performance for means of communication for MES.

### Fit for the purpose

After the occupants have boarded a lifeboat or life raft, they will find a variety of equipment provided to aid in survival, including emergency food rations and drinking water, distress flares and smoke signals, fishing kits, first aid kits, sea sickness medication, and other equipment to permit survival for several days to a week.

However, for many of these items IMO has not established specific requirements, leaving them up to individual maritime administrations. As a result, their quality and effectiveness varies, and ships can find it difficult to obtain suitable replacement equipment in foreign ports. To address these problems, WG 1 has recently completed development of a comprehensive standard ISO 18813, *Ships and marine technology – Survival equipment for survival craft and rescue boats*, that prescribes agreed specifications for this equipment.

Due to a complex and ever-evolving system of preventative measures, a trip on a cruise ship is normally safe and uneventful (at least from a safety standpoint). Most of the equipment for which TC 8/SC 1 develops standards is unusual in that we sincerely hope it will never need to be used, or in many cases even seen, by the travelling public. We look forward to continuing to work in the service of and in cooperation with IMO, to ensure that in the very rare cases when it is needed, it is fit for the purpose and meets the needs of the market. ■

© ISO



## Safe machine operations

by Alfred Sutter, Chair TC 199,  
Safety of machinery

**R**isks from the use of a particular machine occur worldwide. Since machines are used in both professional and personal environments, safety standards can contribute to a reduction of risks at work, in the home and while pursuing leisure activities.

The safety of individuals operating and maintaining machines is the focus of many institutions. Attaining safety depends on culture, laws and regulations. And the consequent variety of safety requirements may hinder international trade. The World Trade Organization declared that International Standards can make a large contribution to removing Technical Barriers to Trade (TBT).

Maintaining the safety and health of the users of machinery is an important part of this. Safety levels should be high in order to accord with the occupational health and safety requirements of national legislations. And the objectives of international safety standardization will only be reached, when all countries are willing to adopt them in their national standardization programmes.

### A complex interaction

Safety in the workplace entails a complex interaction – and reaction – between the individual, the machine and the work environment. Not only is this concept important to ensuring the safety and health of employees, but it is the foundation of the standardization process for machine safety. The slogan “Do it once – do it right – do it internationally” has in this instance to be complemented by “Do it right from the beginning” – meaning that the concept of safety must be *integrated* into machinery at the design stage. It is the designer who knows his machine best. When he does everything in his power to ensure that the user of the machine can work safely within the boundaries of the normal anticipated use of the machine, then he is integrating safety into the design.

### Three steps to safety

The safety concept is based on a so called three step method. The following principles should be observed, in the order below:

- Eliminate or reduce risks as far as possible (inherently safe machinery design and construction)



- Take the necessary protection measures in relation to risks that cannot be eliminated,
- Inform users of the residual risks due to any shortcomings of the protection measures adopted, indicate whether any particular training is required and specify any need to provide personal protection equipment.

**“Do it right, from the beginning” – means that the concept of safety must be *integrated* into machinery at the design stage. It is the designer who knows his machine best.”**

### Horizontal and vertical standards

In order to implement a systematic approach to standardization in machine safety, a concept with both horizontal and vertical standards was adopted, to help the designer with the methodology and giving decision guidance for designing a safe machine. Horizontal type-A standards<sup>1)</sup> (basic safety standards) give basic concepts, principles for design and general aspects that can be applied to all

### About the author



**Alfred Sutter**, Dipl.-Masch.-Ing ETHZ, was for several years Director health and safety for Europe at Grace Industrial Chemicals, Inc, Lausanne. He is a former mem-

ber of the Swiss Federal Commission for Occupational Health and Safety, participating in various special committees. Alfred Sutter is Chair of ISO/TC 199 Safety of machinery (CEN/TC 114), Convenor CEN/WG 14 Risk Assessment and a member of the CEN/Safety of machinery sector (SMS) Advisory Nucleus.



Figure 1.

machinery (ISO 12100, *Safety of machinery – Basic concepts, general principles for design*); type-B standards<sup>2)</sup> deal with one safety aspect that can be used across a wide range of machinery e.g. safety distances (ISO 13852, *Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs* and ISO 13853, *Safety of machinery – Safety distances to prevent danger zones being reached by the lower limbs*) and general noise aspects and application of ergonomic principles.

Another series of type-B standards address products that can be used in different machines<sup>3)</sup>, such as safe control systems (ISO 13849, *Safety of machinery – Safety-related parts of control systems*), two hand control systems (ISO 13851, *Two-hand control devices – Functional aspects and design principles*), or interlocking devices (ISO 14119, *Interlocking devices associated with guards – Principles for design and selection*).

The vertical type-C standards<sup>4)</sup> (machine safety standards) deal with detailed safety requirements for a particular machine or group of machines (e.g. ISO 11111, *Textile machines*).

ISO/TC 199, *Safety of Machinery*, deals with standards of both types A and B. The basic work is reflected in ISO 12100, *Safety of machinery – Basic*

concepts, general principles for design – Part 1: *Basic terminology, methodology, and Part 2: Technical principles*, and ISO 14121, *Risk assessment*.

### Basic hazards and design principles

ISO 12100 was recently revised and deals with the definition of a broad range of terms, the description of basic hazards and principles for design for the implementation of each of the three steps of risk reduction – inherently safe design, protection measures and information for use, including any special training needs.

This standard is also intended for training designers. It is recommended that the standard be incorporated in training courses and manuals to convey basic terminology and general design methods.

ISO 14121, *Risk assessment* is under revision and will contain substantially more than the original. It will include in an informative annex a number of well tried risk assessment methods and risk reduction methodologies which will give the designer an appropriate choice for his needs.

TC 199 has also produced a terminology data base in which a great number of terms are listed and defined in more than a dozen languages.

Supporting the international standardization programme for machinery safety is an important contribution towards a safer world and facilitates global trade by reducing technical barriers to trade.

- 1) see figure 1, pink planets
- 2) see figure 1, orange planets
- 3) see figure 1, yellow planets
- 4) see figure 1, green planets



Although differences in industry culture and language may be difficult to overcome, they all work hard to find acceptable solutions.

The current situation of different national safety standards is not satisfactory. Although ISO 10218, *Robots for industrial environments – Safety requirements*, dating from 1992, exists, it is mainly used in Europe – with regional standards used in the USA, Canada and Japan. Robot manufacturers and their international customers have to deal with the resultant differing requirements and regional variations.

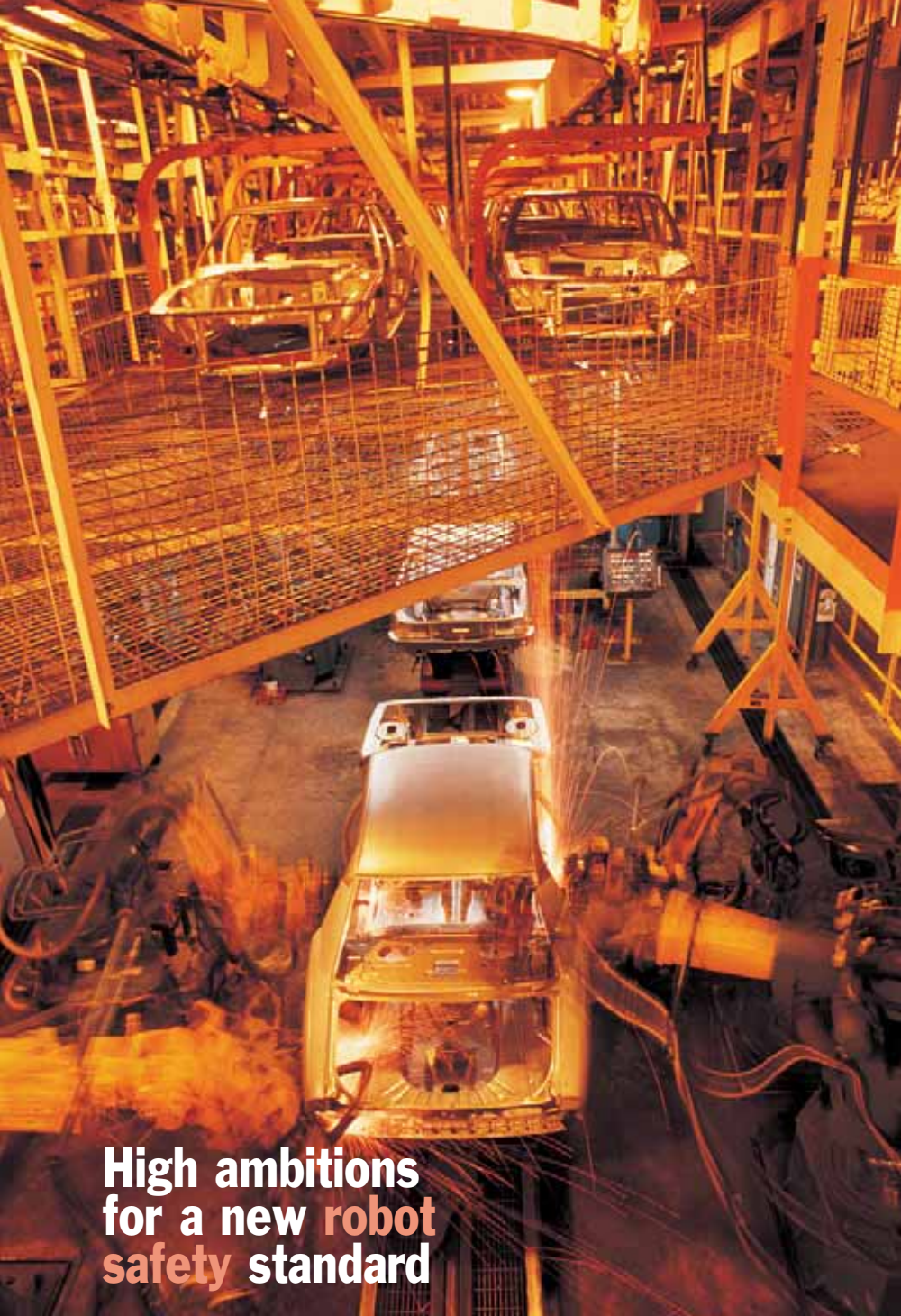
Within ISO/TC 184/SC 2, *Robots for industrial environments*, it was proposed to start revising ISO 10218 in order to replace the different regional and national standards with one commonly used global standard.

Everyone realised that this work would not be easy and would require extensive efforts from the participants. But the potential advantages outweigh the disadvantages and work has started.

### Robots and other machinery

The safety standard on industrial robots is being updated in line with the general safety of machinery standard ISO 12100<sup>1)</sup>. Being an A-standard, ISO 12100

1) Note, see bottom of page 24.



## High ambitions for a new robot safety standard

by Per Norlin, Chair of ISO/TC 184/SC 2, Robots for industrial environments and Mattias Lafvas, Secretary of ISO/TC 184/SC 2

**S**takeholders of the industrial robot industry intend to replace different regional and national standards with one common global robot safety standard. The intention holds, despite the current strength of regional standards.

Intense activity is taking place. The international project team is working in parallel with ISO and The European Committee for Standardization (CEN) and with robot experts from East Asia, North America and Europe.

### About the authors



**Per Norlin** is the Chair of ISO/TC 184/SC 2, *Robots for industrial environments*. He works for ABB Automation Technologies and is manager

of the product planning and product management department at the Robotics Products Business Area Unit in Sweden. He holds both MBA and MSc degrees. Past managerial positions within the robotics field include business development, after-sales, and product & software.



**Mattias Lafvas** is the Secretary of ISO/TC 184/SC 2, *Robots for industrial environments*. He works for SIS, Swedish Standards Institute, and is also

responsible for Swedish national committees within automation and safety of machinery. He is also the secretary of ISO/TC 118/SC 6, *Air compressors and compressed air systems*. Before moving into standardization he worked in manufacturing industry on product development.



