ISO Focus+

The Magazine of the International Organization for Standardization

Volume 4, No. 2, February 2013, ISSN 2226-1095

Small businesses

- Tetra Tech's Energy Unit on the benefits of ISO standards
- Integrated management systems

ISO Focus+

ISO Focus+ is published 10 times a year (single issues: July-August, November-December).
It is available in English and French.

www.iso.org/isofocus+
ISO Update: **www.iso.org/isoupdate**

The electronic edition (PDF file) of *ISO Focus+* is accessible free of charge on the ISO Website **www.iso.org/isofocus+**
An annual subscription to the paper edition costs 38 Swiss francs.

Publisher
ISO Central Secretariat
(International Organization for Standardization)
1, chemin de la Voie-Creuse
CH – 1211 Genève 20
Switzerland
Tel.: +41 22 749 01 11
Fax: +41 22 733 34 30
E-mail: isofocus+@iso.org

Manager: Roger Frost
Editor in Chief: Elizabeth Gasiorowski-Denis
Assistant Editor: Maria Lazarte
Communication Officer: Sandrine Tranchard
Artwork: Xela Damond, Pierre Granier and Alexane Rosa
Copy editor/Proofreader: Vivienne Rojas
Translation: Translation Services, ISO Central Secretariat

Subscription enquiries: Sonia Rosas Friot
ISO Central Secretariat
Tel.: +41 22 749 03 36
Fax: +41 22 749 09 47
E-mail: sales@iso.org

© ISO, 2013. All rights reserved.

The contents of *ISO Focus+* are copyrighted 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.

The articles in ISO *Focus+* express the views of the authors, and do not necessarily reflect the views of ISO or of any of its members.

ISSN 2226-1095
Printed in Switzerland

Cover photo: ISO, 2013

Contents

Comment

Terry Hill, ISO President 2013-2014
The next chapter – ISO's global business of standards 1

World Scene

International events and international standardization 2

Guest Interview

Denis Tremblay, General Manager of the Energy Unit of Tetra Tech, Canada 3

Special Report

ISO standards – Big benefits for small businesses 8
New opportunities – Improving SME access to standards 10
Small businesses, big expectations – The key to expanding the user base for standards 14
Being prepared – A bird's eye view of SMEs and risk management 16
Risk management – How ISO standards can help 19
Sustainability for SMEs – Putting theory into practice 22
Helping the smallest firms go green – Making environmental management systems more accessible 24
Turning over a new leaf – Environmental action puts organizations on path to success 27
Small tech firms – Seizing the benefits of software and systems engineering standards 32
Boosting businesses in developing countries – ITC provides standardization-related support where it is needed most 37

Centre-fold

May I help you? ISO standards and small businesses 28-29

Planet ISO

News of the ISO system 40

Management Solutions

Integrated management systems – What's in it for SMEs? 42

Standards in Action

Singapore – How International Standards helped HISAKA grow 46
United Kingdom and Japan – ISO/IEC 27001 brings major benefits and savings to IIJ Exlayer Europe 49
Canada – Improving project management for small projects 52

New Releases

Energy challenge – ISO standards offer solutions 56

Coming Up 57

The next chapter

ISO's global business of standards

As I take up my duties at ISO, I look ahead to the next chapter. One of the most rewarding aspects of starting my term as ISO President is today's unprecedented need for globally relevant International Standards to tackle challenges faced by the international community. That need is likely to result in new work areas for standards development and shorter publication times, while producing higher-quality documents that are more targeted and relevant to the work of our users.

As the former Chair of Arup Group, one of the world's leading consulting engineering companies, and a civil engineer, one of my priorities will be to encourage ISO to provide standards that address the vital economic infrastructure needs of the economy, business and society.

Firstly, we must change our thinking: ISO needs to think in a more business-oriented way. Standards are developed by business for business, and their strategic use helps enterprises achieve measureable improvements. We, in ISO, need to think of ourselves as being in the global business of standards and to do this, we too need to use the standards of business.

Let's imagine the priorities for this great organization in 2013 and beyond! The timely publication of the January 2013 *ISO Focus+* issue on "smart cities" points to a priority area for ISO in future infrastructure. Sustainable cities, the provision of efficient services – such as water, sanitation, energy, communications and transport – are current global issues. Today, more than 50% of the world's population live in cities – and by 2050 this will have increased to 70% – and most of this urbanization will be in developing countries. Organizations, be they private business or public sector service providers, are increasingly concerned with environmental and societal performance, as well as economic.

I say this because there is a huge opportunity to create global solutions for global issues. And ISO can bring common understanding and agreement on how we can create, live and work in a sustainable world.

I recently led an industry enquiry into how standards and specifications can enable the United Kingdom to innovate, lower costs and improve the whole-life value of our infrastructure assets. One finding was that the standards themselves are rarely a problem and, in fact, are fit for purpose. Through the investigation, it quickly became clear that much of the inefficiency was caused by poor specification and inconsistent application. What can be done internationally to help? Simply put, ISO needs to encourage good implementation of its standards. By this, I mean that the standard is implemented the way the experts who developed the standard intended.

> *More than ever, we, our children and society at large need the unifying power of standards.*

We live in the digital age where people are used to getting the information they want, when they want it, and in a form that they can use. Customers' requirements keep changing and force ISO to adapt its content and format to be more flexible in its delivery of information. The XML project launched in 2010, for example, is already benefitting ISO members and their staff, standards developers, and the ISO Central Secretariat. To be even more efficient, ISO needs to work with partners as convergence of technology and institutions becomes ever more the norm.

The analogy I use – given my background in infrastructure – is that we need to establish a new culture that, through greater transparency and new Statutes and rules of procedures, and better recognition of our technical experts, will be able to make real the claims that ISO is a business-oriented organization, developing standards needed by the marketplace and delivering them on time.

With a new set of Statutes, for example, ISO is well placed to further strengthen governance within the organization so that all members' views and ideas are heard. More importantly, I have learned that all benefit when we deeply understand what our customers want and even try to anticipate their needs. More than ever, we, our children and society at large need the unifying power of standards.

Consider this: we are halfway through implementing the *ISO Strategic Plan 2011-2015*. We will take stock of the progress made and ensure we are meeting the needs of our stakeholders. A plan should be reviewed to make sure that it is still relevant. If it is, we need to continue our efforts; if it is not, we will change or adapt our approach.

The point is quite simply that it is an exciting prospect to lead an organization that provides state-of-the-art specifications for products, services and good practice, to help to make business, industry and government more efficient and effective. The success of the next chapter will be crucial to the longer-term success of ISO as the world's leading developer of International Standards. The way we position ourselves, combined with our commitment over the next few years, will be crucial. ■

***Terry Hill**, ISO President 2013-2014.*

© ISO Focus+, www.iso.org/isofocus+

OECD product recall database

The Organisation for Economic Co-operation and Development (OECD) has launched an online portal that gives consumers, businesses and governments quick and easy access to the latest information on products recalled from the market in Australia, Canada, Europe and the USA. The information is available in more than 100 languages.

Deaths and injuries worldwide from unsafe products are estimated to cost more than USD 1 trillion a year, according to the OECD.

Consumers will be able to check whether a product they plan to buy in a store or online, such as a baby bottle or a bicycle, has been taken off the shelves in another country. Similarly, importers and retailers will be able to react quickly and pull products as soon as they raise concern.

The portal, **globalrecalls.oecd.org**, will also help improve coordination among regulators and governments so that dangerous products can be removed from sale and enforcement stepped up.

The OECD participates in ISO's work as a liaison organization to many technical committees, working on key issues that affect consumer product safety.

ISO is currently developing a standard on consumer product recall (ISO 10393) that will help organizations around the world implement this process by establishing common guidelines.

Energy efficiency for a stronger economy

Fossil fuels abound in the Middle East and North Africa where economies are growing rapidly. But according to the International Energy Agency (IEA), so does an untapped potential for energy efficiency and renewable energies.

"Economic reform will be an important part of the political transition," said IEA Executive Director Maria van der Hoeven of recent political changes in the region. "What is less often recognized is that sound energy policies can play a fundamental role in placing economic policy as a whole on a more sustainable footing."

Strong economic expansion and an even stronger demographic growth have increased the region's energy demands and transport fuel sales to the point where Saudi Arabia and the United Arab Emirates now import gasoline.

Energy efficiency can make a big difference, freeing up capital to invest in the creation of businesses and jobs. ISO standards like ISO 50001 on energy management systems, as well as a plethora of standards on green buildings, industrial process and more, can help reach this goal.

According to the IEA, the region is ripe for a boom in renewable energy, in particular solar power, providing an almost endless supply of new, clean energy that will bring more jobs to the area.

ISO offers a portfolio of standards for solar power, biofuels, and other renewables.

"It seems odd to advocate solar and wind power in an area which holds 50 % of the world's crude oil and 40 % of its gas," said Ms. van der Hoeven. "But even the world's biggest oil and gas exporters have an interest in diversifying their energy portfolio. International cooperation, in particular the sharing of best practice, can be very helpful in achieving this objective."

Energetic start for ISO 50001

Over 1 000 companies were certified to ISO 50001:2011, *Energy management systems – Requirements with guidance for use*, by the end of 2012 – just over a year after publication.

A promising start for the "young" standard, which reflects the growing importance of energy efficiency on the international agenda and increasing confidence in ISO 50001 as a viable solution.

ISO 50001 provides a framework of requirements urging organizations to :

- Develop a policy for more efficient energy use
- Fix targets and objectives to meet the policy
- Use data to better understand, and make decisions about, energy use
- Measure results
- Review how well the policy works
- Continually improve energy management.

Developing countries lead on mobile services

The developing world and emerging countries such as China and India far outshine the USA and Europe in the services they provide to mobile phone users, empowering customers who typically fall outside formal sectors such as banking.

Today nearly half the world's population has access to mobile phones, with some five billion units (out of six billion) in the developing world. Africa tops the list with around 649 million subscribers (65 % of the region's population), making it the most wireless region in the world.

Mobile phones in Africa and Asia are used less for talking than as platforms to support and improve quality of life with innovative solutions, such as credit sharing, payment apps, health information, and teaching and support to small and medium-sized enterprises. For example, in countries like Benin, Kenya and Tanzania, subsistence farmers can get commodity prices and yield information on their phones, determining where best to sell their goods. Likewise, the iCow app helps dairy farmers track gestation and gives tips on breeding and cow nutrition.

Some of the most impressive innovations are in mobile financial and banking services for the "unbanked" (customers without bank accounts).

In response to this evolution, ISO is developing a standard on mobile financial services to address :

- Security and data protection
- Financial application management
- Mobile person-to-person payments
- Mobile person-to-business payments
- General requirements for mobile banking applications

Meanwhile, developing countries continue to use mobile technology in order to develop new solutions to address poverty, raise standards of living, and improve socio-economics (source : **huffingtonpost.com**). ■

Denis Tremblay

Tetra Tech

Photo : Tetra Tech

Denis Tremblay is General Manager of the Energy Unit of Tetra Tech in Canada – which boasts more than 600 professionals in 12 offices from coast to coast. He has also been a member of the board of directors of BPR, a Tetra Tech subsidiary, since 2009.

Mr. Tremblay is President of the *Association de l'industrie électrique du Québec*, the province's electrical industry's professional association. He was also President of the energy committee of the *Association des ingénieurs-conseils du Québec* (Quebec's association of consulting engineers), and member of the Board of Directors of the *École Polytechnique de Montréal* foundation and of the *Institut en génie de l'énergie électrique*.

Prior to joining Tetra Tech, Mr. Tremblay had worked for Alcan (now Rio Tinto Alcan) in the Electric Energy division, as a senior partner in a consulting engineering firm, and on the management of *TransÉnergie*, a division of Hydro-Québec, where he became the Head of Expertise and Technical Support.

© ISO Focus+, www.iso.org/isofocus+

Foundation design of the towers supporting the turbines at Baie-des-sables wind farm.

ISO Focus+: With 330 offices worldwide, Tetra Tech operates in a number of countries and its work teams vary in size depending on the project. How has international standardization contributed to your global activities?

Denis Tremblay: Tetra Tech is a multinational company working on all continents. It is experienced in the management of every kind of project, from the smallest to the largest. Efficient processes are in place to achieve the desired outcome. Tetra Tech, for example, relies on standardized management processes and adapts them to meet the specific needs of each project. A large project may require specific processes, whereas similar principles can also be applied to smaller projects.