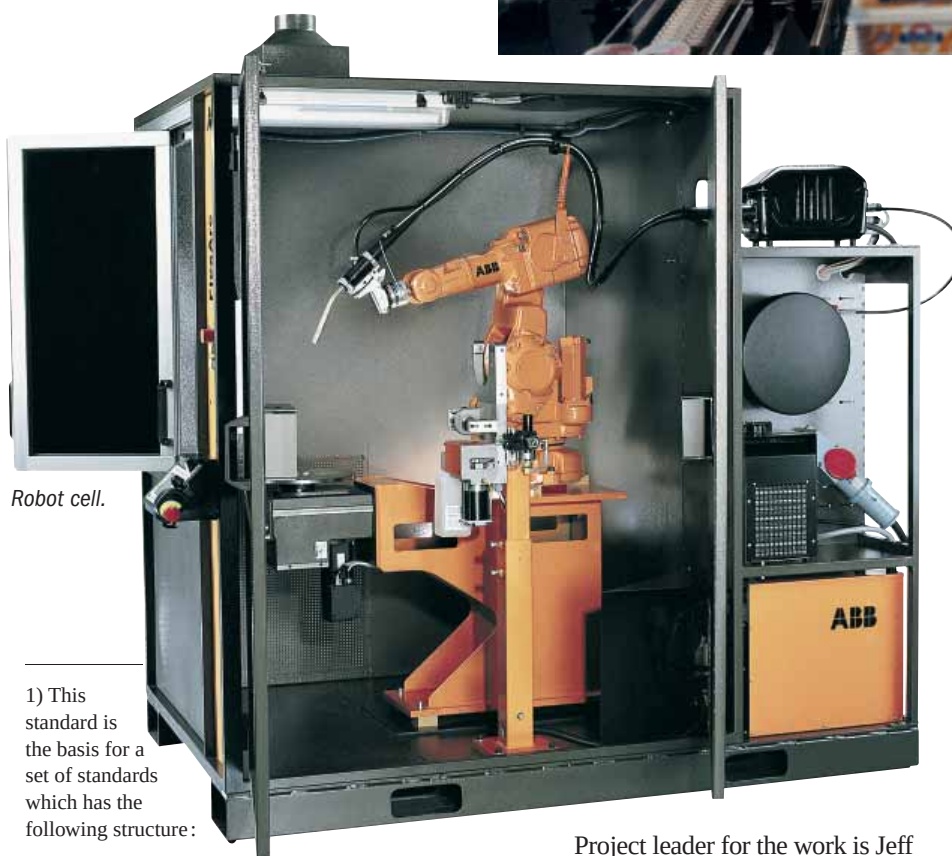
## Main Focus

is part of the hierarchical type A-B-C system within safety of machinery. But, as a *machine-specific* type C standard, ISO 10218 sets safety requirements for hazards and risks *unique* to robots.

**“Stakeholders of the industrial robot industry intend to replace different regional and national standards with one common global robot safety standard.”**



© All photos courtesy of the author.



## Robot Safety

Industrial robots are usually kept behind fences, but nevertheless hazards and risks need to be dealt with to prevent persons from entering hazardous spaces. One way to achieve this is the use of interlocking devices. Special considerations are also to be incorporated, for entering the production cell as required during set up and programming.

Basic hazards associated with robots are described in the standard which also provides requirements to eliminate or adequately reduce the risks associated with these hazards. Requirements and guidelines are specified for the inherent safe design, protective measures and information for use of, industrial robots and robot systems.

## Collaborating robots

Since ISO 10218 was first published in 1992, technical development has proceeded apace. In many cases the existing standard prohibits, or does not address, the use of new emerging technologies.

Wireless control is one example of technology that was not used for industrial robots when the current ISO standard was developed. Today the technology is being introduced on the shop floor and there is a need to agree on

1) This standard is the basis for a set of standards which has the following structure:

**Type-A standards** (basic safety standards) giving basic concepts, principles for design, and general aspects that can be applied to all machinery;

**Type-B standards** (generic safety standards) dealing with one safety aspect or one type of safeguard that can be used across a wide range of machinery;

**Type-C standards** (machine safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

Project leader for the work is Jeff Fryman at Robotic Industries Association (RIA) in the USA. He has ensured that the ISO-led work, in parallel with CEN, also incorporates the CEN consultant. The latter makes assessments to ensure that the standard fulfils the essential health and safety requirements of the European machinery directive. As a European standard, the new EN ISO 10218 is intended to be harmonized under the machinery directive.



requirements addressing use of wireless pendants.

Applications with more than one robot, requiring synchronised robot control, are not dealt with in the 1992 standard. However, technology with several robots using one control system is commonly used today and new requirements are therefore being developed.

A new application that barely exists today but is foreseen to grow quickly is so-called collaborating robots. This means that the operator is collaborating with the robot, sometimes in direct physical contact. Traditionally robots and operators have been kept apart in the production mode, so this kind of collaboration raises new hazards and risks. Thus, the standard writers have looked into different future scenarios in order to achieve requirements that should allow for technical development.

Other new technical requirements included in the new standard relate to safety-related control system performance, robot stopping function, enabling devices programme verification, and updated system design for safety requirements.

### Wider scope

The title of the new standard reflects the recent change of the committee title from "Robots for manufacturing environments" to "Robots for industrial environments". The reason

was that industrial applications such as warehouse locations appeared to be excluded.

To remove ambiguity, the standard is being divided into two parts:

- ISO 10218-1, *Robots for industrial environments – Safety requirements – Part 1: Robot*
- ISO 10218-2 *Robots for industrial environments – Safety requirements – Part 2: Robot system and integration*

Part 1 contains requirements for manufacturers of robots, part 2 for integrators of robots into complete production cells or lines.

The standard is not developed for, but *may* also be used for, non-industrial robots. Many of the safety principles established are common for other environments than industrial. Examples of non-industrial robot applications are healthcare, rehabilitation, prosthetics and other aids for the physically impaired, under-sea, military and space robots, tele-operated manipulators, intelligent

assist devices not made from robots or robot controllers, micro-robots, and service or consumer products.

### Publication

Target publication date for the new ISO 10218-1 is early 2006 and for 10218-2 in 2007. The standards that will be replaced are ISO 10218:1992, EN 775:1992 (Europe), CSA Z434:2002 (Canada), JISB 8433:1993 (Japan) and ANSI/RIA R15.06 1999 (USA). The ISO standard will be published in English and French. As a European standard it will additionally be translated into German. It is then up to the national standardisation bodies to translate into other languages.



Operator with IRB.



### Conclusion

The goal of one globally implemented ISO standard is not far away, thanks to the extensive efforts made. The revised ISO standard on robotics will solve the problem with conflicting regional and national standards, and facilitate communications in the purchasing process. Harmonised requirements will lead to safer robot applications, reducing both accidents and costs. The new robot safety standard will contribute to a safer world. ■

Foundry cell.



## Providing fire containment standards for today and tomorrow

by Peter E. Jackman, Convenor,  
ISO/TC 92/SC 2/WG 7

**T**he more that human beings congregate under one roof for accommodation, leisure or work the greater is the need to protect them from tragedy. Some tragedies are unpredictable, for example earthquakes, tsunamis, hurricanes, but others are more predictable and possibly preventable, such as catastrophic fires. This problem is generally addressed by building codes, a major component of which is the construction of barriers to contain fire and to build structures which can resist the impact of fire. Producing common test procedures and methods of calculating how a construction may satisfy such tests is the role of ISO/TC 92/SC 2, *Fire containment*.

### Bridging the gap between existing test methods

Testing to prove the fire performance of a construction is costly and time consuming. In pre-standardization days individual countries developed their own test procedures, each similar to, but irritatingly different from each other, meaning that global manufacturing companies were doing repeat testing on a frequent basis. Recently, these test procedures have been harmonized within trading regions, such as the European community, but trading regions on other continents, whilst being harmonized within a continent, can be different from those used in 'neighbouring' continents. ISO/TC 92/SC 2 is close to putting in place a range of new ISO test procedures for the purpose of containing and resisting fire, which aim to bridge the gap between existing trading blocks with well established procedures and, at the same time,

### "New fire protection systems require new test methods."

provide solutions for those countries or blocks that have yet to generate fire safety codes for themselves.

### New test methods for new fire protection systems

The work of ISO/TC 92/SC 2, however, goes beyond producing harmonized versions of existing test methods. In the recent past it has been recognized that there are new fire protection systems that require new test methods. Furthermore, there is a recognition that fire severities vary in different applications, which require new test procedures that reflect the different conditions. These new procedures have had to be generated, or adapted by SC 2. Perhaps one of the biggest challenges was as a result of recognizing that the size of the testing facilities in general use restricted the safe application of the outputs of these tests. Many applications could not be tested generally because of the scale of the test

and the need to consider the third dimension of the construction which often provides gratuitous constraint. Methods of calculating how these larger three-dimensional constructions may behave have needed to be put in place, and who better to do this than the SC 2 committee, which is more aware of the data inputs and outputs expected.

Predicting the behaviour of a structure when exposed to real fire (i.e. where the exposure conditions are the product of the actual fire load and ventilation conditions), remains very much the responsibility of TC 92/SC 4, *Fire safety engineering*.

Subcommittee 2 has no less than eight active working groups, each of which takes responsibility for a different aspect of the work. The most established of these working groups is working group 1, until recently under the convenorship of Deg Priest, SC 2 Convenor. This working group has been responsible for the generation and maintenance of the basic fire resistance testing standard, ISO 834; now being produced in multiple parts, following the European Committee for Standardization (CEN) model which evolved in response to the legal need for there to be a full suite of





standards covering every element of building that may be traded throughout Europe. Working group 1 did not, however, adopt the European draft standards without change. It recognized that many of the tests were unduly complicated because each procedure was required to incorporate the specific requirements of each member state in Europe – thus making the standards unwieldy for international use. Each standard was therefore reworked to produce a method that could be more easily adopted by any of the ISO member countries around the world. In many cases,

the changes made have been fed back into Europe to be considered in the first revision of the EN standards. The latest standard to be undertaken by working group 1 is ISO 834: Part 10 which is a special method for evaluating the contribution that intumescent protected coatings make to the fire resistance of steel structural members.

Fire test methods for fire doors, and more recently fire resisting glazing has been the responsibility of working group 3. While the test for fire doors (ISO 3008) is a simplified version of the EN test, the new test for glazing (ISO

3009) is the first standard in the world to consider testing sloped glazing, in recognition of the massive increase in the use of glass in buildings worldwide, and the inevitability that not all of it will be used vertically. Similarly, recognizing the growing use of intumescent seal technology in the design and construction of fire doors, working group 3 has recently published ISO 12472:2003, which is a method for evaluating the efficacy of intumescent door seals.

**“Should any country in the world look to put standards in place to support its own fire safety codes, it should not need to look any further than ISO for such test methods.”**

Buildings worldwide are seeing an increase in the use of ductwork, either for heating buildings in the northern climates or cooling buildings in the southern or equatorial regions. Preventing these ducts from compromising any attempt to contain a fire is the responsibility of working group 4. Their responsibility is to ensure that there are common worldwide tests for both ducts and dampers. Working group 4 has had to move with the times and it has recently published a method for evaluating intumescent dampers, a brand new and very effective technology for stopping the spread of fire in ducts. (ISO 10294: Part 5).

Working group 5 is charged with the task of producing a test procedure for roofs, with the objective of either keeping fire in, or out. Dr Tamás Bánky of Hungary has the difficult job of trying to achieve a common test when there is not a common philosophy.

Like ductwork, all buildings now experience a massive increase in the use of services and working group 6 is generating standards that evaluate the degree of compromise that these services cause to the fire containment strategy. Initially, the working group is working on adopting the draft CEN methods, but because the services themselves vary so much among ISO members, a brand new approach

is being evaluated in working group 6, whereby standard conductors are used in lieu of ‘real’ cables and pipes. The method looks very promising.