Standardization is important to Tetra Tech. While it's true that standardization is more visible in the manufacturing sector, particularly in terms of achieving product compatibility to gain access to new markets, it is also fundamental to the engineering sector.

Just as barriers to market entry in the manufacturing sector can be costly, our customers in the engineering field also have stringent quality requirements, which they link to specific standards, and to which they want us to conform. And when a company makes the effort to meet an International Standard, the payoff is great.

ISO Focus+: What measures does Tetra Tech take to remain competitive in the global marketplace and how do International Standards create added value?

> *The greater the worldwide level of standardization, the greater the competitiveness between companies.*

Denis Tremblay: The competitiveness of a company like Tetra Tech is achieved via access to new markets. Standardization acts as a natural gateway that facilitates this access into the marketplace.

International Standards serve as a bridging mechanism. They constitute a tool for a company, enabling it to overcome barriers and gain greater market access. The more standards are used, the greater their level of competitiveness. This, in the end, gives the ultimate client a big payoff in terms of cost savings.

World-recognized practices open the path to expanding markets. It is only natural that there should be an established link between these practices and accessing a greater number of customers in different parts of the world.

Engineering can't avoid globalization. Expanding into global markets allows companies to implement recognized practices and common standards, particularly with respect to terminology and processes.

ISO Focus+: The success of businesses like Tetra Tech also results from innovation in the development of products and techniques. Why are standards important in this process? How do the engineering sector in general and Tetra Tech in particular benefit from ISO standards?

Denis Tremblay: We are always on the lookout for the most recent innovations developed by university and laboratory research programmes. Standardization, at

times, may be seen as a brake on innovation. However, when innovative techniques are globally recognized, they can be accommodated and integrated into the marketplace. Standardization therefore allows for the rapid expansion of new practices resulting from innovation.

Standardization is important to Tetra Tech.

ISO Focus+: What new International Standards would you like to see included in ISO? What fields could ISO concentrate on?

Denis Tremblay: ISO already covers a number of fields related to our area of expertise. However, several aspects are becoming significantly important in our business practices, such as ethics and governance. ISO, for instance, could certainly suggest a governance model that would be better adapted to tomorrow's commercial environment, as was the case for quality management, risk management and environmental management.

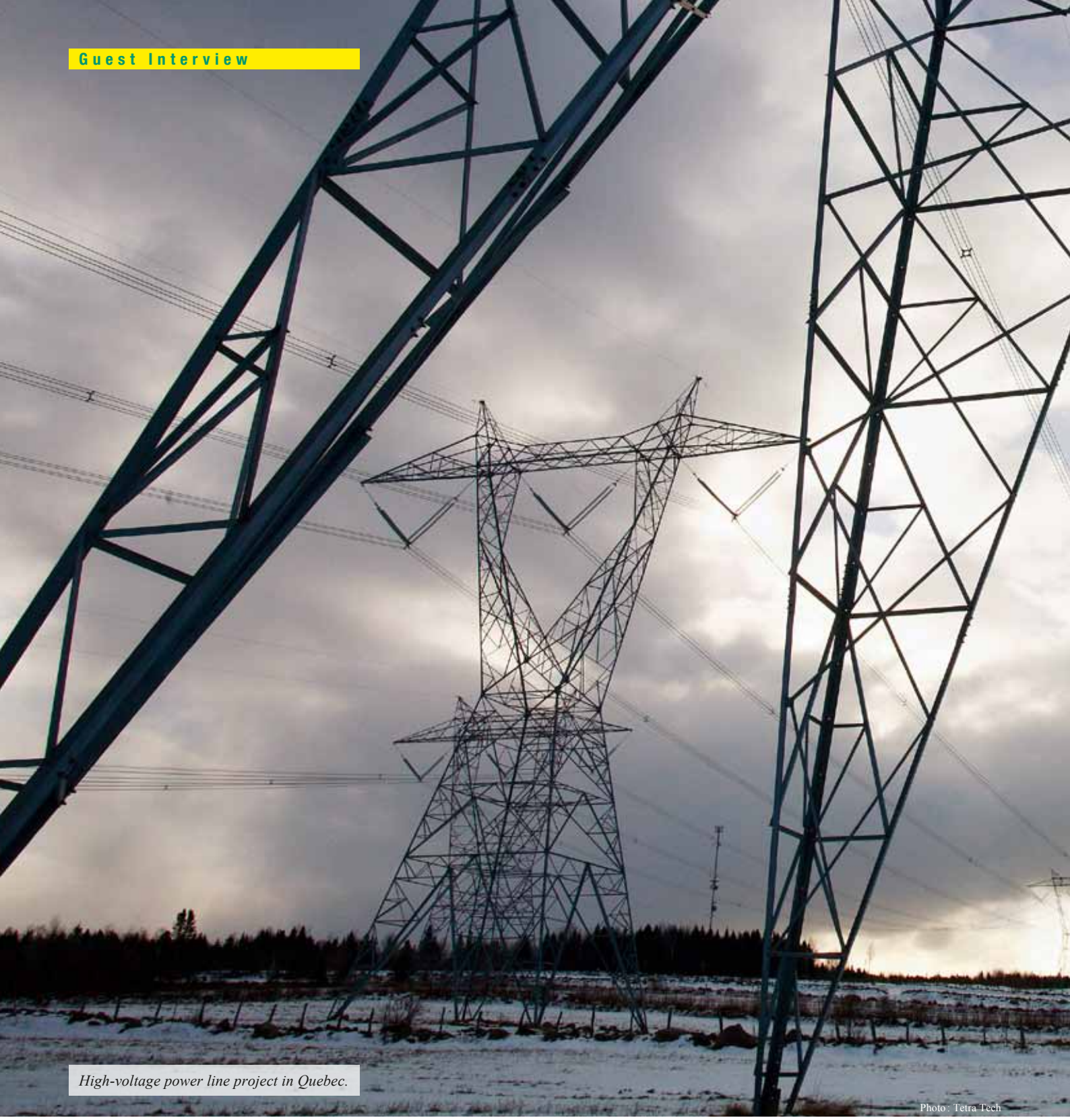
Photo : Tetra Tech

Complete rehabilitation and upgrade of the 2GS hydroelectric power station for Energy Ottawa.

Photo : Tetra Tech

Complete rehabilitation and upgrade of the 4GS hydroelectric power station for the city of Ottawa.

© ISO Focus+, www.iso.org/isofocus+



High-voltage power line project in Quebec.

Photo: Tetra Tech

***ISO Focus+:** What kind of sensitization and capability reinforcement actions would you recommend to ISO and its members so that small or medium-sized businesses could take advantage of International Standards?*

Denis Tremblay: Each company has its way of growing in response to opportunities it is presented. What's clear is that companies wanting to expand –through access to new markets or increased market share – must inevitably follow/adopt common standardized methodologies. International Standards function as an anchor point that allows companies to have a common framework.

International Standards function as an anchor point.

You can look at the process through which new International Standards become integrated from the point of view of the individual, or through the company's customer relationships. The individual/professional must have an open mind on International Standards and be aware of their existence. However, to reinforce the use of International Standards in companies, client relationship is often key. The introduction of International Standards most often occurs because of clients, which create the incentive for companies to conform. ■

About Tetra Tech

Tetra Tech is a leading provider of consulting, engineering, programme management, construction management, and technical services. The company supports government and commercial clients by providing innovative solutions to complex problems focused on water, environment, energy, infrastructure, and natural resources. With more than 13 000 employees worldwide, Tetra Tech's capabilities span the entire project life-cycle.

In Canada, Tetra Tech is a front-line player in consulting engineering, technical services, construction and project management. With more than 50 offices from coast to coast and in the Canadian North, the company provides a multidisciplinary approach that is equal to any challenge throughout the project life-cycle.

The Energy Unit of Tetra Tech in Canada covers the fields of transportation, distribution and renewable energy, hydropower and dams, nuclear and large projects and construction management.

Detailed engineering and construction – Supervision for the development of hydroelectric powerplants (26.9 MW).

Photo : Tetra Tech

© ISO Focus+, www.iso.org/isofocus+

ISO standards

Big benefits for small businesses

by Elizabeth Gasiorowski-Denis

It is estimated that more than 90 % of the world's businesses are small and medium-sized enterprises (SMEs). Surprised ? Don't be. SMEs are, on average, the businesses that are generating growth, creating jobs, growing faster and innovating more. More importantly, they are a good deal less complicated (structurally) and more efficient and flexible than are large firms.

SMEs are present in all of the major types of economic activity, from manufacturing to services, and are consequently vital to economic wealth. They promote diversification of economic activities, support sustainable development, stimulate innovation, develop entrepreneurial skills, not to mention the significant contribution they make to exports and trade.

According to the United Nations Industrial Development Organization, for developing countries, integration into the global economy through economic liberalization, deregulation and democratization is seen as the paramount way to triumph over poverty and inequality. Important to this process is the development of an animated private sector in which SMEs can play a central role.

Here's the good news. International Standards provide as many benefits for small businesses as they do for global enterprises. The strategic use of International Standards can make a significant difference to the annual turnover of an SME, sometimes the difference between success and failure.

To an SME, some of the benefits of using International Standards include :

- The opening up of export markets as products become compatible on a global scale

- Increased efficiency
- Increased credibility and confidence as customers from all over the world recognize ISO International Standards.

For many small businesses, making the decision to participate in a standards development process is difficult, as managers are typically reluctant to allocate resources to a long-term process where the benefits are sometimes intangible. However, if the company is committed and actively participates in the process, the return on investment can be substantial.

The principal benefits of participation include visibility, in-depth understanding, innovation, competitive advantage, networking possibilities, and opportunities to access potential customers. In other words, non-participation in standardization hands decision making over to the competition.

The February 2013 *ISO Focus+* issue looks at how International Standards help businesses of all shapes and sizes to work more efficiently, increase productivity and access new markets.

The issue brings together a portfolio of case studies from several countries as well as articles covering the application of software engineering or environmental management standards in smaller settings, or the benefits of standards and participation in standardization for SMEs. It also highlights how the use of standards, for environmental management systems for example, can increase the value of small businesses and cut costs. Some of the barriers and challenges for SMEs, and possible solutions to overcome these, are also highlighted.

In an exclusive interview on **page 3**, Denis Tremblay, General Manager of the Energy Unit of Tetra Tech in Canada, and a member of the board of directors of BPR, a Tetra Tech subsidiary, highlights the importance of International Standards to the company:

"International Standards act like a footbridge and are tools for the company, allowing it to cross some of the barriers to entry. When we cross these barriers, new markets become accessible. The greater the worldwide level of standardization, the greater the competitiveness between companies, which in the end gives the ultimate client a big payoff through cost savings."

Read on and discover why International Standards are of strategic economic importance, and how SMEs (despite all obstacles) stand to gain most from their use. ■

Elizabeth Gasiorowski-Denis is Editor in Chief, *ISO Focus+*.

© ISO Focus+, www.iso.org/isofocus+

New opportunities

Improving SME access to standards

by Henk J. de Vries, Knut Blind, Axel Mangelsdorf, Hugo Verheul, and Jappe van der Zwan

Small and medium-sized enterprises (SMEs) form a diverse group, ranging from simple crafts manufacturers to innovative high-tech companies. According to the European Union's definition, these can include one-person firms to 250-strong companies. Many SMEs could derive greater benefit from standardization, although standards are sometimes perceived as a burden rather than an advantage. This article highlights the obstacles that prevent SMEs from profiting from standards and standardization and offers solutions.

Why SMEs are different

Most SMEs, particularly the smaller ones, lack the necessary resources to commit to long-term strategies and investments.

Their management is largely involved in daily operational practice, and there is no time or money available for activities not directly related to the primary process.

Joint efforts can make it much easier for SMEs to reap the benefits.

They tend, therefore, to have a short-term view of their business and rarely anticipate change such as future regulations or the development of new standards. This also makes SMEs a notoriously difficult group to target with communication schemes.

Most of them tend to discuss strategy and keep informed within a limited, stable network of suppliers, trade associations and consultants. This is why it is important to take advantage of the SME network to reach them.

Standards-related challenges

With regard to the implementation of standards, SMEs are at a disadvantage because they lack the "absorptive capacity", including the expertise and organizational infrastructure (e.g. standardization units or enterprise knowledge management) that is beneficial for proper implementation of standards. This presents a sequence of barriers to standardization:

1. Lack of awareness

SMEs may be unaware that standards exist, in particular standards specific to their industry.