Working group 8 has been formed at the request of the petro-chemical industry. In this industry, the fire exposure can be magnitudes greater than those experienced in normal building fires and the group has produced a harmonized ‘jet-fire’ test that simulates the fire attack from ruptured petroleum pipework. This is probably the most spectacular test from within SC 2’s arsenal of fire tests.

What of the other working groups; working group 2 and working group 7? Neither of these committees have responsibility for any sector of test methods. Working group 2 is the committee charged with the responsibility for generating calculation methods for use when testing is impractical, or even impossible. It has produced a number of technical reports, giving guidance on the generation of data for modelling purposes or even harmonizing methods of calculation. Working group 7, the authors’ own working group is the one looking to the future. The current test methods, the instrumentation and criteria have their roots many decades ago. The World Trade Centre and the more recent Madrid fire, for example, show how the technology may be lagging behind. Working group 7 is making recommendations for bridging the gap for the future.

The catalogue of standards under SC 2’s control is now extensive and, while it continues to keep its portfolio up to date, should any country in the world look to put standards in place to support its own fire safety codes, it should not need to look any further than ISO for such test methods.

### About the author



**Peter E. Jackman** is Technical Director of International Fire Consultants Ltd (United Kingdom) and in addition to being the Convenor of working group 7

he has attended ISO/TC 92/SC 2 working group meetings continuously since 1975.



## Image safety – new biological risks in the IT age

by Ken Sagawa, Group leader of Accessible Design Group, and Hiroyasu Ujike, Group leader of Multimodal Interaction Research Group, National Institute of Advanced Industrial Science and Technology (AIST)

**I**mage safety is an urgent new issue of the information technology age. Screen images such as those in video games contain lots of rapidly changing scenes and flashing lights to enhance the feeling of thrill, speed and excitement. But how do they affect those viewing the image? Are there any psychological or physiological effects? This problem was not much discussed before highly advanced images and displays became available. But the growth of image production companies and their high volume of striking images make this problem a reality of daily life.

Almost all children like video games. But they are exposed to whatever risks the images present, whilst being themselves unaware of potential risk. Image safety is a matter of protecting people, especially children, from any undesirable physiological and psychological effects of viewing images presented on screens such as videos, games, the internet and other electronic displays.

Evidence of potential hazard has grown in the past decade. In 1993, a TV commercial in the United Kingdom contained flashing images that caused photosensitive seizures in three people who watched it. In 1997 a TV animation programme in Japan affected more than 700 children with similar photosensitive seizures, requiring them to consult doctors. Recently in Japan 36 junior high-school students among 300 who were watching a video with a high content of fluctuating scenes on a large screen experienced symptoms of motion sickness. These are only three widely reported incidents;



© P. Krieger

many more similar incidents are likely to have occurred.

### Children at risk

One of the more serious aspects of the image safety issue is that children are likely to be affected by this type of hazard, and more likely to suffer recurrent effects. There is no doubt that we need to establish a rule to guide both image producers and viewers, to promote greater safety in the enjoyment of screen images.

And so, Japanese Industrial Standards Committee (JISC) proposed a new work item to ISO Committee on consumer policy (COPOLCO) in 2002, to consider developing an evaluation system for image hazards and enhancing consumer awareness of the safety issue. COPOLCO

endorsed this initiative and recommended that JISC hold a meeting aimed at establishing an International Workshop Agreement (IWA).



This was the right decision, as there was no relevant Technical committee or Subcommittee in ISO to discuss this issue, and it is timely to apply the IWA deliverable to this urgent problem.

During 7-9 December 2004 in Tokyo, the International Workshop on Image Safety, organized by JISC and the National Institute of Advanced Industrial Science and Technology (AIST) was attended by some 100 delegates, including COPOLCO Chair Caroline Warne and a number of technical experts and other interested parties. The focus was on :

### About the authors



**Ken Sagawa** is a Group leader of Accessible Design Group, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan. He is a

vice-president of the International Commission on Illumination (CIE). His major field is visual psychophysics in photometry and colorimetry, and most of his recent studies concern age-related changes in visual functions and evaluations of the visual environment for the elderly. Mr. Sagawa contributes to ISO/TC159, *Ergonomics*, and is a member of the Japanese committee on consumer policy.



**Hiroyasu Ujike** is a Group leader of Multimodal Interaction Research Group, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan. He is a bachelor of engineering in robotics and a doctor in engineering on human lens accommodation. His research on parallax depth perception had triggered his interest in the interaction between visual and non-visual information, leading him to work on visually-induced motion sickness in 2002. His research work on motion sickness has mainly focused on types of optic flow and velocity, which are more effective in motion sickness.

- General aspects of image safety (background, problems, current situation)
- Three technical aspects of image hazards (photosensitive seizure, motion sickness, and visual fatigue from 3D-images)
- What ISO could do.

All present were agreed that there was no doubt of the importance of the image safety issue and that some standard may be needed to address it. However, the discussion did not agree on technical items. The workshop served as a starting point, with most of the problems raised left in abeyance.

## Striking a balance

One of the difficult problems is how to strike an appropriate balance between the interests of image producers and image viewers. Any future standard on image safety should address this problem by being firmly grounded in scientific knowledge on the safety of images.

Recognizing these problems, the IWA on image safety (IWA 3) was edited after the workshop and will be published soon. IWA 3 clearly addresses the importance of this issue for both industry and consumers and calls for future work toward standardization in ISO.

It is of note that similar work has been done in the International Telecommunication Union (ITU) which recently published "Guidance for the reduction of photosensitive epileptic seizures caused by television". Currently, this is the only existing international recommendation in this area and it deals *only* with photosensitive seizures. It is clear we need guidelines for other aspects of image safety, such as motion sickness and visual fatigue from 3D images, which may affect many more people than seizures.

Since the JISC proposal to COPOLCO in 2002, the image safety issue has gained attention from many interested parties in industry, broadcasting and amongst consumers. The first stage of the discussion is almost complete; a second stage awaits. The JISC is now considering the proposal of a new work item in ISO to further discuss this new image safety problem. ■



© Grace Nielsen

## Consumers depend on safety standards

*by Elizabeth Nielsen, Convenor of COPOLCO's working group on product safety and member of the Standards Council of Canada's CAC COPOLCO*

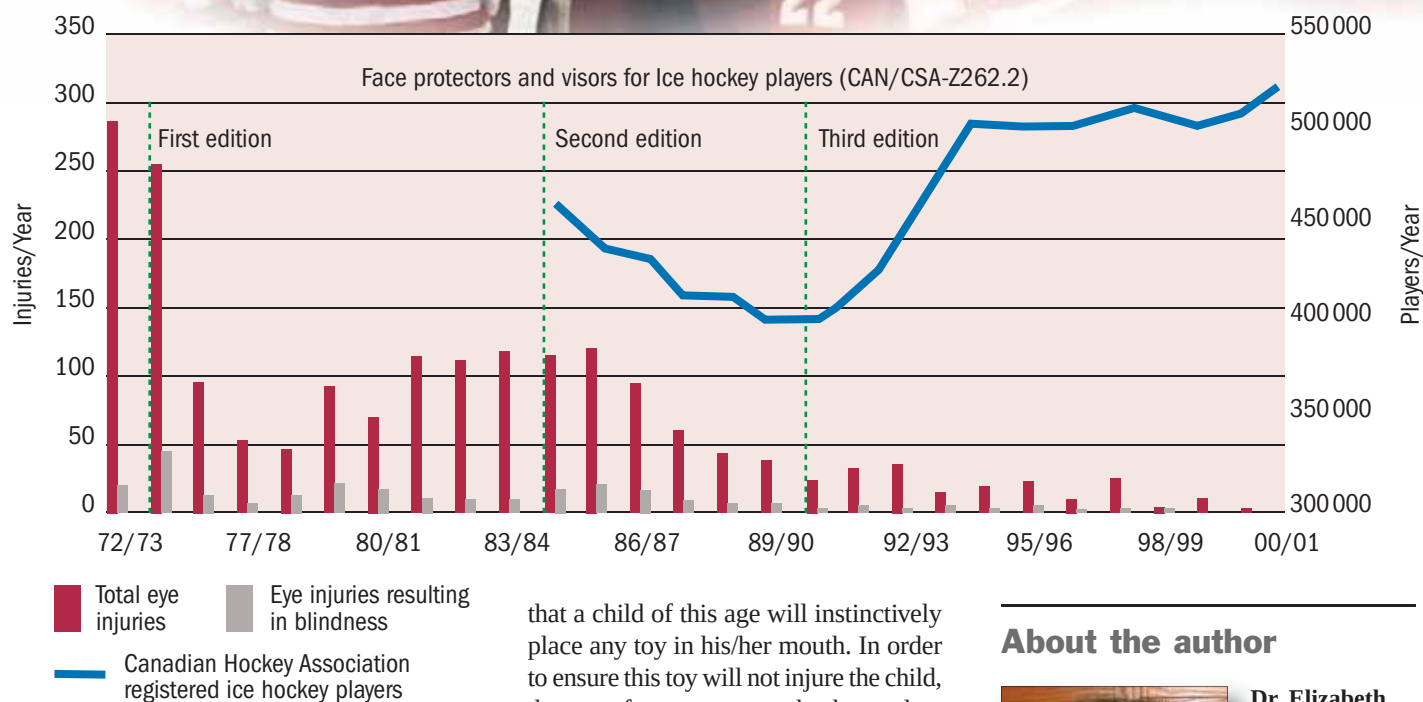
**S**tandardization provides a range of benefits to producers from the elimination of technical barriers to trade to a reduction in costs and an increase in product innovation. Moreover, it also plays another important role in protecting the health and safety of those who buy and use the products produced. Consumers like producers are an essential component of the trade equa-

**"Consumers, whether from a developed or developing country, depend on safety standards to prevent them and their families from being harmed or injured."**

tion. For trade to be successful, the needs of both parties involved in the process must be satisfied.

Every aspect of a consumer's life is touched by standards from the toys their children play with, to the sports helmets they wear and the products they use to carry out a multitude of household tasks each day. Consumers, whether from a developed or developing country, depend on safety standards to prevent them and their families from being harmed or injured. They, therefore, expect a high level of safety in the products they buy, irrespective of where, when or by whom





### Ice hockey eye injuries in Canada

(Sources: Dr. T. Pashby, 2002, Canadian Hockey Association, 2002) © CSA

the products were made. Unfortunately, product related injuries continue to be a worldwide problem particularly among the young and the elderly.

## Addressing all potential hazards

Safety standards, that follow a holistic approach by addressing all the hazards associated with a product and are accepted and used internationally, have a significant role to play in meeting consumers' expectations. The lack of such standards can result in increased injuries, expensive product recalls and the loss of consumer confidence in a product or brand name. The importance of addressing all the potential hazards associated with a product is obvious in this illustration of an infant playing with a toy. Child behavioural studies have determined

that a child of this age will instinctively place any toy in his/her mouth. In order to ensure this toy will not injure the child, the manufacturer must make the product big enough so that it can't be swallowed, use materials that do not leach out toxic substances when in contact with saliva and eliminate any sharp edges that may result in cuts or gashes.

Practical experience has shown that safety standards can lead to reduced frequency and severity of injuries among consumers. For example, the Canadian Standards Association (CSA) developed safety standards for face protectors used by hockey players. As illustrated in the chart produced by CSA, the number of reported hockey eye injuries in Canada has dropped from 290 per year when the standard was published to less than 10 today. Through the same period, the number of players has increased significantly. Similarly, the development of child resistant packaging safety standards has resulted in 72 percent fewer Canadian children being hospitalized for poisonings in 2000 than in 1983<sup>1)</sup>.

1) Health Canada and Canadian Institute of Health Information, 2001.