2. Importance of standards for SMEs

SMEs may be not aware of the added value of standards for their particular enterprise. They may regard standards as a necessary evil rather than a powerful tool with which to meet their business objectives.

3. Tracing the right standard

SMEs may have problems finding the relevant standards, or knowing whether a standard is still in effect.

4. Obtaining standards

SMEs may have difficulty getting hold of a standard because they are unaware of the distribution points, because of the price of standards, or simply because they end up buying the wrong standard (through inadequate description of its contents).

Most SMEs lack the necessary resources.

5. Comprehension

SMEs may not properly understand a standard due to the technical content and language, the unavailability of a version in the national language, the abundance of references to other standards, or a lack of information on the context of the standard.

6. Implementation

Most of the benefits, of course, come from the implementation of the standard. SMEs may have difficulty implementing standards, either because of their inherent complexity or due to lack of knowledge or skills.

7. Evaluating implementation

Achieving business goals is the chief motivation for implementing a standard. An SME may therefore wish to evaluate the potential benefits of implementation to derive lessons that will help implement standards in the future and gain feedback for the standards developers.

Barriers to involvement benefits

The low representation of SMEs in standardization can be explained by the fact that they often do not have the time, personnel or financial resources to engage in standardization. Moreover, they face a relatively higher financial burden than larger companies because the cost of travelling and participation are invariably fixed. Many SMEs also lack the necessary expertise in standardization matters.

However, a Dutch study revealed that the reason most often given for non-involvement was simply that they didn't know it existed. Those that did often met with other obstacles, the financial aspect being only one of these and not the most important one. A number of barriers may prevent them from becoming involved in standardization.

1. Lack of awareness

SMEs may know about standards, without understanding that these are developed in a process in which any company can get involved.

2. Awareness of the importance of involvement

Even when an SME is aware of the fact that it can become actively involved in standardization, it may still have trouble assessing whether it is worth the investment.

© ISO Focus+, www.iso.org/isofocus+

3. Tracing projects

An important reason for SMEs not getting involved in standardization is often simply a lack of knowledge about the process. SMEs that do become interested in standards development may still have difficulty tracing the relevant standards development projects.

4. Getting involved

Lack of resources (money, time, skills and knowledge) are another reason to refrain from participation.

5. Effective involvement

Being involved does not imply that the involvement is effective. Other participants may ignore an SME simply because it is an SME. Issues presented by a multinational may – consciously or unconsciously – carry more weight. Research, however, shows that the role of individuals in standardization can be decisive. Is an SME able to delegate a highly qualified person, in terms of both knowledge and skills, who is able to make a difference?

6. Evaluation

Involvement in standardization is a long-term investment. Cost precedes benefits, but continuous focus on benefits is a must during the process. Is the SME able to evaluate the effectiveness of its involvement?

7. Initiating new activities

An SME may wish to initiate a new standardization activity, because it needs standards to make its invention a market success. Yet starting a new project from scratch can be difficult.

Solutions

Solutions to overcome the barriers to standardization can be grouped into three categories: 1) compensate SME's lack of resources (time, financial resources or knowledge); 2) make the "supply side" of standards and standardization more easily accessible; and 3) focus on intermediary organizations to bridge the gap between SMEs and the "standardization world". Trade associations in particular have a role to play.

Education in matters of standardization is one of the priorities.

In our project for the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC), we developed a set of 58 solutions to help SMEs derive greater benefit from their participation in, and implementation of, standards.

This toolbox of solutions may be used by national standards bodies as well as national trade associations to support SMEs in their country. Following are just a few of the solutions related to standards:

- NEN (ISO member for the Netherlands) has developed a method for systematically tracing standards needed for a product or service, a method that can be used in other countries as well
- A summary, scope and table of contents of each standard should be published on the standards body's Website
- Technical committees should create a meta-document for each set of interrelated standards, in which the structure of cross-referenced standards is presented. This provides SMEs and other stakeholders with a clear picture of the available standards in a given field. Standards bodies should make this document available for free on their Website
- Technical committees should provide a short document containing background information about the standard

Some of the solutions pertain to the involvement of SMEs in standardization:

Bridging the gap between SMEs and the standardization world.

in the field of standardization. Others are less so.

Supporting trade associations might start with an analysis of the strengths and weaknesses of member companies relative to the opportunities created and threats imposed by standardization. This exercise can be undertaken jointly by the national standards body and trade associations, perhaps even in cooperation with a university. On that basis, the trade association can identify a range of available solutions, in close cooperation with the relevant national standards body. The report provides best-practice cases of trade associations from different business sectors, in several European countries.

- National standards bodies should develop case studies of SMEs that have successfully participated in standardization
- Proposals for new work items should be accompanied by a feasibility study including relevant stakeholders and their interests
- National standards bodies should stimulate representation of groups of SMEs via their trade association

A survey among both national standards bodies and trade associations in Europe showed support for almost the entire toolbox of solutions. CEN and CENELEC and their national members agreed to implement improvement measures from the toolbox. National standards bodies can choose the relevant subset by assessing their country's current situation: which solutions are in place already and which are not? To which barriers do they relate? Guidance is provided to help pinpoint national priorities.

Education in matters of standardization is one of the priorities. This is fundamental for solving the lack of awareness. CEN, CENELEC, the European Telecommunications Standards Institute and their national members (notably Denmark and the United Kingdom) are becoming active in this field, following in the footsteps of the international initiatives taken by ISO, the International Electrotechnical Commission and the International Telecommunication Union.

Another top priority is to establish or improve relationships with trade associations, discuss their respective roles, and provide them with knowledge and materials. The study recognizes the crucial role of trade associations in improving the situation for SMEs. Some trade associations are very active in supporting their members

Working together

Some of the characteristics inherent to SMEs prevent them from getting the full benefit of standardization. However, joint efforts by national standards bodies and trade associations can make it much easier for SMEs to reap the benefits.

More information is available in the CEN/CENELEC report. Although the report is written for the European market, the situation for SMEs is to a large extent similar in other parts of the world, including developing countries. ■

This article is based on the report *SME Access to European Standardization – Enabling small and medium-sized enterprises to achieve greater benefit from standards and from involvement in standardization* (Henk J. de Vries, Knut Blind, Axel Mangelsdorf, Hugo Verheul and Jappe van der Zwan, 2009, Brussels: CEN and CENELEC). See **ftp://ftp.cencenelec.eu/EN/SMEs/News/Publications/SME-AccessReport.pdf**.

About the authors

Dr. Henk J. de Vries is Associate Professor of Standardization at the Rotterdam School of Management (RSM), Erasmus University, Netherlands.

Prof. Knut Blind is Professor of Innovation Economics at the *Technische Universität Berlin*, Professor of Standardization at RSM, and Leader of the research group Public Innovation.

Dr. Axel Mangelsdorf is Research Fellow at the BAM Federal Institute of Material Research and Testing in Berlin, Germany, and visiting Researcher at the Chair of Innovation Economics of the *Technische Universität Berlin*.

Dr. Hugo Verheul is Professor i-Thorbecke, Digitalization of the Public Sector, at the NHL University of Applied Sciences, Leeuwarden, Netherlands.

Jappe van der Zwan is Manager of Publishing at the Netherlands Standardization Institute.

Small businesses, big expectations

The key to expanding the user base for standards

Getting involved for the development of standards.

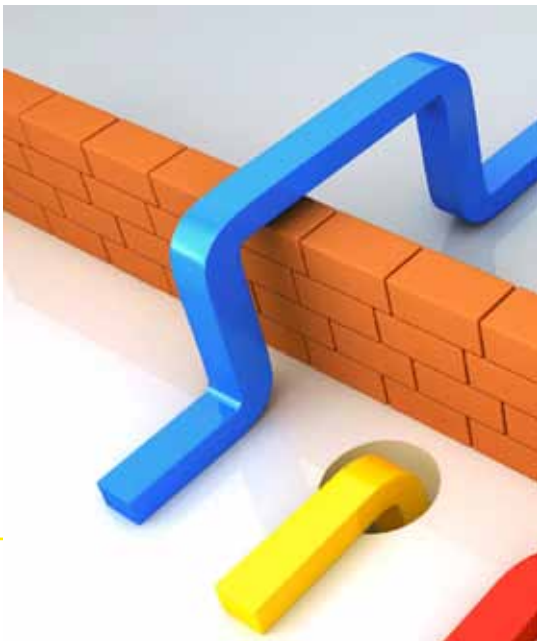
by Alain Costes

In order to achieve their full effect, standards should be applied on a voluntary basis and by as many stakeholders as possible, economists say. In industry, standards have long been the daily tools of businesses, large and small. But when it comes to very small businesses (VSBs), particularly in the services and craft sectors, using standards is a much more recent trend.

A business, however small, implements products and technologies that must rapidly adapt to the changes imposed by our open world. Traditional ways of passing on know-how are no longer sufficient and standards increasingly represent a vehicle for disseminating the knowledge and methods called for by our accelerated rate of innovation.

Overcoming obstacles

Although small businesses are aware of such changes, many still regard standards



as an external hindrance. Standardization clearly provides a feedback loop allowing businesses to get involved in the development of standards, but smaller enterprises often see this possibility as beyond their reach.

A number of recent surveys have identified the main obstacles to the participation of small and medium-sized enterprises (SMEs) in standardization. With little awareness of the initiatives that might be relevant to them, they often find it difficult to anticipate them or participate in their development, devoid, as they are, of a proper organizational structure and adequate financial and human resources.

Organizing SMB representation

An initial solution to this problem lies in the way SME representation is organized. In France, the leading professional organizations rose to the challenge, creating, in 2004, a platform within the Board of Directors of the French standardization association (AFNOR). This platform helps them anticipate any new standards upstream and identify, downstream, the standards that will require promotion through accessible and detailed information. One section of AFNOR's Website (**www.afnor.org**) is dedicated to the self-employed, providing information that helps them identify and assess the standards that are most useful to them.

France was a pioneer in this respect, introducing legal measures in favour of small businesses in 2009, which were in large part included in the 2012 Regulation (EU) on European standardization.

Meeting the expectations of smaller businesses also represents an opportunity for new markets. The proposed services must be innovative and, more importantly, targeted : understanding the specific fields of activity of VSEs is essential in order to better approach them.

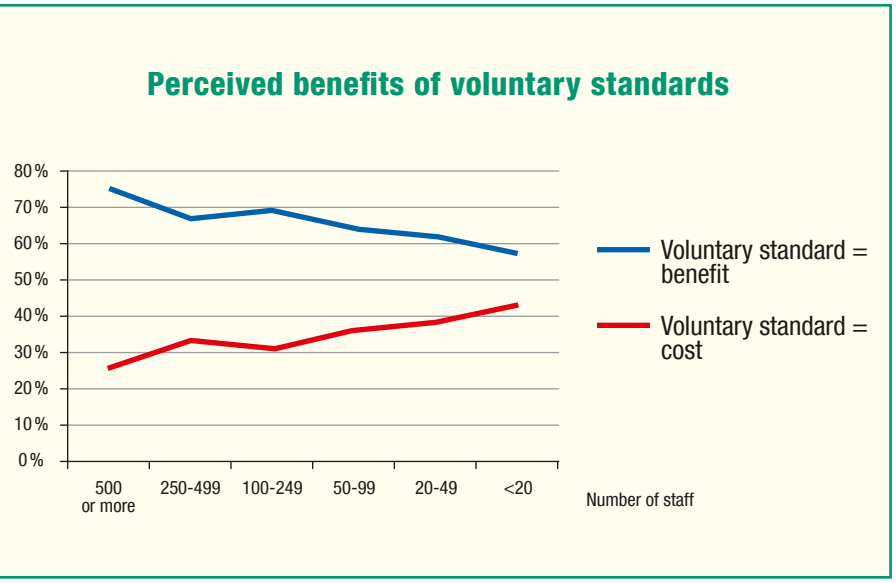


Figure 1 : *Perceived benefits of voluntary standards by businesses in relation to their size, assessed in 2009 through a survey of French organizations, which generated 1800 answers* **http://groupe.afnor.org/economic-impact-standardization/appli.htm**.

Standards increasingly represent a vehicle for disseminating knowledge and methods.

Further perspectives

The French Standardization Strategy 2011-2015 dedicates a specific plan for microbusinesses and SMEs, encouraging the development, for their benefit, of performance spin-off standards focusing on a given area of business, type of company or services field[1]. Breakout sessions organized during the ISO 2012 General Assembly suggest that the organization might benefit from applying this principle to the leading standards for which it is renowned, in particular the management systems standards.

This principle should also be applied to product or service standards. The modern conception of standards is that they define a result to be achieved. For VSEs, test procedures can be very costly. This can be addressed by developing descriptive implementation guidance to facilitate implementation in the most common situations.

The expectations of VSBs may not always be easy to satisfy in the standardization system as it stands, as they not only require listening abilities, but also adaptability, flexibility and creativity. ISO is making significant efforts in these areas. All this should prompt us to seize this unique opportunity to broaden our scope in terms of the number and diversity of professionals using standards. ■

1) See **http://groupe.afnor.org/e-catalogues/strategie-francaise-de-normalisation/appli.htm** (in French) and **http://groupe.afnor.org/e-catalogues/french-standardization-strategy/appli.htm** (in English)

About the author

Alain Costes has been the Director of the Standardization division of AFNOR (the ISO member for France) since June 2012. A graduate of the *École Polytechnique* (France's top engineering institute) and *Sup'Aéro* (France's top school of aeronautics and space), he has spent a major part of his career working within the General Delegation for Armaments of the French Ministry of Defence.

Being prepared

A bird's eye view of SMEs and risk management

by Robert Moll

Small and medium-sized entreprises (SMEs) are the backbone of the European economy. They represent 99.8 % of companies in the 27 countries of the European Union, provide 67 % of jobs and create nearly 59 % of the total gross national product.

The Eurostat Structural Business Statistics give for 2011 the following structures and definitions:

Type of enterprise	No. of employees	Annual turnover (EUR)	No. of enterprises (% of overall)	No. of enterprises
Micro-enterprises	1 – 9	≤ 2 million	92.2	19 968 000
Small enterprises	10 – 49	≤ 10 million	6.5	1 358 000
Medium enterprises	50 – 249	≤ 50 million	1.1	228 000
SMEs total	87 100 000		99.8	21 544 000*
Large enterprises	> 250	> 50 million		
Large enterprises total	42 900 000		0.2	43 000

* Independent companies only, excluding legally independent companies that are part of large enterprises.

A wide variety of SMEs

SMEs play a significant role in all areas of the economy and include hairdressers, bakers, restaurants and IT consultancies. In manufacturing, they often supply specialized technical components for the automotive, aircraft, chemical and other key industries.

Considering the important economic and social roles of SMEs, governments and other stakeholders have paid great attention to improving their competitiveness and sustainability.

For all their diversity, most SMEs share similar characteristics.

Centralized decision making and limited personnel capacities

Many SMEs are privately owned and dominated by the owner as the key business driver, decision maker and provider of core competence. Only sometimes is the owner supported by a thin layer of managers.

Limited personnel qualifications

Most SMEs have strong central skills but few well-qualified staff outside their cores.

Restricted internal financial resources

SMEs usually allocate the best part of their financial resources to their core business. They then typically have little left to invest in medium- and longer-term projects that could safeguard their long-term future.

Reduced access to external financial sources

This is particularly true in the wake of the financial crisis (and the enforcement of rules related to "Basel II", which requires banks to hold larger capital reserves), and banks have restricted financing to SMEs and imposed tougher conditions.

Limited access to information

This concerns information related to changes in legal and other business frameworks, such as regulations on environmental and electronic waste, and its disposal.

Regulations have frequently increased the financial burden on SMEs and sometimes require expensive technical changes to products. Small companies have found these changes increasingly difficult to handle, especially when they become aware of them at a later stage. Indeed, SMEs often discover these rules when customers point them out — just before, or even after, they have come into force.

They face the above limitations, together with increasingly fast-paced change, the demands of globalization and many other risks and challenges.

Risk management enables SMEs to identify threats and opportunities.

Given their vital role, however, it is essential to help SMEs expand and become more sophisticated, competitive and, where possible, international.

Risk management

Although all organizations encounter risks, those best able to deal with these risks have the highest chances of survival and sustainable development.

Risk management enables SMEs to identify threats and opportunities, both internal and external.

For any economic (or social) entity, the first step to handling unavoidable risks is to identify the main threats, then rank them by relevance. This ranking should be based on potential impact and likelihood.

Risks should also be put into a proper time frame. This can be done using risk scenarios to simulate potential impacts. All risk scenarios contain a:

Time aspect

Risks can be caused by past events, such as quality problems from delivered products or services. They can relate to the immediate future, i.e. the next 12 months (for example cash flow problems due to the insolvency of a key business partner) or to the medium-term future, i.e. one to two years (for example the arrival of new low-cost competitors). They can also impact the long-term future, i.e. two to five years (for example the emergence of new technologies replacing those on which the SME is based).

Relevance aspect

Risks that are relevant for an enterprise need to be identified and distinguished from those that have no or only a minor effect. Today's social and economic framework is in rapid and constant mutation, which requires all enterprises to adapt. At the same time, however, it is crucial that changes and adaptation processes be triggered only for factors that are really relevant for the company. It is essential that any form of risk management strategy be tailored

© ISO Focus+, www.iso.org/isofocus+

closely to the enterprise's needs. Strategy tools based on a "one size fits all" approach will not work.

Likelihood aspect

Different threats have a different likelihood of occurring. Determining the likelihood of an event occurring, and developing a reliable set of tools, is a constant challenge. This is one of the most crucial and difficult elements of risk management.

Severity aspect

This concerns consequences. Different risks have different impacts and range from smaller financial losses (caused, for example, by a small customer failing to pay or an unplanned need to repair equipment) to bankruptcy (caused, for example, by a key customer's failure to pay or a major investment in a new but unsuccessful product).

Effective risk management is a complex process consisting of different aspects such as timing, relevance to the enterprise, likelihood, and impact or consequences.

In implementing a risk management system, a balance needs to be found between attention to risk and healthy entrepreneurship.

In discussions over the restrictions faced by SMEs, the limitations regarding qualified staff and financial resources have been pointed out.

The implementation of a risk management system requires a simple but effective basic structure that can become part of a business routine and support the key decision maker(s). If successful, such an approach can replace the widespread habits of managing risks by gut feeling or handling them after the risk case has occurred.

SMEs play a significant role in all areas of the economy.

The identification and evaluation of risks, and decisions on dealing with risk, should become an integrated part of an enterprise's activities, both existing and new. However, success depends entirely on whether or not risk management becomes an integral part of existing decision-making processes. It should not become a set of procedures that exists in addition or outside the company's decision-making processes.

Although many elements of a risk management strategy can be regarded simply as good management practices, some may meet with opposition due to the need for new procedures and changes.

One element in particular may generate considerable emotional resistance : the implementation of procedures to prevent internal fraud or theft. This move calls into question the trust among owner, management and staff. However, as a number of studies have shown, around a quarter of SMEs are subject to at least one major internal theft every 10 years.

This element of risk management needs to be addressed openly with employees. It should aim to protect honest employees and not serve as an expression of distrust.

Properly handled, an integrated risk management system can help SMEs become stable and less vulnerable to change. It can also act as a motivator to consistently improve procedures and apply technologies that help stay at least one step ahead of risk. ■

About the author

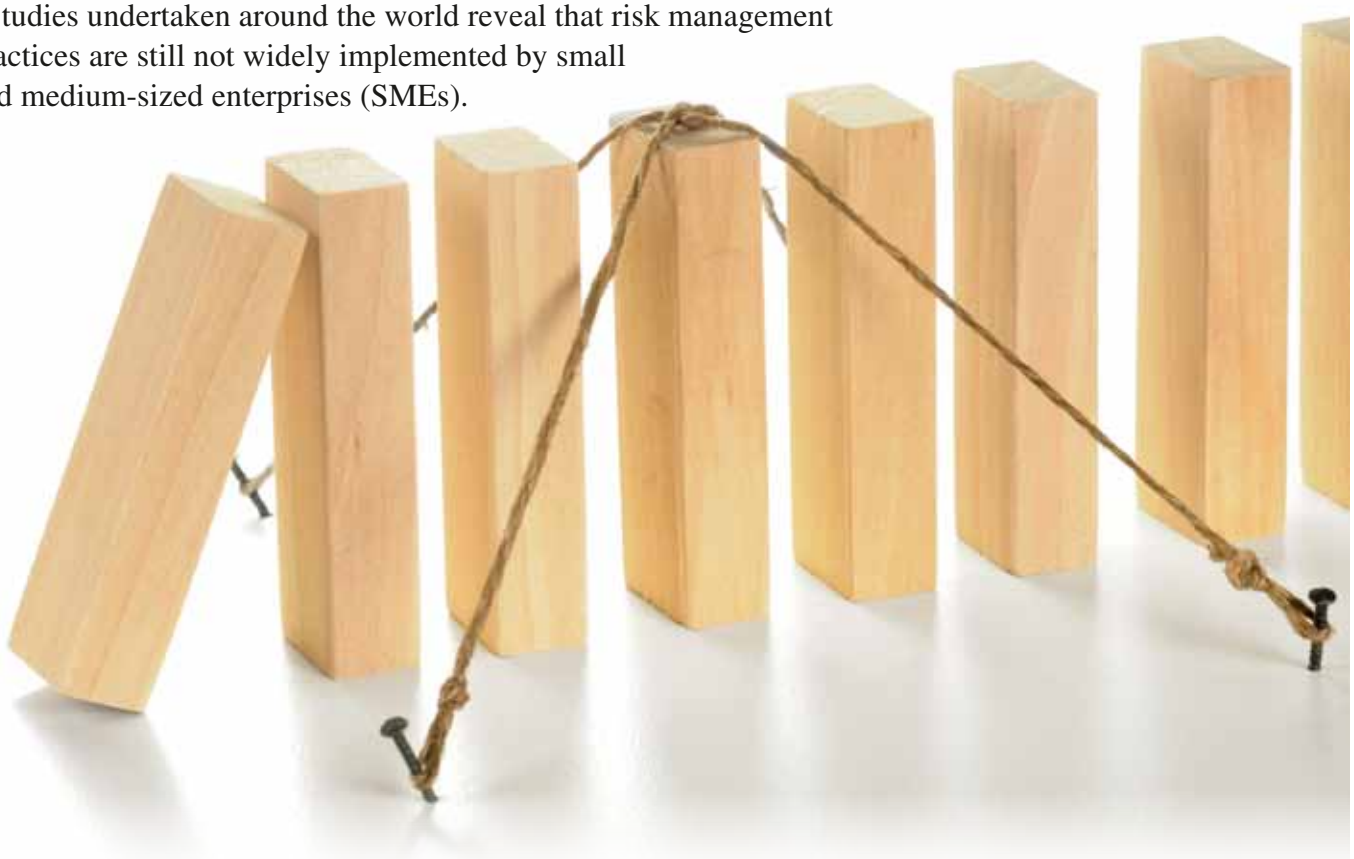
Robert Moll is Managing Director of Moll Operating Consultants, which develops strategies for SMEs targeting markets in Europe, Asia-Pacific and South Africa. Previous posts have included management positions in a number of SMEs.

Risk management

How ISO standards can help

by Reinhard Weissinger

Studies undertaken around the world reveal that risk management practices are still not widely implemented by small and medium-sized enterprises (SMEs).



Yet, such companies face significant exposure to both external and internal risks, many of which are directly linked to their limited resources. Studies have shown that the smaller the company, the less likely it is to apply a systematic approach to management, and the more likely it is to rely heavily on its owner-manager.

ISO 31000 in a nutshell

ISO 31000:2009, *Risk management – Principles and guidelines*, is designed to benefit organizations of all sizes and types – even the smallest of firms.

ISO 31000 defines risk as the "effect of uncertainty on objectives". This relates to both opportunities (for future business success) and threats (the likelihood of future losses), helping organizations identify potential business developments and any negative impacts. In this way, the ISO 31000 risk management guidelines can contribute to the business success of an organization so that its benefits outweigh the costs.