## About the author



**Dr. Elizabeth Nielsen** has been involved in improving the safety of products since the late 1970s. As a Canadian Government scientist, regulator and policy analyst, she has been responsible for testing consumer products and radiation emitting devices for compliance with safety regulations and standards, and for the development of such regulations, legislation and standards. Recently retired from Health Canada, Elizabeth Nielsen continues to contribute to the work of the Standards Council of Canada and the Canadian Standards Association (CSA). She is a member of the Canadian Advisory Committee to COPOLCO, the Canadian National Committee of the International Electro technical Commission, convener of COPOLCO's Working Group on Product Safety and the CSA Consumer Representative on the committee responsible for the safety of electrical products.

### Guidance on the assessment of risks throughout the product lifecycle

One of the main problems identified with respect to safety standards is the reactive nature of the standards development process. Instead of being proactive and preventing unsafe products from being manufactured or sold, the standards development process often starts after the product has entered the market or has injured someone. The traditional vertical-product sector approach to standards development is one of the factors that contribute to this reactive situation. With the number of new products and technologies that are entering the marketplace, it is very difficult for any standards system to effectively respond to the new products or classes of products in a timely fashion.

To address this problem, consumer representatives recently recommended that ISO consider the development of a consumer product management guide or standard. The purpose is to provide suppliers with guidance on the assessment of risks associated with consumer products and their management throughout the product lifecycle. It necessitates a shared responsibility and sustained commitment by producers, distributors and retailers to ensure that safety issues are identified at the design stage, that production controls are established and that corrective actions are implemented at any stage in the process when a safety issue is identified.

To ensure that the voice of consumers is expressed and heard in the development of ISO standards, ISO established the Consumer Policy Committee (COPOLCO) in 1978. COPOLCO is involved in identifying the concerns of consumers and providing advice and recommendations to ISO on how to address them. Over the past 25 years, COPOLCO members have taken an active interest in improving product safety standards. The Committee has taken the lead or played a major role in the development of ISO/IEC Guides 50, 51 and

71 which provide guidance on safety requirements for products in general and specific requirements for children and seniors.

### Improving product safety standards

In order to address the continuing concerns of COPOLCO members about product safety a working group on product safety was established in 2002. This group identified many issues including the need: to raise awareness about safety issues among standards developers, designers and manufacturers; to establish a mechanism to manage product safety issues in a proactive and horizontal manner; for ISO to establish a forum to address gaps in safety standards for consumer products; and to improve the use and understanding of Guides 50, *Safety aspects – Guidelines for child safety*, 51, *Safety aspects – Guidelines for their inclusion in standards* and 71, *Guidelines for standardization to address the*

**“The standards development process should serve to prevent unsafe consumer products from being designed, manufactured and sold and to ensure that all potential hazards associated with the product are addressed.”**

© P. Granier



*needs of older persons and people with disabilities* among product designers, manufacturers, and those who develop product standards.

In order to address the issues raised and achieve the goal of preventing unsafe products from being manufactured and sold, the working group made a number of recommendations which were approved by COPOLCO including:

- Rationales that explain why certain safety levels or test procedures were chosen and the evidence on which the decisions are based be available to those using or revising a standard;
- Recommending to ISO that ISO/IEC Guides 50, 51, and 71 be made available to the public and those writing standards since committee members at the international, regional and national levels do not have easy access to these guidance documents;
- Preparing a detailed justification paper for the development of a Consumer Product Safety Management Guidance Standard or Guide that assists those responsible for the safety of consumer products in assessing and managing the risks associated with their products, and
- Including in the justification paper criteria for the safety risk assessment of consumer products and the results of consultation with appropriate bodies.

In conclusion, when standards are being developed, the safety needs, use patterns, and abilities of consumers must be considered. The standards development process should serve to prevent unsafe consumer products from being designed, manufactured and sold and to ensure that all potential hazards associated with the product are addressed. While it is easy to criticize the delays and traditional approach used to develop product standards, substantial progress has been made and I am convinced that, if not for the existing system, the safety of consumers would be completely overlooked. ■



## Protecting vital sites with new clean fire extinguishing systems

by Barry Lee OAM, Chair ISO/TC 21/SC 8, Gaseous media and firefighting systems using gas

**F**ollowing five years of outstanding international collaboration, ISO 14520, *Gaseous fire extinguishing systems – Physical properties and system design*, was published in 2000. It is a 14-part Standard, with Part 1 covering general requirements and Parts 2 through 14 dealing with agent-specific requirements.

This work was necessitated by the phase-out of Halon 1301, bromotrifluoromethane, a versatile and widely used 'clean' fire extinguishing agent introduced in the late-1960s. Production of Halon 1301 ceased a decade ago following recognition that it was an ozone depleting substance (ODS). The demise of Halon 1301 was anticipated in 1987 when 24 countries signed the Montreal Protocol<sup>1)</sup>. Legislation subsequently scheduled the phase-out of ODSs. Somewhat unexpectedly, Halon 1301 proved to have the highest ozone depletion potential of any man-made ODS.

### New agents, no damaging residues

A number of new products have been developed as alternative fire extinguishing agents. Many of these have attributes similar to Halon 1301 includ-

<sup>1)</sup> The Montreal Protocol on Substances that Deplete the Ozone Layer was negotiated and signed by 24 countries and by the then European Economic Community in September 1987. It called for the parties to phase out the use of CFCs, halons and other man-made ODSs. It has been described by UN Secretary General Kofi Annan as "Perhaps the single most successful international agreement to date."



ing low toxicity to humans, nil electrical conductivity and 'clean' characteristics, that is, they leave no damaging residue. These attributes are particularly important in the case of gaseous fire extinguishing systems protecting such mission-critical hazards as telecommunications facilities, control centres, computer rooms and Uninterruptible Power Supply (UPS) plant. They are also in demand for the protection of archives, art storage vaults and similar water damage-susceptible hazards. Clearly, it is important to users and those who specify such fire protection systems to know that they are being designed to appropriate global standards. ISO 14520 satisfies that need.

**"It is important to users and those who specify ... fire protection systems to know that they are being designed to appropriate global standards. ISO 14520 satisfies that need."**

It accomplishes this by specifying requirements for the design, installation, testing, maintenance and safety of gaseous fire extinguishing systems in buildings, plant or other structures. It also details the characteristics of the various extinguishants and the types of fires on which they are effective. Accordingly, it is addressed to architects, engineers, insurers and specialist contractors concerned with the specification, design, installation, testing, approval, inspection, operation and maintenance of such systems.

### Plastics as fuel hazards

The second edition of ISO 14520 has reached Final draft International Standard (FDIS) stage and is expected to be published in 2006. It will comprise 12 parts, 11 of which are agent-specific.

As foreshadowed in the 2000 edition, the fire test procedures have been extensively revised to include tests representative of plastic fuel hazards (poly-

meric sheet fuel array fire tests involving Polymethylmethacrylate (PMMA), Polypropylene (PP) and Acrylonitrile-Butadiene-Styrene (ABS)). These tests are designed to more closely represent plastic fuel hazards such as may be encountered in information technology, telecommunications and process control facilities. The special case of grouped power or data cables is also addressed.

### Testing and the environment

Systems practitioners generally agree that full-scale discharge is the most effective way of proving all aspects of system design and function. Of course, with certain extinguishing agents, environmental factors militate against this. ISO 14520 states that a discharge test is generally not recommended but concedes that 'a discharge test may be conducted if acceptable to the authority'. The introduction to ISO 14520 notes in part that, 'new elements to eliminate the need to release extinguishants during testing and commissioning procedures are included'. These are linked to the inclusion of enclosure integrity testing (the so-called 'door fan test').

ISO 14520 requires not only that effective extinguishing concentrations be achieved, but also that they be maintained for a sufficient period of time to allow effective emergency action. This is known as 'hold time' and may be predicted by a door fan test; this test has been restructured in the new edition to accommodate lighter-than-air gases and to deal with odd-shaped hazard enclosures.

### Safe human exposure limits

The new edition also includes an annex dealing with safe personnel exposure guidelines based on physiologically based pharmacokinetic (PBPK) modelling as an option for determining allowable exposure times for halocarbon agents. The PBPK model represents a scientific approach to determining safe human exposure limits, with respect to both concentration level and exposure time. Its importance is that it adds the

time dimension to the safe exposure criteria – a dimension that has not thus far been a consideration with the gaseous Halon alternatives.

Several agent-specific Parts have been withdrawn on the basis that the extinguishing media have not been commercialised, and a new agent-specific Part (5) has been introduced to cover FK-5-1-12 dodecafluoro-2-methylpentan-3-one systems.

### ISO contribution to a safer world

Finally, it should be noted that the new agent-specific FDIS Parts include only extinguishing concentration values determined in accord with ISO 14520 test requirements. Heptane, wood crib, PMMA/PP/ABS and a range of other fuels are included. Viewed across all Parts, the new ISO/FDIS 14520 probably contains the most comprehensive up-to-date data on 'clean agent' extinguishing concentrations currently available – once again developed through a global inter-laboratory cooperative effort. Completed in parallel with CEN work, this is a further example of ISO's contribution to a safer world. ■

### About the author



**Barry M Lee, OAM, Dip Mech E, FI Fire E (Lond), MRSH**, is a Fellow of the Society of Fire Protection Engineers, USA. He is technical consultant (formerly technical director) Tyco International Pty Limited and past president of the Australian Industrial Research Group. He is a member – at board level – of numerous technical and professional bodies in Australia. He is Chair of ISO/TC 21/SC 8, *Gaseous Fire Extinguishing Systems*.



## Management of food safety in the supply chain

by Jacob Færgemand, convenor and project leader of ISO/TC 34, Food products, WG 8, Food safety management systems, and Dorte Jespersen, secretary of the WG, the Danish Standards Association

**F**ood safety hazards may be introduced at any stage of the food chain, and adequate control throughout that chain is therefore essential. Food safety is a joint responsibility of all the parties participating in the food chain.

Unsafe food can be dangerous and costly. ISO 22000, *Food safety management systems – Requirements for any organization in the food chain*, aims at ensuring that there are no weak links in the food supply chain.

ISO 22000 sets requirements for food safety management systems and can be applied to all types of organizations within the food chain, ranging from feed producers, primary producers, food manufacturers, transport and storage operators and subcontractors to retail and food service outlets – together with inter-related organizations such as producers of equipment, packaging material, cleaning agents, additives and ingredients.

### What is the standard about?

ISO 22000 combines generally recognized key elements to ensure food safety along the food chain:

- *Interactive communication*

Clear communication along the food chain is essential to ensure that all relevant food safety hazards are identified and adequately controlled at each step. This implies communication of the needs of the organization to organizations both upstream and downstream in the food chain.



Communication with customers and suppliers, based on the information generated through systematic hazard analysis, will also assist in establishing customer and supplier requirements in terms of feasibility, need and impact on the end product.

- *System management*

The most effective food safety systems are designed, operated and updated within the framework of a structured management system and incorporated into the overall management activities of the organization. This provides maximum benefit for the organization and interested parties. ISO 22000 is aligned with the requirements of ISO 9001:2000 in order to enhance the compatibility of the two standards and to ease their joint or integrated implementation.

- *Hazard control*

ISO 22000 combines the HACCP<sup>1</sup> principles and application steps, developed by Codex Alimentarius, with prerequisite programmes. It uses the haz-

ard analysis to determine the strategy for hazard control.

### What are the benefits for users?

Organizations implementing the standard will benefit from:

- organized and targeted communication among trade partners;
- optimization of resources (internally and along the food chain);
- improved documentation;
- better planning, less post-process verification;
- more efficient and dynamic control of food safety hazards;
- all control measures subjected to hazard analysis;
- systematic management of prerequisite programmes;
- wide application because it is focused on end results;

- valid basis for taking decisions;
- increased due diligence;
- control focused on what is necessary; and
- saving resources by reducing overlapping system audits.

### What are the benefits for other stakeholders?

Other stakeholders will benefit from:

- confidence that the organizations which are implementing ISO 22000 have the ability to identify and control food safety hazards.

**The standard adds value** because:

- it is an auditable standard with clear requirements;
- it is internationally accepted;
- it integrates and harmonizes various existing national and industry-based certification schemes;
- food processing industries are waiting for this standard;
- it is aligned with both ISO 9001:2000 and HACCP<sup>1)</sup>;
- it contributes to a better understanding and further development of HACCP.

### The ISO 22000 Family

ISO/TS 22004, *Food safety management systems – Guidance on the application of ISO 22000:2005*, will be published shortly to give guidelines on implementing the standard, with particular emphasis on small and medium sized enterprises. ISO 22000 and ISO/TS 22004 were developed by working group WG 8, *Food safety management systems*, of ISO technical committee ISO/TC 34, *Food products*. Experts from 23 countries participated in the working group together with many international organizations having liaison status, such

as the Confederation of the Food and Drink Industries of the European Union (CIAA), Codex Alimentarius Commission, CIES/Global Food Safety Initiative, and World Food Safety Organization (WFSO).

### “Unsafe food can be dangerous and costly.”

To increase the acceptance of ISO 22000, the Association Française de Normalisation (AFNOR) proposed a technical specification intended to assist certification bodies. The purpose of the ISO/TS 22003, *Food safety management systems – Requirements for bodies providing audit and certification of food safety management systems*, is to provide the necessary information and confidence about the way in which the certification of an organization's food safety management system has been conducted. This technical specification will provide harmonized guidance for the accreditation of certification bodies and define the rules applicable for the audit of a food safety management system complying with ISO 22000.

ISO/TS 22003, which will be available in the first quarter of 2006, is being developed by a joint working group JWG 11, *Requirements for bodies providing audit and certification of food safety management systems*, of ISO/TC 34, *Food products*, and the ISO committee on conformity assessment (CASCO). Experts from 22 countries are participating in the joint working group in liaison with the International Accreditation Forum (IAF) and IQ-NET.

### “ISO 22000 can be applied to all types of organizations within the food chain.”

ISO/TC 34 is also preparing an important standard ISO 22005, *Traceability in the feed and food chain – General principles and guidance for system design and development*, which will shortly be circulated as a Draft International Standard. ■

### About the authors



**Dr. Jacob Færgemand**, a food engineer, graduated from Aalborg Technical University, Denmark. Since 1994, he has worked with Bureau Veritas

BVQI Denmark as lead auditor for ISO 9000 and HACCP (DS 3027) and hygiene inspector for BRC. In 1996, he became Food Sector Manager, and in 2002 Sales Director BVQI Denmark. He is responsible for Bureau Veritas BVQI activities worldwide on BRC inspection and HACCP certification to DS 3027. He chairs the Danish food safety standardization group. In 2001, he launched the development of ISO 22000, E-mail: [jacob.faergemand@dk.bureauveritas.com](mailto:jacob.faergemand@dk.bureauveritas.com), Web [www.bvqi.dk](http://www.bvqi.dk)



**Mrs. Dorte Jespersen**, a chemical engineer, graduated from the Technical University of Denmark in 1992. Since 1994, she has worked with the

Danish Standards Association (DS) as project manager. She is secretary of a number of national standardization committees in the areas of food, laboratory equipment and medical devices.

E-mail [dj@ds.dk](mailto:dj@ds.dk), Web [www.ds.dk1](http://www.ds.dk1)

1) Hazard Analysis and Critical Control Point.



## Managing security in the whole supply chain

by J.F.F. Becker, TNO,  
Netherlands expert member,  
Working Group on Security  
of ISO/TC 8

**W**hat is the one thing that can bring together an airline, an airport, the largest container port in Europe, a brewer, a shipping company and a coffee retailer?

The answer is – a highly developed sense of the need for corporate security. Security not only of the type experienced by today's air traveller at the departure gate or, latterly, by users of metro trains – but security in the widest sense. Security that deals with all aspects of a company's activities and the integrity of the procedures that provide it with raw materials and other inputs, produce its goods and services and deliver those goods and services to their destination. We are looking at security of the whole supply chain.

Representatives of all the varied corporate activities in the supply chain are members of PROTECT, a project launched by the Netherlands to address supply chain security issues. Research members include the Dutch industry organizations of shippers, transport companies and logistics service providers, Port of Rotterdam, Dutch customs, Erasmus University of Rotterdam, BCI and TNO. Supply chain security can thus be studied from door-to-door: from brewer via container ports, shipping line and hauler to retailer. The need for standardized security procedures is the reason for participation in the security working group established under the aegis of ISO technical committee ISO/TC 8, *Ships and marine technology*. The stakes are high and the need for standardization work grows, daily.



### Risk-based approach

ISO Publicly Available Specification (PAS) 28000\* prescribes security procedures. It is a generic management specification that enables any organization, large or small, in any sector of activity, to establish an overall supply chain security management system. The procedures require the organization to assess the vulnerabilities in which it operates and to determine if adequate security measures are in place and regulatory requirements are satisfied. For any security needs identified by this process, the specification instructs the organization to implement mechanisms and processes to meet these needs.

**“The stakes are high and the need for standardization work grows, daily.”**

PAS 28000 is based on the format adopted by ISO 14001:2004, because of its *risk-based* approach to management systems. However, organizations

that have adopted a *process* approach to management systems, such as ISO 9001:2000, may be able to use their existing management system as a foundation for the security management system of PAS 28000.

The specification describes six interrelated elements of a security management system. Section 4.1 states ‘General Requirements’. Following sections elaborate on ‘Policy’ issues, ‘Security risk assessment and planning’, ‘Imple-

### About the author



**J.F.F. Becker**  
MSc (Justus, 1978) is consultant logistics and transport at the Netherlands Organisation for Applied Scientific Research (TNO) since 2001. He

is work package leader in PROTECT, a Dutch TRANSUMO project (2005-2008) for Dutch parties on security in international supply chains. For the European Union, he performs research on a European transport security policy and the Integrated Surveillance of Crowded Areas for Public Security.

\* ISO 28000 was prepared by TC 8, *Ships and marine technology*, in collaboration with other TCs responsible for specific nodes of the supply chain.

## International Organizations involved in the development of ISO/PAS 28000

**IMO** (International Maritime Organization), **IAPH** (International Association of Ports and Harbours), **ICS** (International Chamber of Shipping), **WCO** (World Customs Organization), **BIMCO** (Baltic and International Maritime Council), several **IACS** (International Association of Classification Societies) members, our MoU partners, **SCST** (Strategic Council on Security Technology) and our Category A liaisons with **ITN** (International Innovative Trade Network) and **WSC** (World Shipping Council).

## Threats and countermeasures

The user's security plan will:

- Identify the threats posed. That is, the security scenarios.
- Determine how likely it is that a person, attempting to identify particular security scenarios in the supply chain, would encounter them. This determination is made by reviewing the current state of security in the supply chain and, based on the finding of that review, professional judgment is used to postulate how vulnerable the supply chain is to each security scenario.
- For a supply chain considered reasonably vulnerable to a threat with severe consequences, develop additional procedures or operational changes to reduce the likelihood of the threat, the consequences of the threat, or both. These are called countermeasures. Based upon a system of priorities, countermeasures can be incorporated into the security plan to reduce the threat to a manageable level. ■

mentation and Operation', 'Checking & corrective action', and 'Management Review' – as in the figure opposite.

## Better decisions

ISO/PAS 28001 – which is close to publication – details the procedures prescribed in PAS 28000. But PAS 28001 should be seen only as *one* way to achieve security management of a supply chain. A company can choose its preferred method for complying with PAS 28000. For example, shipping companies may wish to apply PAS 20858 as a start, since this standard can be used as guidance to implement the International Ship & Port Security (ISPS) code. Such other methods may require additional actions – and full conformity to PAS 28000 needs to be verified.

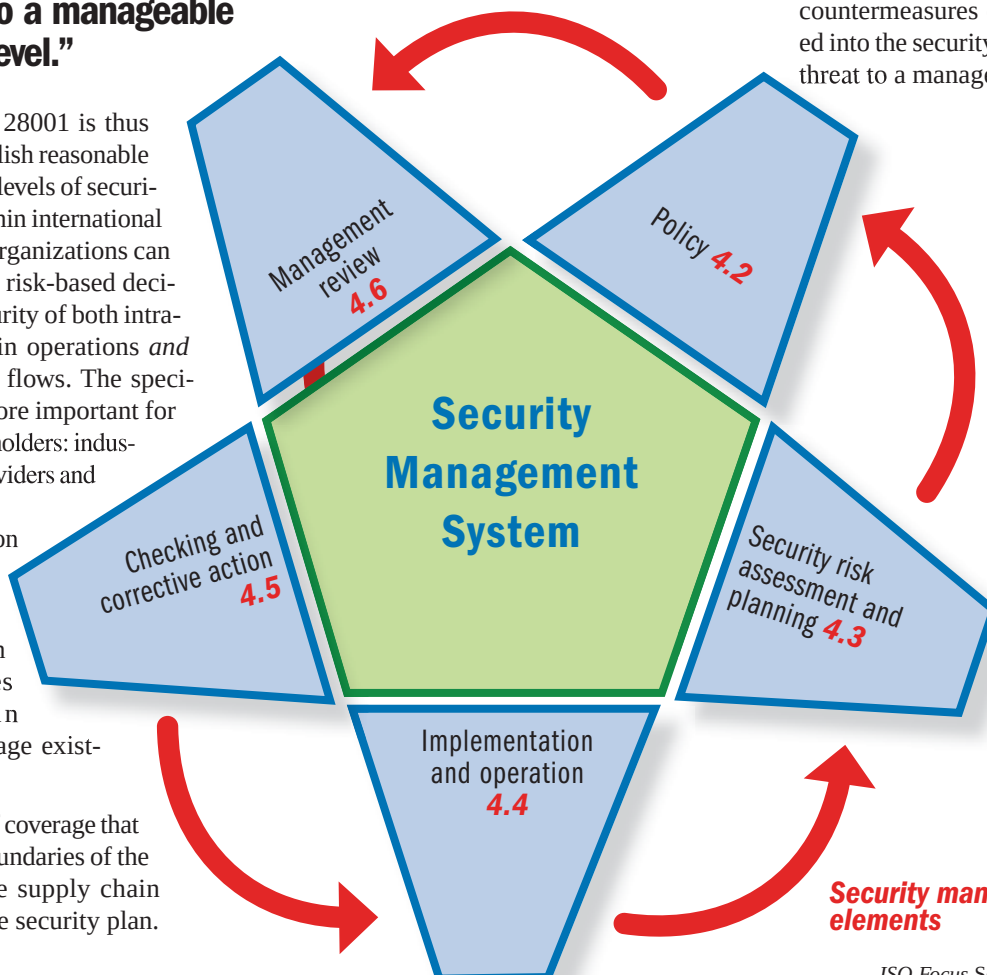
**“Based upon a system of priorities, countermeasures can be incorporated into the security plan to reduce the threat to a manageable level.”**

ISO/PAS 28001 is thus designed to establish reasonable and documented levels of security operations within international supply chains. Organizations can then make better risk-based decisions for the security of both intra-firm supply chain operations *and* inter-firm goods flows. The specification is therefore important for three major stakeholders: industries, logistics providers and governments.

Application of PAS 28001 will produce:

- A security plan that describes measures in place to manage existing threats.
- A statement of coverage that defines the boundaries of the portion of the supply chain covered by the security plan.

- A security assessment report – documenting the vulnerability of the supply chain to defined security scenarios. It also defines the impact expected from each of the threat scenarios if they occur.
- A training programme to enable supply chain personnel to meet any assigned security related duties.