Risk management must be tailored to each organization and must become a regular part

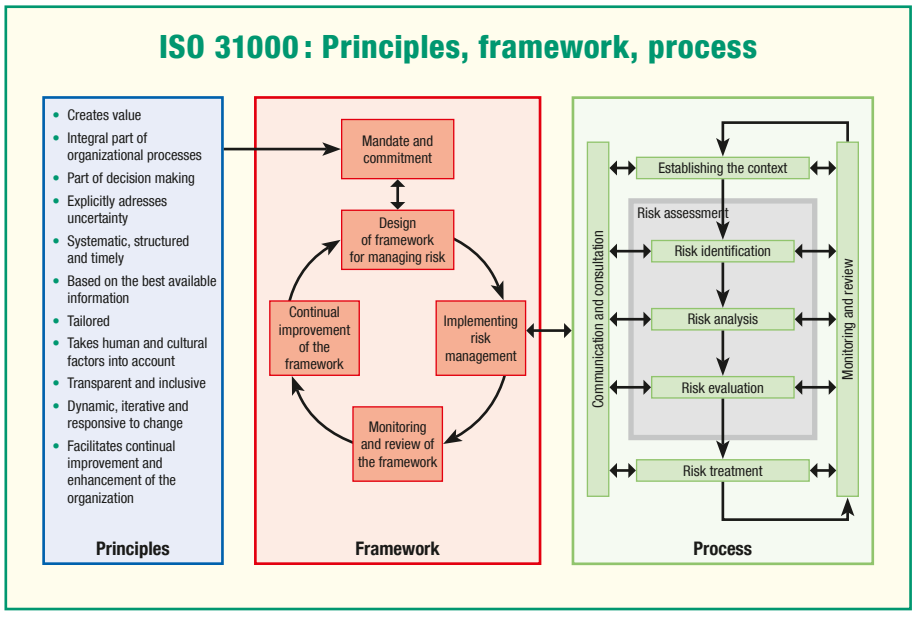


Figure 1 : *ISO 31000 risk management principles, framework and process.*

© ISO Focus+, www.iso.org/isofocus+

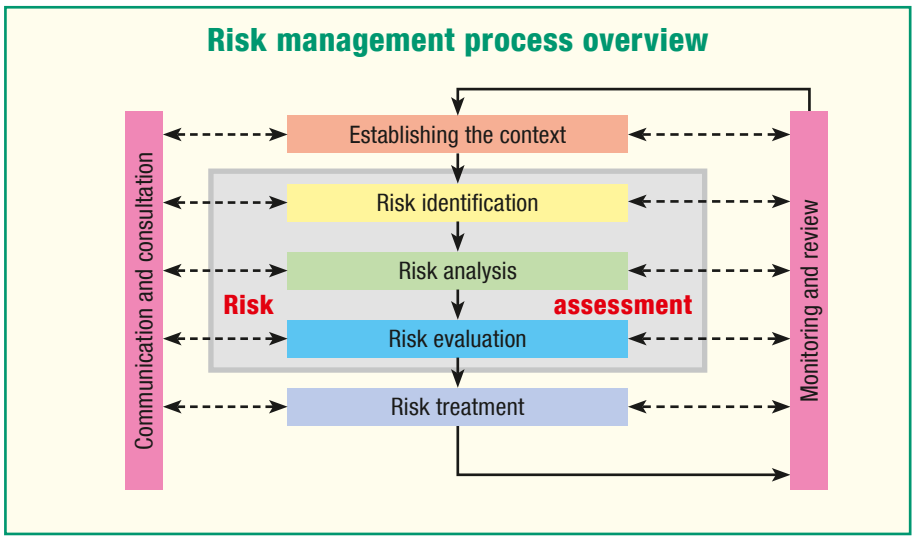


Figure 2: *ISO 31000 risk management process.*

of its processes. Responsibilities for dealing with certain risks need to be assigned to individuals as part of their job description (risk ownership).

Commitment from top management forms the basis for establishing a risk management framework which comprises the company's organizational structures and defines:

- The functional responsibilities of dealing with risk
- The definition of risk parameters and criteria
- The approach and tools to monitor risk and regularly review and improve the risk management framework

The framework outlines the organizational structure within which to implement the risk management process. It is based on an understanding of the organization's internal and external environment, and aims to identify, analyse and evaluate risks and their potential impacts.

ISO 31000 is aimed at organizations of all sizes and types.

The evaluation will establish whether a risk needs to be mitigated in order to limit the likelihood of it occurring or reduce its potential severity to a tolerable level, or whether it can be accepted and dealt with as "residual" risk using daily management practices. What is considered tolerable, however, depends to a certain degree on an organization's "risk appetite".

Barriers to using standards

Studies on the use of standards by SMEs show that they face many challenges such as limited or no awareness of standards and their importance, limited or no knowledge about which standards may be relevant and where to obtain them, limited or no success in understanding them and difficulties in their implementation. This last point has prompted some standards organizations to develop guidance documents on how best to write standards to address the needs of SMEs[1].

As shown in **Figure 3**, implementation requires users to interpret and adapt a standard to the particular needs of the organization. This is not automatic.

Finally, there are also barriers to evaluating the success of standards implementation.

Introducing risk management

According to ISO 31000, risk management depends on successfully embedding or integrating the risk management framework into the organization's overall management system. The difficulty arises when an organization does not have a management

1) CEN/CENELEC Guide 17:2010, *Guidance for writing standards taking into account micro, small and medium-sized enterprises (SMEs) needs*.

system and when its processes depend largely on the owner-manager.

SMEs may find it easier to implement risk management in several steps.

For example, one option might be to introduce risk criteria when planning an important new project as this would enable staff to become familiar with its concepts and gain the necessary experience.

Risk management may be best applied in several steps.

In a second phase, these same risk criteria could then be evaluated for broader and long-term application to other areas of the organization.

The risk profile, i.e. the set of risks identified by the SME, could be kept relatively small and focused on core risks, so that the number of indicators needed to measure and monitor them can also be limited and thus more manageable. A risk register containing a list of generic risks for the respective industry could also be used for support.

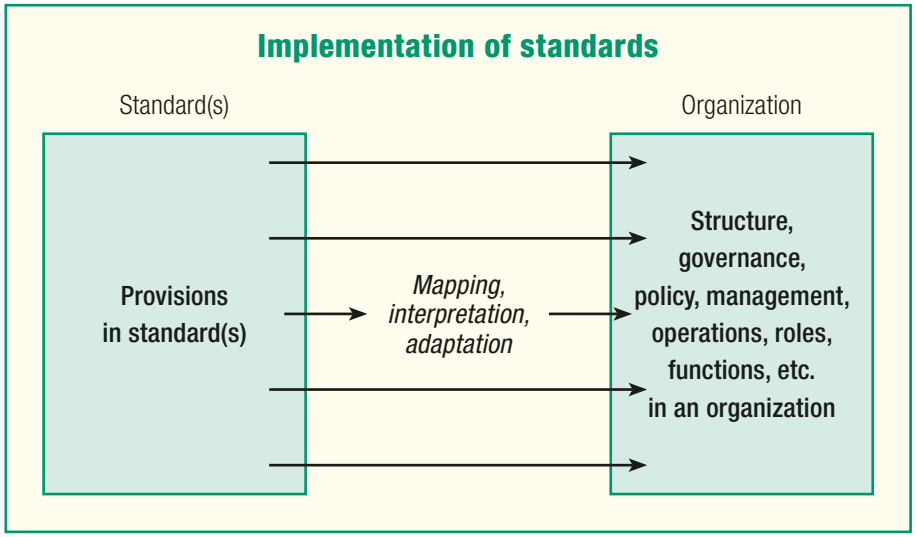


Figure 3 : *Implementation of standards based on user interpretation.*

As a next step, once there is greater familiarity with risk management, additional risks can be identified and indicators developed, increasingly migrating towards a more formalized and systematic approach.

Openness, honesty and communication are vital.

Depending on the SME's size and structure, therefore, risk management can be introduced in one area of the organization to gain experience before being rolled out to other parts.

These are just a few examples of the many ways in which an organization can gradually implement risk management. Regardless of the approach taken, it is important to focus initially on core risks. Involvement, commitment and support by top management and good internal communication are essential to the successful introduction of risk management.

As with all organizational change processes, openness, honesty and communication are vital. This includes engaging personnel in discussions and providing the opportunity for feedback. Openness and an environment of mutual trust are crucial in gaining employee buy-in for such a transition.

ISO's technical committee on risk management, ISO/TC 262, *Risk management*, is currently working on the future ISO 31004, *Risk management – Guidance for the implementation of ISO 31000*, which aims to develop systematic assistance for organizations planning to implement ISO 31000 or to move towards this form of risk management from existing solutions. ■

About the author

Reinhard Weissinger is Manager, Research, Education and Strategy, at the ISO Central Secretariat.

© ISO Focus+, www.iso.org/isofocus+

Sustainability for SMEs

Putting theory into practice

by Haraldo Mattos de Lemos

Natural resources, both renewable and non-renewable, are extracted every day to produce the goods and services we need for our livelihood. This process generates waste and pollution. In this context, there are two main challenges that we must solve in order to achieve sustainability.

First, we must guarantee the availability of natural resources to ensure future generations are able to meet their own needs. Second, we must be careful not to exceed the limits of the biosphere capacity to recycle and absorb waste and pollution.

In 1802, when the human population on Earth was but one billion, these issues were not a challenge. A mere 209 years later, the world's population has reached 7 billion. The resources of our biosphere are depleted, with fewer trees, fewer fish in the oceans, fewer fossil fuels and less water available per capita, and humanity's very survival is at stake.

At the United Nations Conference held in Johannesburg in 2002, the United Nations Environment Programme (UNEP) presented the overview report *Ten years after Rio 92 : the UNEP assessment*, a study based on 22 global sustainability reports by various industry sectors, including aluminum, automotive, chemicals, coal, electricity, fertilizers, food and drink, iron and steel, oil and gas. Its primary conclusion was : "There is a growing gap between the efforts of business and industry to reduce their impact on the environment and the worsening state of the planet."

The world's population has reached 7 billion.

The reasons identified included the following :

- Only a small number of companies are actively striving for sustainability. More than 80 % of the world's industries are small and medium-sized enterprises (SMEs) and, at that time, the big enterprises were almost alone in seeking to improve their production processes and the design of their products
- Improvements are being overtaken by economic growth and increasing demands for goods and services (the "rebound effect").

Sustainability challenge

As sustainability becomes a critical challenge, industry is under increasing pressure to improve production processes and the design and development of products – and is turning to ISO standards for practical solutions.

Sustainability has always been an underlying element in standards development. Key examples of ISO solutions include the ISO 14000 series on environmental management, auditing, performance evaluation, labelling, life-cycle analysis and climate change mitigation. Their use by industry helps preserve natural resources and reduce waste and pollution. ISO standards also support innovative uses of natural resources and help ensure that goods and services are globally acceptable.

© ISO Focus+, www.iso.org/isofocus+

Today, companies are reaching out to international markets, where competitiveness, profitability and sustainability must be reconciled and optimized. As attention on the supply chain for industrial process increases, SMEs are under pressure to demonstrate the environmental management efficiency of their production processes.

Reporting

The Global Reporting Initiative has just finalized its *G4 Reporting Guidelines*. The previous G3.1 version was used to establish the scope of the report, which is restricted to material issues impacted by the company's owned and operated facilities. The new G4 version requires a supply-chain assessment to understand the biggest impacts, both upstream and downstream, even if outside the company's control. The value chain, from raw material inputs to end-of-life, will help determine key stages in a product's life cycle. Leading companies that have already adopted this approach often discover that the largest impacts lie outside of their control.

Humanity's very survival is at stake.

The Carbon Disclosure Project (CDP)[1] has been making information requests relating to carbon and climate change since 2008. The CDP has just launched the *CDP supply chain 2012 information request for small & medium-sized enterprises*.

ABNT, the ISO member for Brazil, is starting a project, sponsored by the Inter-American Development Bank, to help SMEs reduce their greenhouse gas (GHG) emissions. ABNT is preparing an inventory of the emissions of 200 SMEs. It will carry out verifications in 50 of them and validate reduction projects in 10 of them, based on the ISO 14064 series on GHG quantification, monitoring and reporting, and on the requirements of ISO 14065 for GHG validation and verification bodies. ABNT will be responsible for disseminating the newly gained experience throughout Latin America and the Caribbean.

UN action

The United Nations Environment Programme (UNEP) and the Society of Environmental Toxicology and Chemistry (SETAC) are partnering to promote a capacity-building approach. The goal is to help SMEs on lower tiers of the supply chain to develop the necessary life-cycle management systems and structures to effectively balance global economic drivers with local sustainability requirements.

The UNEP/SETAC life-cycle management capability maturity model (LCM-CMM) will guide SMEs in developing the requisite organizational competencies, routines and structures for continued performance toward various sustainability objectives. The LCM-CMM will help SMEs to improve, even with limited technical support, minimizing the burden on global customers to provide technical consulting services for supplier development. The approach includes a self-assessment questionnaire to evaluate the maturity of decision making in 12 key business activities covering leadership processes, life-cycle management processes and enabling infrastructure processes.