# Developments and Initiatives

## Third ISO Conference for Technical Committee and Subcommittee Chairs

Geneva,  
Switzerland

## Putting Passion into Practice the Standard Makers' third ISO Conference

Following the initial words of conference moderator Kevin McKinley, ISO Deputy Secretary-General, further speakers at the 3<sup>rd</sup> **ISO Conference for technical committee and subcommittee chairs**, held in Geneva on 16-17 June, also referred to the passion with which makers of International Standards approach their work. But all agreed on the need to channel that passion into **making the ISO system globally relevant and efficient** – the conference theme.

ISO's current portfolio of more than 15 000 voluntary standards is the output of some 50 000 experts, coming from stakeholders in business, government, international organizations, consumer associations and other groups, working in over 3 000 technical bodies under 177 active technical committees.

ISO meetings take place at the rate of over 10 per day in different parts of the world. Between meetings the experts continue the standards' development work through information and communication technology (ICT) tools.

Because this system is decentralized, ISO instituted periodic conferences for the chairs of its technical committees and their subcommittees to offer a chance of face-to-face exchanges of views, experiences and ideas with their counterparts from other committees.

ISO Vice-President (technical management) and Chair of the Technical Management Board (TMB), Mrs. Ziva Patir, welcomed delegates with a challenge to ensure that standards do not become an impediment to progress, but remain "the bright side of globalization" and a vehicle to disseminate innovation

and good practices. Standards were the building blocks of quality. Global reach and competitiveness could be obtained only through quality assurance. She pointed out that services now represent 70 percent of the world economy and were no longer "soft" subjects. They demanded an approach in which quality was embedded.

### A motivated, efficient and peaceful "army"

In his own welcome, ISO Secretary-General Alan Bryden identified the actions taken by ISO over the last three years "to better position itself as the leading platform for the production of globally and market relevant International Standards, covering products, services, and management and business practices."

Alan Bryden saw a growing demand for and growing production of, standards, against a background of increased globalization and a need for increased security that should not itself become a new barrier to trade. The ISO/WTO interface was changing in scope and importance, with the emergence of ever larger multinational companies; trade in services (cf. WTO-GATS) would become a larger part of the daily dialogue.

**"ISO's current portfolio of more than 15 000 voluntary standards is the output of some 50 000 experts."**

Providing ISO with a "platform for performance" had become a principal aim of Alan Bryden's tenure. The *ISO 2005-2010 Strategic Plan* "Standards for a sustainable world" was central to this and recognized three vital pillars of enhanced performance: the 153 members of ISO, the 177 technical committees and the 150 staff in Central Secretariat services and support.

Alan Bryden outlined four other major recent initiatives: the *ISO Code of Ethics*; the *ISO Five Year Action Plan for Developing Countries*; the *ISO Policy for global relevance*; the deployment of a communication plan designed to enhance ISO's profile with governments, industry and civil society at large.

The theme of communication in all its forms – through Joint Working Groups, through ISO's connections to the outside world including the World Economic Forum, through IT and publications such as the magazines *ISO Focus* or *ISO Management Systems* – was central to Alan Bryden's closing remarks, following two days of intensive discussions and interaction. "I see all of you, involved in meeting the world's growing demand for more relevant International Standards, as the highly motivated and increasingly efficient field officers of a peaceful army."

## The value of time

Conference organization recognised the fact that delegates' time has a high personal and business value. During the two days, Chairs were given at least as much opportunity to network and interact on a "one-to-one" basis with each other and with Central Secretariat staff as to listen to and take part in formal working sessions.

Those formal sessions were arranged around six themes, each with its moderator, rapporteur and from three to six presenters; no working session lasted more than 90 minutes and times were strictly adhered to – without serious curtailment of the vital question and answer periods. It is at least conceivable that elements of ISO's own 9000 series on quality assurance went into the crispness of the overall planning and execution.

The chronology of the two days took attendees through **Managing the technical work, Global relevance** (a relatively new initiative), **Developing countries and stakeholder engagement** (another initiative of recent vintage), **Using IT from development to delivery, Communication and promotion, to Central Secretariat services and support**. Many of the sessions covered old ground but in the light of new imperatives for speed and relevance. Something new emerged from all the sessions.

## Sardines from Peru

Before the working sessions got underway Mr. J. Denis Bélisle, Executive Director, International Trade Centre UNCTAD/WTO, stressed the symbiotic nature of the ISO/ITC/UNCTAD/WTO relationship, in his keynote address. ISO Chairs were seen as a driving force for world trade and development in a process where ITC and ISO need each other.

Mr. Bélisle welcomed the *ISO 2005-2010 Strategic Plan* which he qualified as clear and useable. He had praise for the ISO initiative aimed at developing countries – "the one *raison d'être* of my organization, the ITC, is to help the developing world export more. That is simple to state but difficult to do. The ISO is reaching out to the developing world in ways that complement the work of the ITC. In order to sell more to the developed world, less developed countries need to use International Standards – a fundamental part of the process of eliminating non-tariff barriers to trade in the WTO."

The initial refusal of the EU to accept sardines from Peru as an acceptable use of the name was a useful illustration of overcoming non-tariff barriers to trade. The EU eventually aligned itself with CODEX definitions.



From left to right: ISO Deputy Secretary-General Kevin McKinley, ISO Secretary-General Alan Bryden, ISO Vice-President (technical) Ziva Patir and J. Denis Bélisle, Executive Director, International Trade Centre.

Technology transfer was achieved through use of standards; in fact, standards offered the lowest cost solution for such transfers. Lower transaction costs led to lower development costs. Mentoring and twinning – fostered at the multi-lateral level through ISO – were important tools in transferring knowledge and experience.



## Developments and Initiatives

In Mr. Bélisle's view, government regulators accept International Standards *if* they see that the standards fulfil *their* objectives, which are in general to make *all* markets as international as possible. But he recommended improving communication to the boardroom. "You must reach out directly to those people amongst the users who assess the bottom line, in any business. So – communicate in a non-technical manner and convince these people that *standards improve profits.*"

### Putting a Dollar Sign on Standards

Standards may improve profits at the individual corporate level. That improvement may even be measurable, accurately. One thing that might convince even more people of the value of standards work is the contribution it makes to national economies and the world economy. Various speakers alluded to this and Ziva Patir quoted some hard data.

### **"ISO is reaching out to the developing world in ways that complement the work of the International Trade Centre."**

In moderating the final working session, she pointed out that DIN had identified an annual standards contribution worth 1 percent of Germany's GDP. That contribution was reckoned to be five to ten times more than the contribution from patents (intellectual properties). The return on investment from standards was approximately 25 percent – which would be the envy of most commercial enterprises.

It is possible to put a dollar sign on such data, using GDP figures for 2003 – the most recent year for which the World Bank has published indicators for each of 185 independent countries. One percent of Germany's GDP (the world's third largest economy, behind the United States and Japan) is USD 24 billion, some 6.6 percent of the corresponding world figure of USD 365 billion. USD 24 billion is a larger amount than the annu-

al *total* GDPs of 119 of the countries on the World Bank list. So we are looking at a very large figure indeed.

### From Tradition to Innovation

It would not be possible to hold a conference for TC and SC Chairs without a working session devoted to managing the technical work. Participants were perhaps confirmed in their view of most aspects of the processes. But were they surprised or challenged?

A clear distinction had to be made between the Technical Management Board (TMB) and Technical Committees (TCs). For the latter, interactions with Subcommittee Chairs and Secretaries, and Technical Programme Managers (TPMs) within the ISO Central Secretariat added three more dimensions to their way of working which could simplify, complicate or even bury their efforts, depending on the quality of those interactions.

The tasks of the TMB included establishment of TCs and allocation of secretariats. The TMB appointed TC Chairs. They approved TC titles, scopes and programmes. They coordinated and monitored. They heard appeals.

But against that background the TMB had to ask themselves, continuously, six key questions. What worked? What did not work? How much was implemented? How much was fulfilled? How many of the predictions were correct? How difficult was it to predict the future?

Members of the TMB do not ask questions in a vacuum. In order to be on the TMB they are required in most cases to have broad experience in standardization. They consult nationally – and sometimes regionally or internationally. They represent the *whole* ISO membership. And they recognise that they need advice from stakeholders. **Plan Do Check Act** was becoming a watchword.

Steven Cornish, ANSI representative to the TMB, USA, gave participants a detailed analysis of just how deep the process of seeking stakeholder advice in the USA could go. He described the open and consultative approach that

ANSI takes to obtain input on technical policy matters. ANSI also holds 25-30 bilateral meetings per year with parties in other countries and that assist in its formulation of positions for TMB.

The implication seemed to be emerging that what had become a tradition for ANSI could perhaps become an innovation for other national standards bodies. But, as was clear from many of the questions, that challenge depended on resources and time.

Trevor Vyze, BSI representative to the TMB, United Kingdom, was keen to demystify the TMB. Everything came down to what was good for the quality of ISO standards – with questions concerning TCs, Chairs, members and experts derived from that, but against a background of the need to secure consensus. The TMB strives to take reasonable consensual decisions, even if it may seem to imply an added burden on the TC leaders at times.

Scott Jameson, Chair of ISO/IEC JTC 1, *Information technology* and Trevor Smith, Chair of ISO/TC 176, *Quality management*, identified key messages from the Chairs. Perhaps life was easier for them than for members of the TMB – but perhaps not. They did not have to ask themselves six questions. They merely had to remember to lead and not participate; to concentrate on consensus building; to be a diplomat, a communicator, a negotiator, a mediator, an observer and a listener. And, whilst embracing diversity, they had to communicate, communicate, communicate.

### I Have a Dream

Mario O. Wittner, Chair of ISO/CASCO, Committee on conformity assessment, replied to the observation by Olivier Peyrat, AFNOR representative to Council, France, that he had moved from the academic world of exact and natural science, to standardization, by reminding delegates of the past ISO President Cortopassi 1-1-1 dream.

One standard – One test – One certification.

It was necessary to provide rules and tools for TC/SCs on global relevance policy and guidance. The impor-

tant things were avoidance of technical barriers to trade, options to reflect market differences and to ensure that standards were market driven.

Cheryl Stark, Chair of ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries* gave delegates "global relevance in differing climatic conditions." The most problematic of climates was the political - which involved all the questions of social responsibility.

Global relevance itself had to be exported around the world - to the UN, IEC, EU and others. A global relevance conformity assessment set had to be developed. Global relevance should be considered in business planning. And, following the Vienna Agreement (VA), CEN members should be asked to promote ISO global relevance in Europe.

The Cortopassi dream had been replaced by a motto: global standards used locally, worldwide. But realisable dreams remained - that of market convergence and a global market in a significant number of goods and services.

## Standards for Progress

Eighty percent of ISO members are developing countries or economies in transition. Despite this, ISO member organizations from developing countries hold only 5 percent of the ISO technical committee (TC) or subcommittee (SC) secretariats and only 2 percent of the ISO/TC/SC working group (WG) secretariats. This is primarily due to a lack of funding but also to a lack of information and awareness.

Maureen P. Mutasa, Chair of ISO/DEVCO, Committee on developing country matters and Director General, SAZ, Zimbabwe, reminded delegates of the *ISO Five-Year Action Plan for developing countries* - to improve awareness, develop capacity, increase national and regional cooperation, develop electronic communication and expertise in IT tools, and increase participation in governance and technical work of ISO.

But the successful implementation of the Plan depends to a large extent on partnerships amongst international organizations in a more systematic and

coordinated manner. Under the watchful eye and sympathetic ear of Rob Steele, SNZ Member of ISO/TMB, three other principals contributed to the debate - Katie Altoft of the Canadian Standards Association, Francisco Verdera Mari - TMB member and Director International Relations and Cooperation AENOR and Caroline Warne - Chair ISO Consumer Policy Committee (COPOLCO).