Targeted solutions

ISO 14005:2010, *Environmental management systems – Guidelines for the phased implementation of an environmental management system, including the use of environmental performance evaluation*, aims to facilitate the inclusion of SMEs in the quest for sustainability.

ABNT has launched a Website for SMEs (**http://portalmpe.abnt.org.br**) as a result of an agreement with the Brazilian office for small industries (SEBRAE). The SMEs registered at SEBRAE may buy Brazilian Standards for one-third of their market value, and have access to the sectorial collections such as the apiary chain, leather and footwear, plastics, and key standards such as ISO 14005. Through this Website, SMEs can use an online self-assessment tool to evaluate the advantages of specific standards in their field of activity, and access articles highlighting the importance of standardization for SMEs. The Website also offers an online course on the use and applicability of technical standards in SMEs.

Together, we hope that all these initiatives will encourage SMEs to participate in the world's quest for sustainability. ■

Walmart and M&S

Walmart announced in October 2012 its new commitment to increase the sustainability throughout its supply chain worldwide with the Walmart Foundation grant of USD 2 million to the Sustainability Consortium. This consortium has developed a Sustainability Index, which measures the sustainability of products across a list of over a hundred categories. Seventy percent of purchases at Walmart include products that have been evaluated by the Sustainability Index, and come from the 500 suppliers which have provided data and information to the index.

Marks & Spencer (M&S) announced in October 2012 the strengthening of its environmental and chemical policy, with a series of measures designed to reduce the use of harmful substances in its textiles supply chain. The new policy imposes minimum standards on the company's textiles suppliers and also features a series of commitments designed to accelerate the development of less harmful chemicals for use in the textile production and dyeing process. Mark Sumner, Sustainable Raw Materials Manager at M&S stated: "As a result, processes are now being used in the M&S supply chain that reduce the impact on the environment such as cold batch dyeing, a process that, on average, uses 50 % less water and reduces carbon emissions by 30 %."

About the author

Haroldo Mattos de Lemos is Vice-Chair of ISO/TC 207, *Environmental management*, Chair of the Technical Council of ABNT, the ISO member for Brazil, and President of the Brazilian Committee for the United Nations Environment Programme. Mr. Mattos de Lemos is also Professor of Environmental Engineering at the Federal University of Rio de Janeiro.

1) **www.cdproject.net**

© ISO Focus+, www.iso.org/isofocus+

Helping the smallest firms go green

Making environmental management systems more accessible

by Howard Markland

There is no doubt that environmental management systems (EMSs) are able to benefit both the environment and business bottom line. Although micro-enterprises are keen to improve their environmental performance, most find it difficult to develop and implement a formal EMS.

The original EMS published in 1992 was British Standard BS 7750, which built on the success of quality management systems, but focused instead on environmental risks and opportunities. BSI launched with a pilot to demonstrate its applicability to businesses of all sizes, and participants ranged from a bird sanctuary to a national power generator!

BS 7750 was soon replaced by ISO 14001:2004, *Environmental management systems – Requirements with guidance for use*, which has since become an international benchmark, and is widely used by organizations to manage the environmental consequences of their operations and demonstrate their achievement to others.

Growing popularity... to a point

Although the majority of ISO 14001 users are larger organizations, its fundamental principles are equally relevant to small firms wanting to improve their environmental performance.

Use of ISO 14001 has grown steadily, with uptake dominated by larger organizations that claim it improves profitability, compliance, image and market access.

The success of ISO 14001 has also energized the development of many other environmental standards, reporting schemes and ecolabels.

However, there is growing evidence that small enterprises [defined by the European Union (EU) as having fewer than 50 staff or a turnover of under EUR 10 million] struggle to understand or implement ISO 14001. Furthermore, those that do are unlikely to secure the benefits enjoyed by larger firms.

The challenge is most acute for those firms which lack the resources to understand

or implement its requirements, while those seeking to trade on their environmental performance face the additional burden of audit and certification.

The challenge is even more pronounced for micro-enterprises (defined by the EU as having fewer than 10 staff or a turnover of under EUR 2 million), which typically have fewer available resources to evaluate their impacts or introduce formal management systems. This is a significant concern as small and micro-enterprises are responsible for most of the economic activity and employment around the world, so their collective environmental impact could be enormous.

Greater access

Since 2005, ISO has been trying to make EMSs more accessible to smaller firms. In 2010, ISO published a 70-page implementation guide in the form of standard ISO 14005:2010, *Environmental management systems – Guidelines for the phased implementation of an environmental management system, including the use of environmental performance evaluation*. It also published an 87-page checklist.

Adding to ISO's efforts, other organizations have developed EMS schemes designed to help smaller businesses implement ISO 14001, such as Acorn, ISOeasy, Eco-Mapping, Enviro-Mark, and EcoWarranty. Some public-sector organizations and sector groups have also offered subsidies and sector interpretations to encourage EMS uptake.

Despite these efforts, ISO 14001 still does not present a compelling business case for most micro-enterprises. Since supplementary documents, assistance schemes and subsidies are failing to boost ISO 14001 uptake, this raises the question of whether the ISO 14001 standard is indeed appropriate for most micro-enterprises.

New Zealand's experience

Recent experience in New Zealand suggests that although micro-enterprises may not embrace ISO 14001, they can still apply its principles to improve their business and environmental performance.

New Zealand is widely known to be an environmentally friendly and innovative country, which suggests that businesses would have a healthy interest in ISO 14001. However, uptake has been slow and highly variable, in contrast to the increasingly strong uptake evident in most other countries.

Low early uptake in New Zealand can be attributed to the radical reform of business-facing legislation in the early 1990s, which distracted many businesses and focused their attention on regulatory compliance rather than voluntary initiatives such as EMSs.

There have been many attempts to encourage micro-enterprises to adopt ISO 14001.

Uptake grew between 2000 and 2004, but then declined steeply due to a combination of weak incentives (negligible recognition by regulators, procurers and markets), barriers to uptake (cost, complexity and lack of implementation resources), and a bewildering array of alternatives.

Since 2010, uptake has been stimulated by growing supply chain pressures, potential savings from reduced greenhouse gas emissions and the launch of low-cost schemes linked to ISO 14001.

The majority of New Zealand's micro-enterprises are family businesses focused on the domestic market. Most suffer resource constraints, are reluctant to delegate and tend not to hire specialists. Many dislike formality and so minimize documentation, lack official management systems and learn mainly through experience or networks.

These micro-enterprises value the environment but have little knowledge about their adverse impacts, the practical improvements they can make, or how environmental improvements can benefit their profitability. They are aware of ISO 14001, but are challenged by its administrative requirements, and most consider it a "big business" tool.

Large exporters are increasingly finding that ISO 14001 is a prerequisite to entering premium markets. However, as their micro-enterprise suppliers are unlikely to have a formal EMS, this represents a risk to both the exporter and the environment, as well as a missed opportunity to boost business efficiency. Although 94% of New Zealand's firms are micro-enterprises, they hold only 12% of the conformance certificates issued (most of which are obtained to satisfy export market requirements).

Government initiative

The New Zealand government has paid significant attention to improving EMS uptake by micro-enterprises. It believes micro-enterprises can achieve substantive environmental and business benefits without having to adopt a formal EMS – provided they can implement a low-cost, easily understandable scheme that enables them to:

Operational versus administrative

The following "operational" elements of ISO 14001 are readily accessible for organizations of all sizes:

- Developing policy
- Assigning roles and responsibilities
- Identifying impacts and regulatory requirements
- Planning and implementing improvements
- Monitoring and measurement

However, the following "administrative" elements can present significant challenges to micro-enterprises:

- Documenting operating procedures
- Controlling documents and records
- Communication arrangements
- Non-conformance procedures
- Internal audit
- Management review

© ISO Focus+, www.iso.org/isofocus+

- Identify opportunities as well as risks
- Implement practical improvements
- Quantify their achievement
- Communicate their achievement to others

In addition, it should:

- Be consistent with ISO 14001, where possible
- Embody regulatory requirements
- Not require subsidy or specialist input
- Have the option of independent validation

This led the New Zealand government to develop Envirostep, a free online self-assessment tool for micro-enterprises that covers environmental performance and management requirements. It includes 23 questions in plain English that address ISO 14001 requirements.

94 % of New Zealand's firms are micro-enterprises.

Users answer a simple questionnaire and receive an instant (percentage) performance score and recommendations for improvement. Users also have the option of certification (for a fee) which provides assurance that their score is valid and enables them to communicate their achievement to others.

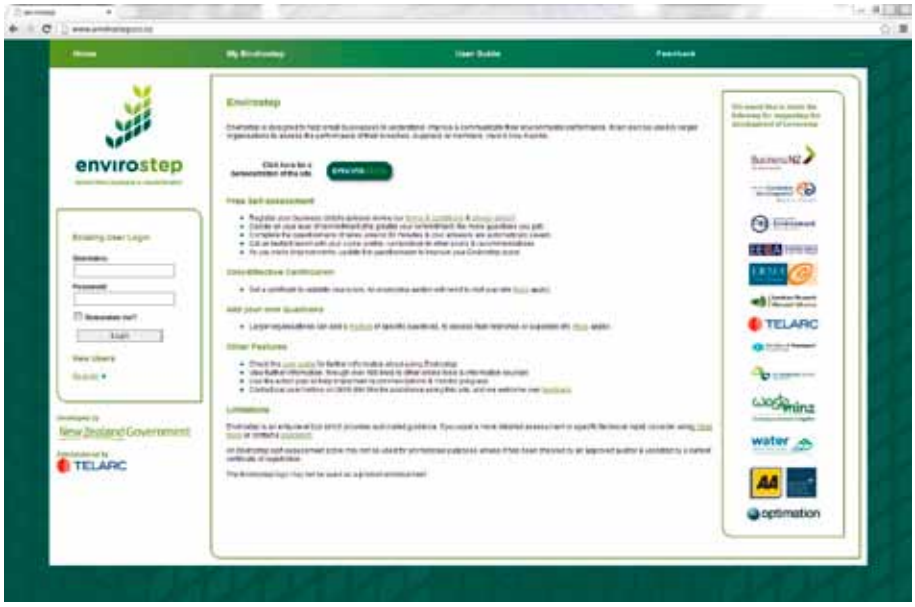
Micro-enterprises using Envirostep particularly like the free access, government endorsement, simple content, speed of use (typically 45 minutes) and extensive links to supporting resources. It provides them with a low-risk introduction to environmental management, and is a preparatory step for those considering more sophisticated alternatives such as ISO 14001.

Larger organizations are also using Envirostep to pre-qualify suppliers and assess the environmental performance of their subsidiaries or contractors, and some have added their own user-specific content to the assessment.

The way forward

As environmental performance requirements gradually percolate down supply chains, micro-enterprises will face growing demands to reliably assess, improve and communicate their environmental performance.

Experience in New Zealand confirms that micro-enterprises can effectively implement a basic EMS scheme, provided it embodies ISO 14001 requirements and is accepted by certifiers. Additionally, this approach can also provide larger organizations with a cost-effective way to monitor and communicate environmental performance for their sites, suppliers and subsidiaries. ■



New Zealand's Envirostep includes 23 questions addressing ISO 14001 requirements.

About the author

Howard Markland is a Senior Analyst with New Zealand's Ministry of Business, Innovation & Employment. He represents New Zealand on ISO/TC 207, *Environmental management*, subcommittee SC 1, *Environmental management systems*. Mr. Markland has worked in environmental management roles around the world since 1984. These include research scientist, regulator, auditor, consultant and programme manager. Much of his work has focused on assessing, improving and communicating the environmental performance of micro-enterprises.

Turning over a new leaf

Environmental action puts organizations on path to success

by Simon Cordingley

By taking a fresh look at management issues from an environmental perspective, organizations can become more successful and secure. ISO's environmental standards make this easier.

Most organizations, whether small or large, focus on economic and social interactions, often overlooking the negative impacts that poor management of environmental considerations might have on their success. In fact, a proactive, planned approach to environmental management driven by ISO standards can help organizations, especially small and medium-sized enterprises (SMEs), become more profitable and resilient.

Energy factor

For all organizations, managing environmental issues is already part of their business routine. For most, however, this environmental management is carried out poorly and by accident, whilst responding to economic or social pressures. Few look at key issues such as energy use from an environmental point of view. Generating, distributing and consuming energy uses a huge range of natural resources, including fuel, water, land, metals and minerals.

Economic and environmental issues are inextricably linked.

In addition, the pollution generated affects air and water quality, and contributes to climate change. Turning on a light, starting a computer or activating a piece of machinery has an environmental impact.

Yet, energy should be a key issue for organizations. Energy prices are high – and

DON'T KNOW WHERE TO START? HOW ABOUT ISO 9001:2008 IN PLAIN LANGUAGE WITH NUMEROUS CONCRETE EXAMPLES FROM A WIDE RANGE OF SECTORS?

May I help

ISO standards and sm

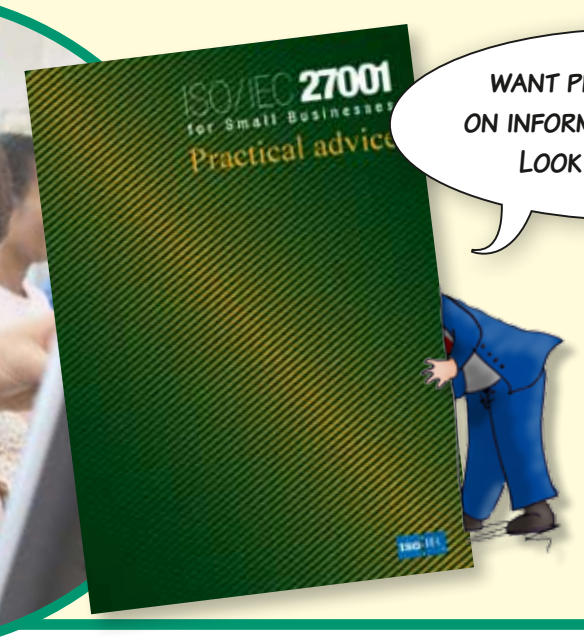
ISO International Standards provide many benefits for businesses worldwide, both in industrialized and developing countries. But these benefits are not just for large corporations and big businesses.

ISO standards can also help small and medium-sized enterprises (SMEs).

IS YOUR FOOD SAFE? TRY THIS BRAND NEW GUIDE FOR FOOD SAFETY MANAGEMENT SYSTEMS.

STILL NOT CONVINCED? CHECK OUT HOW STANDARDS HELP SMEs, WITH REAL USER TESTIMONIES.

© ISO Focus+, www.iso.org/isofocus+



WANT PRACTICAL ADVICE ON INFORMATION SECURITY? LOOK NO FURTHER !

WHAT DO CEOS THINK? MANAGERS SPEAK OUT ABOUT HOW ISO STANDARDS CONTRIBUTE TO THEIR SUCCESS.

p you ?

all businesses

A number of guides and handbooks published by ISO are designed to help SMEs get the most out of our standards.

Here are just a few examples to help you get started.

GOING GREEN? ACHIEVE THE BENEFITS OF IMPLEMENTING AN ENVIRONMENTAL MANAGEMENT SYSTEM WITH THIS 2-IN-1 COMBO PRODUCT.

© ISO Focus+, www.iso.org/isofocus+

rising –, and organizations are working hard to bring down their energy costs. In so doing, they are also managing their energy-related environmental impacts.

Consider the following: the cost and availability of a wide range of environmental products and services are linked directly to economic and social costs. Production efficiency means making more products from fewer raw materials while generating minimal waste. This is core to the efficient use of natural resources.

Similarly, ensuring adequate access to raw materials needed for production is central to sustainable manufacturing. Additional costs, associated for example with waste and emissions to air and water, also affect an organization's financial security.

As a result, economic and environmental issues are inextricably linked. If one were to conduct an environmental audit of a random selection of organizations, it would quickly become apparent that all are managing environmental issues from an economic perspective. This generates commercial value by reducing costs while securing some degree of resilience.

But can we increase economic value by tailoring our management activities to proactively consider environmental issues? The answer is yes!

New approach

Environmental issues often generate a commercial advantage such as:

- Helping to identify and control waste
- Working within the limits of availability of raw materials

Managing environmental issues is already a routine part of business.

- Revising products and services to respond to environmental pressures and customer demands for environmentally friendly goods and services

All of the above can help organizations yield unexpected savings, improvements and opportunities.

Managing environmental action is the next challenge. An organization may engage in a wide and varied range of environmental improvement programmes, making it difficult to keep track of all potential activities, benefits and opportunities. This is where an environmental management system (EMS) can help.

An EMS is a tool which enables an organization to identify how it interacts with the environment and set priorities and a plan of action. It can help:

- Reduce negative impacts on the environment (waste of resources and pollution)
- Promote positive action (protecting habitats and raising environmental awareness)
- Develop more sustainable products and services

As with any tool, an EMS should serve the organization. It should enable effective control and tracking of progress without becoming a burden.

ISO's contribution

ISO has developed a package of environmental standards to help organizations become more sustainable, both strategically and financially. ISO 14001:2004, *Environmental management systems – Requirements with guidance for use*, guides an organization through a process of:

- Identifying ways in which products, services and activities can affect the environment (and vice versa)
- Planning and implementing programmes to drive and measure improvement

ISO 14001 is one of a series of standards supporting proactive environmental management. Other ISO standards offer guidance on carbon and water footprints, eco-efficiency, life-cycle assessment, environmental communication, labelling, and more.

Managing environmental action is the next challenge.

Despite these available tools, an organization might still find it difficult at first to apply environmental standards in a way that meets its needs. This is where ISO 14005:2010, *Environmental management systems – Guidelines for the phased implementation of an environmental management system, including the use of environmental performance evaluation*, steps in.

This standard provides guidance to organizations on how to implement an EMS in a way that will allow it to initiate and progressively expand its system, and to secure increasing "business" benefits in the process. Ultimately, an organization can use the standard to work towards meeting the requirements of ISO 14001.

About the author

Simon Cordingley holds an active and pioneering role in the environment industry with over 27 years' experience as an environmental practitioner, consultant and trainer. He is a Founding Director of Compass PD Limited, which helps organizations to embed environmental and sustainability considerations into their strategy and operations. Mr. Cordingley is also a Founder Director of Bytesize Learning Limited, a publishing company which develops and delivers cutting edge, multi-media training on behalf of clients.

Work ahead

Of course, there is always progress to be made. ISO 14005 faced a sizeable challenge: providing effective guidance to a variety of organizations, big and small, all over the world. For example, a two-employee fuel station in Mexico will probably take a very different approach from a large manufacturing plant in Japan.

Given the diversity, it is not always practical, or indeed possible, to provide guidance that fits all possible situations. The advice in ISO 14005 must therefore be adapted to an organization's individual needs. And though I believe that a less formal, more flexible product, like a guidebook might have been more suitable, the experts who developed ISO 14005 worked hard to produce a standard that provides useful guidance to anyone wishing to implement an EMS.

For organizations, the journey and effort towards proactive environmental management will be worthwhile. As the human population on this planet continues to grow in both number and demand for resources, the pressures on our environment will only increase. Organizations that manage their interactions with the environment will be in a stronger position to adapt and succeed. And nothing is more adaptable and entrepreneurial than an SME. ■

© ISO Focus+, www.iso.org/isofocus+

Small tech firms

Seizing the benefits of software and systems engineering standards

by Claude Y. Laporte, Normand Séguin, Gisele Villas Boas and Sanyakorn Buasung

The ability of organizations to compete, adapt, and survive depends increasingly on software. In the automotive industry, for instance, one manufacturer says its top-of-the-line cars have up to 100 million lines of code.

Manufacturers are also increasingly dependent on the components produced by their suppliers. A large manufacturing chain of mass-market products often has a pyramidal structure, as illustrated in **Figure 1**.

This can bring challenges : for example, when a large manufacturer integrated into one of its products a part with an unknown software error that was produced by one of its 6 000 lower-level producers, the manufacturer ended up losing millions of dollars.

Industries everywhere recognize the value of very small entities (VSEs) in contributing useful and beneficial products and services. A VSE is an entity (enterprise, organization, department or project) with up to 25 people.

In Europe, 85 % of the information technology (IT) sector's companies have up to 10 employees ; in the Montreal area of Canada, 78 % of software development

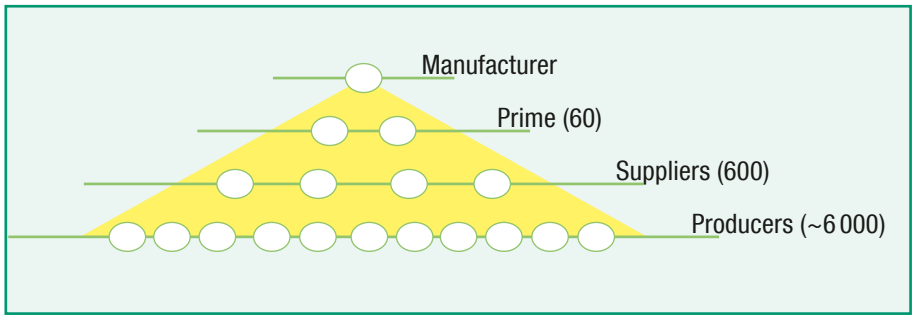


Figure 1 : *Example of a major manufacturer's supply chain (adapted from Shintani 2006).*

enterprises have fewer than 25 employees, and 50 % have fewer than 10 ; and in Brazil, IT companies with up to 19 people account for around 95 % of companies.

The joint technical committee of ISO and IEC (International Electrotechnical Commission) ISO/IEC JTC 1, *Information technology*, subcommittee SC 7, *Software and systems engineering*, and others are working hard to encourage small tech firms to adopt the ISO/IEC 29110, *Software engineering – Lifecycle profiles for Very Small Entities (VSEs)*, series of standards.

Standards take-up

According to Altman, "International Standards have become, at the same time, the price of admission to the global economy and the glue holding it together. Adherence to standards is a condition of entry to the World Trade Organization. And as the global economy grows, so do they."

Certifications can enhance access to markets.

In the past, ISO/IEC JTC 1/SC 7 standards were not easily applied, or readily adopted, by VSEs. Many VSEs found them difficult to understand and implement. They needed help in understanding the benefits of the concepts, processes and practices described in the ISO/IEC international software engineering standards – and in initiating their use.

Generic profile group			
Entry	Basic	Intermediate	Advanced

Table 1 : *Graduated profiles of the generic profile group.*

ISO/IEC 29110	Title	Target audience
Part 1	Overview	VSEs, customers, assessors, standards producers, tool vendors and methodology vendors
Part 2	Framework and taxonomy	Standards producers, tool vendors and methodology vendors. Not intended for VSEs
Part 3	Assessment guide	Assessors, customers and VSEs
Part 4	Profile specifications	Standards producers, tool vendors and methodology vendors. Not intended for VSEs
Part 5	Management and engineering guide	VSEs and customers

Table 2 : *ISO/IEC 29110 target audience.*

Profiles for a progressive approach

ISO/IEC profiles were used to develop the new software engineering standard for VSEs. A profile is a kind of matrix that identifies which elements should be taken from existing standards.

Producing a new standard for VSEs involved :

- Developing a set of profiles for VSEs not involved in the development of critical software
- Selecting the ISO/IEC 12207:2008, *Systems and software engineering – Software life cycle processes*, subset applicable to VSEs with up to 25 people
- Tailoring the subset to fit VSE needs
- Developing guidelines, checklists, templates and examples

A generic profile group applies to a vast majority of VSEs that do not develop critical software. A collection of four profiles (entry, basic, intermediate and advanced) provides a progressive approach to serving most VSEs.

The entry profile focuses on start-up VSEs and those working on small projects (i.e., project size of less than six person-months). The basic profile describes the software development practices of a single application by a single project team, and with no special risk or situational factors. The intermediate profile is aimed at VSEs developing multiple projects, while the advanced profile applies to VSEs that want to grow as independent software development businesses. **Table 1** illustrates the generic profile group as a collection of four profiles.

Table 2 describes the ISO/IEC 29110 series of standards and technical reports targeted by audience.

What VSEs want

Within ISO/IEC JTC 1/SC 7, working group WG 24, *SLC Profile and guidelines for VSE*, was formed in 2005 and mandated to :

- Give VSEs a way to be recognized for producing quality software systems
- Produce a set of standards and provide guidance to VSEs in establishing software engineering processes
- Produce guides that are easy to understand, short, simple and readily usable by VSEs

WG 24 developed a survey to question software-related VSEs about their use of standards, as well as to collect data to identify problems and potential solutions to help them apply the standards.