**"You must reach out directly to those people amongst the users who assess the bottom line, in any business. So - communicate in a non-technical manner and convince these people that standards improve profits."**

The twinning concept had progressed to the point where new groups in TC 207 will have twinned leadership (from Canada and Brazil) and TC 176 had an approved internal policy on twinning and was seeking nominations for a Vice Chair for the TC and SCs. Spain and Tunisia shared a common interest in the new TC 228 (Tourism). A MoU for five years was 95 percent complete and established twinning principles. Doc TMB 13/2005 provided "Guidance for twinning & Partnership Arrangements."

The discussion yielded important points for the way forward: monitoring of stakeholder involvement - including their actual presence at the table; consumer guides to be used in committee; getting to know committee colleagues; avoidance of jargon; writing participation guides; recognising that participation *must* precede twinning; applying Plan, Do, Check, Act; the possibility of a Web site for those involved in twinning.

## ...and Progress in IT

Application of IT is a key success factor for ISO to accelerate standards development, facilitate the work of the TC secretariats and get all mem-

bers involved, including the developing countries.

Herman Schipper, NEN member of Information Technology Strategies Implementation Group (ITSIG) reported on the progress outlined by Bob Feghali, Chair of ITSIG, ANSI, Ernst-Peter Ziethen, DIN representative to the TMB, and Reinhard Weissinger of ISO Central Secretariat. They had been kept in order by Elizabeth Stampfl-Blaha, ON representative to Council.

Behind much of the jargon inevitable in the IT world it became clear that ISO was already well along a path which led in its daily work to the total elimination of airmail and FAX, the elimination of much of the present e-mail and telephone traffic and even a fair portion of meeting time. The main message to emerge was that member bodies should use the harmonized systems developed under ITSIG and provide training; then the enormous potential of ICT could be fully used. The Global directory (GD), as a database for the management of users/participants in the ISO system, was an integral part of the changing system. Feedback was welcome.

In reply to the inevitable question on access, it emerged that all but a few members have at least first level IT capability. More support is in the pipeline. Developing countries themselves see the necessity to upgrade their ICT infrastructures and are investing in new systems. Then - does the new GD pose a security threat? "Less so than before - better protection is ensured."

## Methods, Plans - and Times

The winner of the 2004 Lawrence D. Eicher Leadership Award was SC 2, Quality system, of ISO/TC 176, *Quality management*. Charles Corrie, TC 176 Secretary, said that he trusted the award was given strictly because of the *methods* adopted in quality systems and it had nothing to do with the emblematic nature of ISO 9001.

Three significant "firsts" had been achieved in developing the standard: a product introduction - entirely new to ISO; an electronic comments template -



## Developments and Initiatives

more than 7 000 comments had required to be handled; and a DIS in electronic form. The whole effort had demanded 16 weeks of work per year by each committee participant – probably another “first” for ISO.

Adoption of the approach used took place 5 years after the vision for a “process based” standard. But, when adopted, the approach had a management plan with objectives, responsibilities and milestones. It had a project plan with key processes, staff, risks and schedules built in. And it had a work breakdown structure/design specification, with all processes defined and scheduled.

Success had been achieved through management, agreeing fundamental issues early, a higher work rate, extensive communication and the support of all involved.

Graham Holloway, Chair of ISO/TC 157, Graham Thomas, Chair of ISO/TC 118, and Hiroo Wakai, JISC representative to the TMB, debated the need for, and design of, business plans (BPs). There was no other systematic way to analyze the market, link the work programme to market needs and determine priorities and allocate resources. But BPs had to be simpler and more transparent.

Graham Thomas saw a lot of work for no reward, too many BPs that were not compelling and very often an unfocused mix of issues. Hiroo Wakai had

### **“Standards may improve profits at the individual corporate level.”**

canvassed views on ISO TC BPs. They were difficult to locate on the ISO Web site, they had tended to be of poor quality and not fresh for TC experts. They were too technical for the general public and there had been a problem with names. A long-term vision was required. A simplified BP template had become available in September 2004. By May 2005, 130 updated BPs had been received and 30 were missing of which 10 had extended dates.

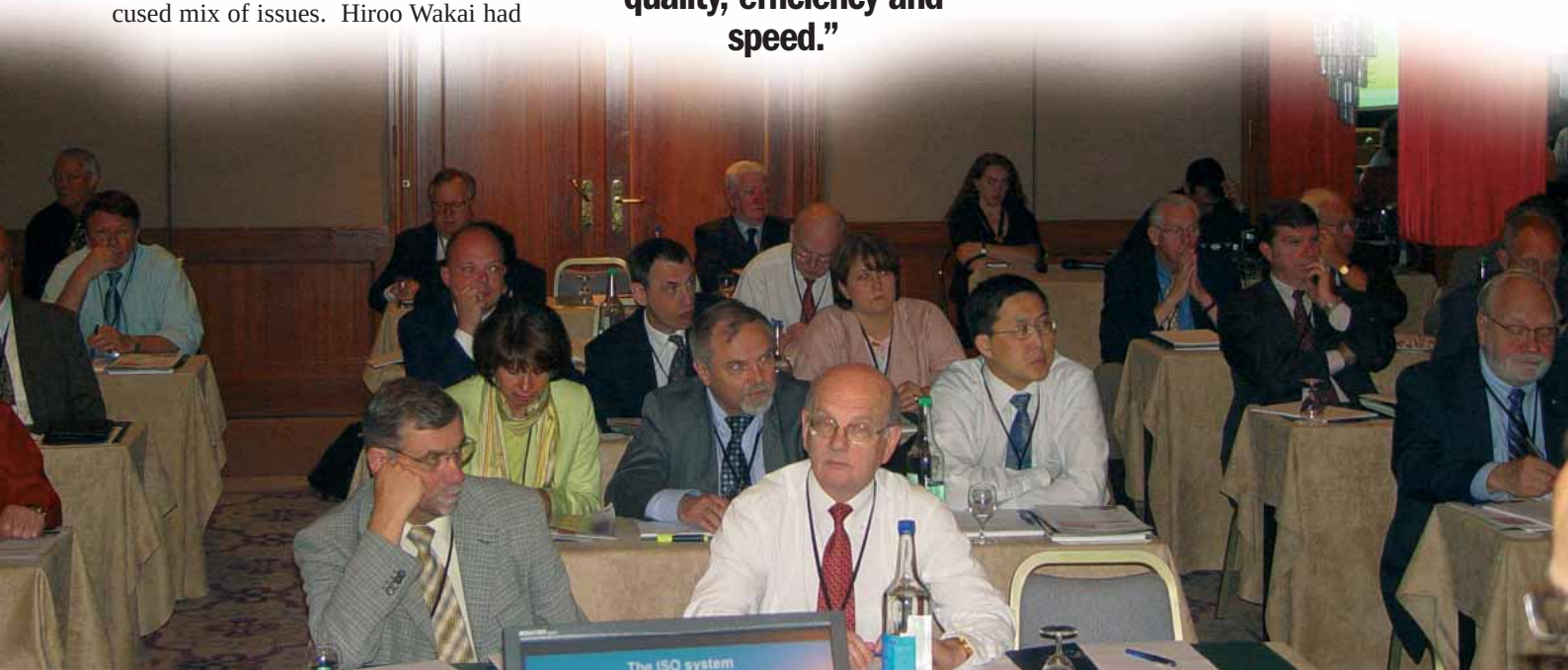
Ernst-Peter Ziethen had been looking at standards development times and development tracks. The overall time to market of International Standards had improved. In 2000, only 46 percent had met their time frame; by 2004, 68 percent had done so. Further improvement depended on management (with BPs as one element), stronger leadership, support by NSBs, support for the conveners, training and more work between meetings.

### **“The focus in all areas is now on first class customer service, responsiveness, quality, efficiency and speed.”**

### **Third Pillar**

The third of Alan Bryden’s three pillars for enhanced performance is the ISO Central Secretariat (CS). Kevin McKinley, Joanna Goodwin and Alain Samné contended with final conference billing immediately after lunch and a hot afternoon to provide a rapid quick-step through what CS can do for you – the users – and what you are expected to do for CS.

The technical operation of ISO CS is now reorganized into four main functions – technical policy, production, project management and e-services, and the technical group. The focus in all areas is now on first class customer service, responsiveness, quality, efficiency and speed. ISO CS is certified to ISO 9001:2000. Feedback and suggestions for improvement are always welcome. ■



# New this month

## World Trade Report 2005 highlights ISO's key role

by Roger Frost, Press and Communication Manager, ISO Central Secretariat

ISO's position as "the world's largest developer of standards" is acknowledged in the *World Trade Report 2005*, just published by the WTO (the World Trade Organisation), in an analysis of "Trade, Standards and the WTO".

Written by WTO economists, the report underlines the important benefits that standards can deliver in terms of information for consumers, environmental protection and compatibility of related goods and services.

"International standards help ensure technical compatibility across countries and convey information to consumers about products that have been produced abroad or processes that took place in another country," the report states, adding, "International standards thus reduce transaction costs and facilitate international trade."

The report identifies ISO and its partners the IEC (International Electrotechnical Commission) and the ITU (International Telecommunication Union) as "the most important" of the 49 international standardizing bodies, and comments, "The expansion of membership in both ISO and IEC over recent decades reflects the growing importance of international standards."

On the reasons for this growth, the report states: "Increased standardization activity reflects, among other factors, demand by consumers for safer and higher quality products, technological innovations, the expansion of global commerce and the increased concern paid by many governments and nongovernmental organizations to social issues and the environment. Standards have played an important role in fulfilling these needs."

ISO Secretary-General Alan Bryden commented: "It is certainly very

encouraging for ISO and its 153 national members to see the importance of international standardization to trade and the economy, as well as to social issues such as the environment and social responsibility, recognized and analysed so thoroughly in the World Trade Report 2005.

"It shows that ISO's efforts to communicate the benefits of international standards, not only to engineers, but also to business, government and to society as a whole, are achieving positive results."

The WTO report states that ISO and IEC produce about 85 % of all international standards and that in 2004, ISO published 1247 standards and related documents, bringing its total at the end of the year to 14900.

While the private sector provides the biggest impetus to developing standards, the report points out that non-governmental organizations have become involved, working with industry and international organizations to develop standards in such areas as the environment and corporate social responsibility.

"ISO and IEC standards are voluntary," the report continues, "but some are referred to in technical regulations and some become de facto mandatory. A certain number of their standards – mainly those concerned with health, safety or the environment – have been adopted in some countries as part of their regulatory framework, or are referred to in legislation for which they serve as the technical basis.

"Although voluntary, some ISO and IEC standards become a market requirement, as has happened in the case of ISO 9000 quality management systems, or of dimensions of freight containers, bank cards or electric batteries."

Among areas of ISO's work highlighted by the report is its development of standards and guidelines for conformity assessment – the process of verification that products or services actually meet the specifications or requirements provided in standards or regulations.

The WTO report comments, "Ideally, an attestation of conformity with regulatory requirements should be carried out only once and in the most cost-effective manner and should be recognized in all

markets. For this to become a reality, confidence in the work of conformity assessment bodies in other countries needs to be established through multilateral cooperation.

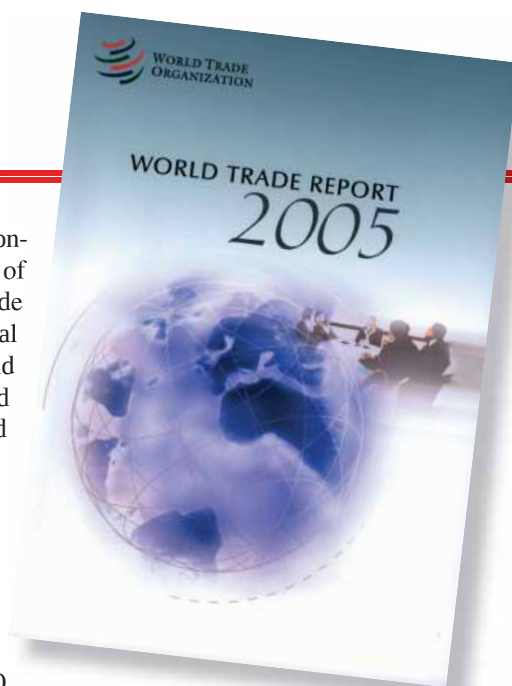
"Cooperation is facilitated if harmonized standards on best practices in conformity assessment are adhered to, such as in the international standards/guides on conformity assessment established by ISO's Committee on conformity assessment, ISO/CASCO."

The report adds that the ISO/IEC 17000 series developed by ISO/CASCO establishes best practice for conformity assessment bodies, encouraging consistency, transparency and candour.

Turning to the standards' development process, the report notes that ISO's work is strictly regulated by the organization's own procedures and the WTO's "code of good practice" [Editor's note: Annex 3 to the Agreement on Technical Barriers to Trade (TBT), "Code of Good Practice for the Preparation, Adoption and Application of Standards"].

The report also underlines that improving the participation of developing countries in international standardization is "crucial".

Alan Bryden commented on this point: "ISO and the WTO see eye-to-eye on the need to facilitate access by developing countries to world markets through greater awareness of the benefits of international standardization and increased participation in developing ISO standards. It is one of our strategic objectives for 2005-2010 and a concrete aim of the *ISO Five-year Plan for Developing Countries*."





## How ISO 9000 benefits leading agricultural seed researcher and producer

by Roger Frost, Press and Communication Manager, ISO Central Secretariat

International Standards for quality management systems, as well as standards for testing, food processing and food products, “promise to play an increasingly critical role in feeding the world”, according to Dean Oestreich, President of Pioneer Hi-Bred International, Inc., a DuPont subsidiary, one of the world’s largest agricultural seed research and production companies.

Oestreich shares the above perspective as guest contributor of the “Viewpoint” column in the current issue of the ISO magazine *ISO Management Systems* under the heading of “ISO 9000 helps Pioneer cultivate productivity and confidence in global agriculture”.

The company develops improved seed products, marketing in nearly 70 countries around the world, and its sales in 2004 totalled USD 2,6 billion. Pioneer has certified its quality management systems for seed production and seed quality testing worldwide, covering operations at 112 locations.

Pioneer began pursuit of certification for its quality management systems in 1992 because it viewed ISO 9000 as a management tool to help it to meet the challenges of intensifying international competition, ever-increasing complexity, and rapidly advancing technology.

“Unlike many other organizations, no one required the company to certify its quality management systems,” says Oestreich. “Instead, concern for

the customer and a desire for competitive advantage drove the decision to certify its quality management systems – and it was a decision that has paid handsome dividends.”

Oestreich credits ISO 9000 with strengthening the company’s seed production operations worldwide, explaining: “Seed product specifications vary from market to market, but quality management systems help ensure that seed produced in one country reliably meets specifications in another country even though it is halfway around the world. That consistency and uniformity builds customer confidence and delivers value to farmers.”

Among the nuggets of ISO 9000 experience shared by Oestreich with *ISO Management Systems* readers are the following:

- Certifications initially covered individual locations or individual markets, but today, Pioneer has the goal of one global certification.
- The company’s transition to ISO 9001:2000 went smoothly because it was already implementing customer focus, the process approach and continual improvement.

- The ISO 9000 approach has even won over Pioneer’s R&D community whose concerns that a quality management system would “kill creativity” evolved into a realization that systematic support builds greater precision and confidence in the results of experimentation.
- Far from rigidifying Pioneer’s processes, its quality management systems have proved to be “a highway of change” for introducing technological innovations.
- ISO 9000 certifications have been of value in meeting rigorous regulatory requirements, including those affecting the international movement of seed, something that is critical to the seed industry.
- Looking to the future, Oestreich concludes: “Tomorrow’s food supply chain needs to be supported by science-based standards that promote trade, enhance research, and ensure a plentiful supply of safe, healthy food.

“This is the direction set by ongoing efforts to develop International Standards for quality management systems, environmental management systems, food safety systems, and biological research. Because of its importance, the international seed industry in general and Pioneer specifically continue to participate in the development of International Standards.

“Future standards may well play a regulatory role. One of the goals for these standards-development efforts needs to be the consolidation or harmonization of overlapping regulatory systems and auditing schemes. Streamlining national and international regulatory systems, without weakening legitimate safeguards, will reduce costs to consumers and support increases in agricultural productivity.” ■



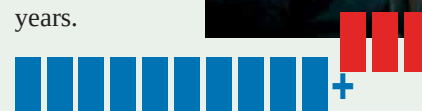


# Coming up

## Developments and Initiatives

**International Standard Book Number (ISBN)** – ISO has published a new edition of its heavily utilized ISBN standard providing the international book identification system.

The article highlights the changes made to the newly published fourth edition of ISO 2108, *Information and documentation – International Standard Book Number (ISBN)* – which specifies an implementation date of 1 January 2007 for a new 13-digit ISBN – as well as the benefits of the new standard for publishers, booksellers, libraries, distributors, systems suppliers and other sectors of the book supply chain that have come to rely on the ISBN over the past thirty years.



## Main Focus

### Aerospace: the new frontier

From the world's largest passenger plane, Airbus A380, to the The European Space Agency's Rosetta spacecraft used to help monitor NASA's Deep Impact mission, the aerospace industry has become a global business. Gone are the days when a single company will undertake to bring a new air or spacecraft along. Today's new products are being developed more and more by international teams, not by individual companies, or even by individual countries.

As international cooperation in aerospace has grown, so has the need for International Standards. Today, International Standards are necessary not only to ensure interchangeability and interoperability of equipment, but to do so in a reliable and cost-effective manner. They are also necessary to facilitate fair and equitable trade and to remove technical barriers to trade and open markets in various regions of the world. Thus, International Standards are an important and critical resource that can be used by engineers, scientists, and technicians in support of flight and ground support hardware, software, facilities and procedures.

The October 2005 issue of *ISO Focus* brings together the current and future standardization for aerospace – with emphasis given on the output of ISO/TC 20, *Aircraft and space vehicles* – together with concrete examples illustrating the impact of International Standards in the context of aerospace projects, such as Deep Impact and Rosetta Europe's Comet Chaser. The issue also reveals the broadening scope of standards from technical standards relating to interoperability, quality and safety of components and equipment to management systems, from data exchange to services, from optimization of production to environmental impact.

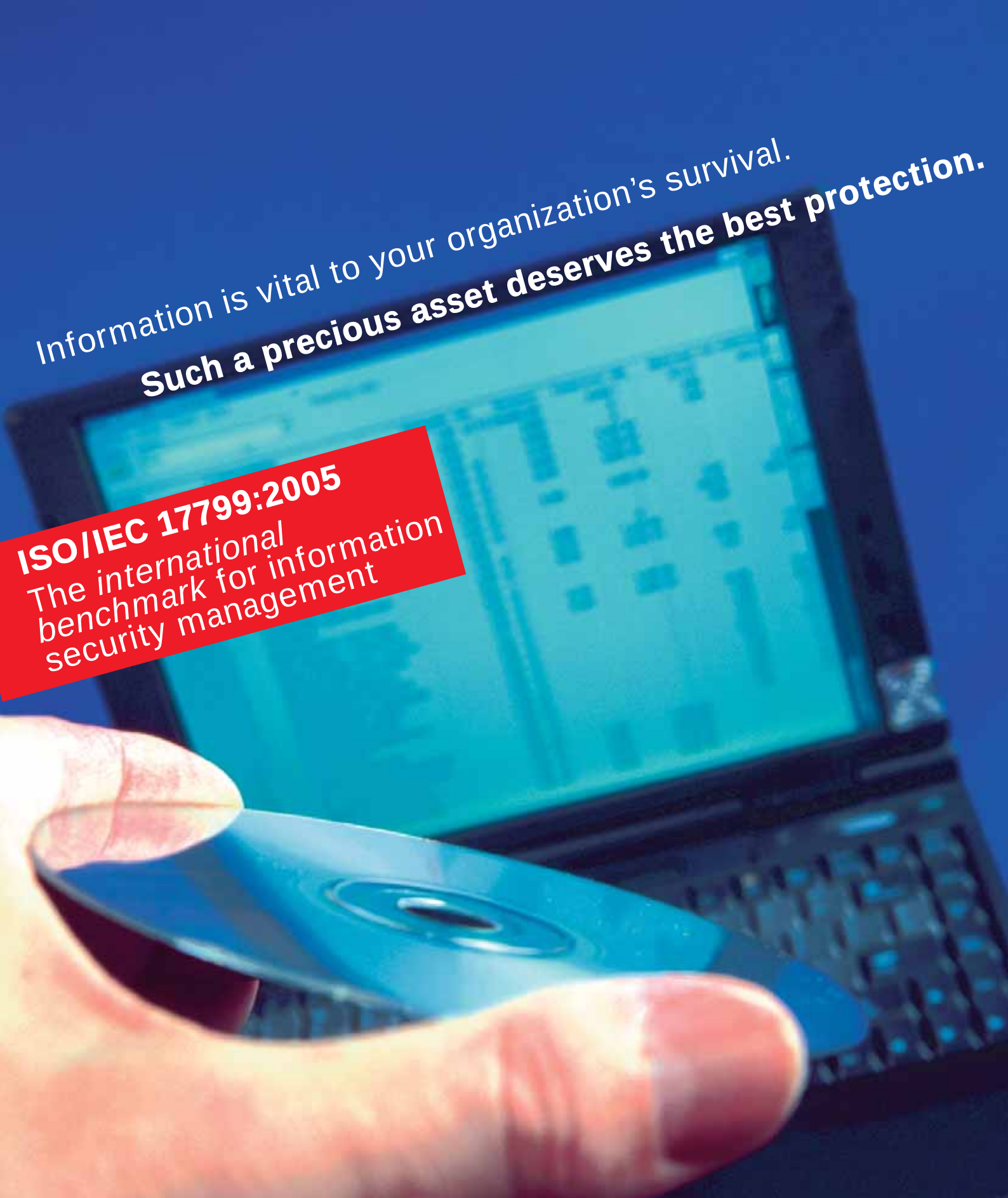
Articles cover such topics as the use of space technologies in accident detection and warning of natural disasters, air cargo and aircraft ground equipment, aircraft hydraulic systems, aerospace electrical requirements, safety and compatibility of materials, space debris, spacecraft-to-launch vehicle interface control documents as well as terrain and airport mapping data bases for aeronautical use.

### Standards in the materials sector

Materials are literally the building blocks for technology. The efficient and effective design, manufacture and performance of products can best be achieved through having appropriate and reliable materials' properties data. This relies upon the availability of dependable, pertinent and validated standardized methods and procedures for materials testing.

The article looks at how the Versailles Project on Advanced Materials and Standards (VAMAS) has addressed the need for reliable materials properties data through pre-standardization research into materials for many years. Such work has fed into the development of many standards on testing of materials predominantly in ISO.





Information is vital to your organization's survival.  
**Such a precious asset deserves the best protection.**

**ISO/IEC 17799:2005**  
The international  
benchmark for information  
security management

For most businesses, information security is essential to maintain competitive edge, cash flow, profitability, legal compliance and commercial reputation. For many businesses and non-business organizations, information may be their principal asset. A breach of information security may threaten their very existence.

**ISO/IEC 17799**, the state-of-the-art countermeasure, has just been updated and improved. Use it to make your information assets even more secure !

Available from ISO national member institutes (listed with contact details on the ISO Web site: [www.iso.org](http://www.iso.org)) and from the ISO Central Secretariat Web store at [www.iso.org](http://www.iso.org). E-mail enquiries to [sales@iso.org](mailto:sales@iso.org).