Over 400 responses were collected from 30 countries, with the largest proportion, about 46 %, originating from Latin America. More than 67 % of respondents indicated that it was important to be either recognized or certified ; over 62 % said they would like more guidance with examples ; 55 % asked for lightweight and easy-to-understand standards, complete with templates ; and a high proportion said it should be possible to implement standards quickly, easily and at low cost.

© ISO Focus+, www.iso.org/isofocus+

Part 5, the management and engineering guide, is the most valuable document for VSEs. It describes a set of activities and tasks of project management (PM) and software implementation (SI) processes, a set of documents to be produced during process implementation and a set of roles involved in task execution.

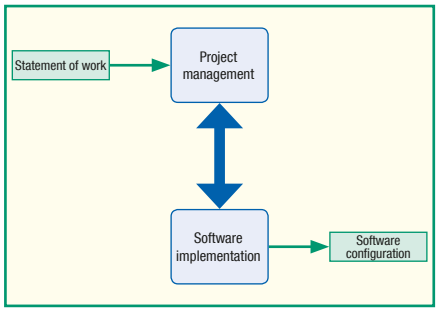


Figure 2 : *Basic profile processes.*

Both PM and SI processes are interrelated, as illustrated in **Figure 2**. The customer provides a statement of work as an input to the PM process, and receives a software configuration (i.e., software and documentation) after executing the SI process.

Role	Task list	Input products	Output products
WT CUS	SI.2.2 Document or update the requirements specification	Project plan (product description)	Requirements specification

Table 3 : *Example of one task of the software requirements analysis activity.*

The PM process aims to establish and systematically carry out the tasks of the software implementation project. This allows compliance with the project's objectives in terms of expected quality, time and cost.

The purpose of the SI process is to ensure the systematic performance of the analysis, software component identification, construction, integration and test, and product delivery activities for new or modified software according to the specified requirements.

To remove a product's defects, the activities workflow includes verification, validation and test tasks.

Figure 3 illustrates the activities of the PM process. Although the notation used here is sequential, the ISO/IEC 29110 series was not intended to dictate the use of different life cycles such as waterfall, iterative, incremental, evolutionary and agile.

Each activity of ISO/IEC 29110 is described using the following format : a four-column table lists the roles (such as WT = work team and CUS = customer) involved in a specific task, the tasks, their input and outputs. As an example, one task of the software requirements analysis activity is illustrated in **Table 3**.

Many VSEs find standards difficult to understand and implement.

To further help VSEs, the typical content of documents produced during the execution of a project is described. **Table 4** shows one such document on change request. The descriptions of the documents produced during the execution of the PM and SI processes are based on ISO/IEC/IEEE 15289:2011, *Systems and software engineering – Content of life-cycle information products (documentation)*, with a few exceptions.

The documents listed in **Table 2** for the basic profile were published in 2011. At the request of WG 24, the three ISO/IEC 29110 technical reports are available at no cost.

To facilitate the widest adoption possible and implementation of ISO/IEC 29110, members of WG 24 were involved in the translation of the documents into French, Japanese, Portuguese and Spanish. Translations of the entry profile into other languages are expected.

WG 24 also developed Wikipedia pages in English, French, Portuguese and Spanish. Short videos about the standards are available on Planet ISO's YouTube channel (**youtube.com/planetiso**) in English, French, Portuguese and Spanish.

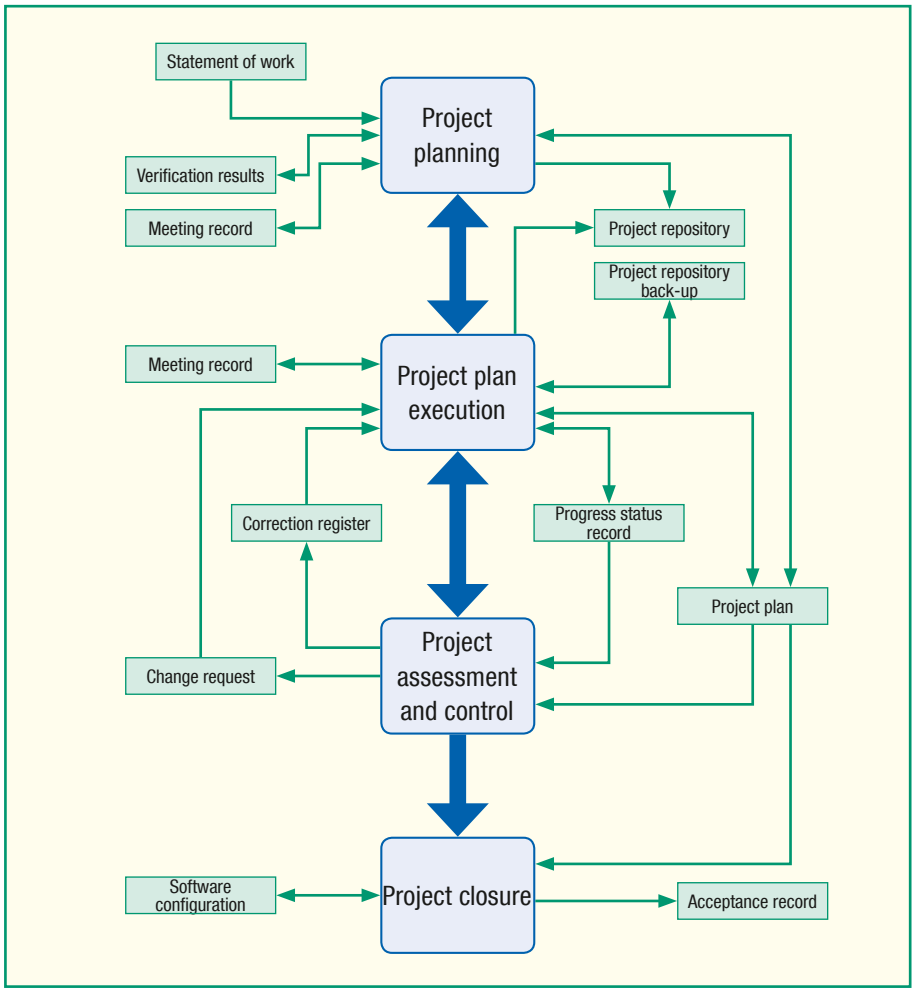


Figure 3 : *Project management process diagram.*

Deployment packages

To provide guidance on the actual implementation of the management and engineering guides in VSEs, deployment packages (DP) have been developed to define

guidelines and explain in more detail the processes in the ISO/IEC 29110 profiles. The elements of a typical DP are:

- Description of processes
- Activities
- Tasks
- Roles and products
- Template
- Checklist
- Example
- Reference and mapping to standards and models
- List of tools

DPs were designed such that a VSE can implement its content without having to implement the complete framework (the management and engineering guide) at the same time. Nine DPs have been developed to date and are freely available on the Internet. **Figure 4** illustrates the set of DPs developed to support the basic profile.

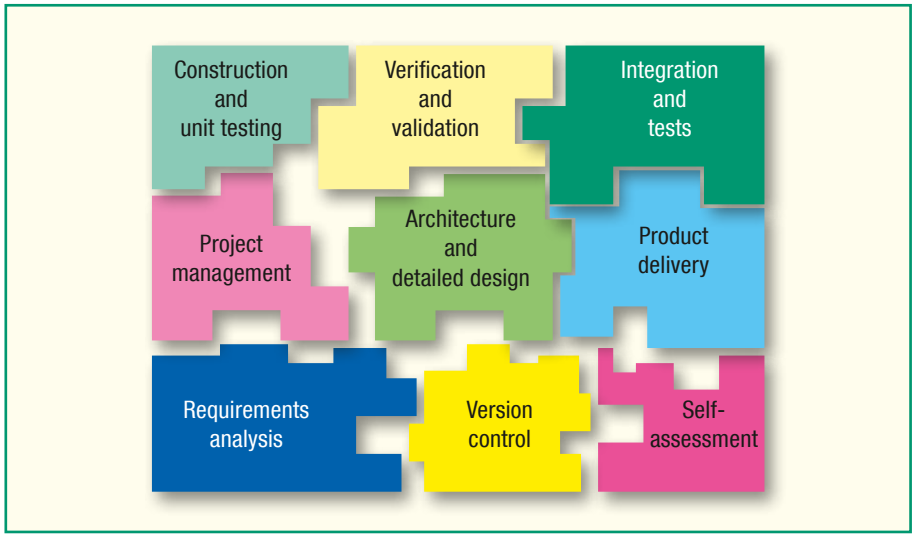


Figure 4: *Deployment package to support the Software Basic Profile (Laporte 2012).*

Teaching and applying ISO/IEC 29110

The new standard has been taught to undergraduate and graduate software engineering students in Canada, Haiti, Peru and Thailand.

In Canada and Haiti, for example, students of software quality assurance courses are using ISO/IEC 29110 to execute their projects in organizations and also to guide start-up VSEs. Students can observe actual processes used by an organization, draw on the standard as a guideline and evaluate if an organization's processes meet the standard.

Afterwards they can suggest to the organization what to improve in their modus operandi to satisfy the processes of ISO/IEC 29110.

The certification added value

For all organizations, but in particular for VSEs, international certifications can enhance credibility, competitiveness and access to national and international markets.

For VSEs, a certification process should be simple, short and low in cost, and have international credibility. Brazil and Thailand lead the development of ISO/IEC 29110 certification processes to meet VSE needs.

Brazil has developed and piloted an ISO/IEC 29110 certification process to give VSEs the opportunity to achieve market recognition as producers of quality software products. The Brazilian certification process aims to:

- Operate according to the main principles of conformity assessment using the ISO/IEC 17000 suite of standards, mainly ISO/IEC 17065:2012, *Conformity assessment – Requirements for bodies certifying products, processes and services*, developed by the ISO Committee on conformity assessment

By implementing ISO/IEC 29110, VSEs worldwide will be better equipped.

- Promote international acceptance of the ISO/IEC 29110 certification in many countries
- Enable easy and quick implementation by the national body certification schemes established in these countries

Brazil's *Requirements for conformity assessment programs for VSE's software development life-cycle processes* is aimed at certification bodies, accreditation bodies and auditors.

Brazilian auditors receive 40 hours of training. This approach shows that an ideal ISO/IEC 29110 auditor should be competent in auditing techniques, and have expertise in ISO/IEC 29110 concepts and experience in software development.

The certification process has been successfully applied during audit training in five VSEs, which plan to request formal certification as soon as it is officially available in early 2013.

Two Brazilian certification bodies have submitted their applications to conduct

Name	Description	Source
Change request	Identifies a software, or documentation problem or desired improvement, and requests modifications. It may have the following characteristics: • Identifies purpose of change • Identifies request status (new, accepted, rejected) • Identifies requester contact information • Impacted system(s) • Impact to operations of existing system(s) defined • Impact to associated documentation defined • Criticality of the request, date needed by The applicable statuses are: accepted and tracked.	Software implementation Customer Project management

Table 4: *Description of content of a change request in ISO/IEC 29110.*

© ISO Focus+, www.iso.org/isofocus+

ISO/IEC 29110 audits to Inmetro, the accreditation body in Brazil, which is affiliated with the International Accreditation Forum (IAF). Once these applications are approved, audits can be conducted in any country that has signed the IAF agreement.

Since 2000, Thailand has been certifying VSE compliance with ISO/IEC 29110 using the ISO/IEC 15504 series, *Information technology – Process assessment*, under the ISO/IEC 17065 certification body accreditation scheme.

Thailand has also been working with countries of the Association of Southeast Asian Nations (ANASE) and Asia-Pacific Economic Cooperation (APEC) to adopt both ISO/IEC 29110 and ISO/IEC 15504 schemes as a regional platform for trade and economic integration.

The project has been supported by the Thai government and its information and communications technology industries. ISO/IEC 29110 should soon be adopted as one of the requirements for the procurement of software for Thai government agencies.

Systems development

In 2011, WG 24 was mandated to develop a set of standards and guides for VSEs involved in the development of systems. A system is a combination of interacting elements, such as electronic, mechanical and software components, organized to achieve one or more stated purposes.

A draft management and engineering guide for the basic profile has been developed in collaboration with systems engineers of the International Council on Systems Engineering (INCOSE) and the *Association Française d'Ingénierie Système* (AFIS). The systems engineering basic profile is expected to be published in late 2013 or early 2014.

By implementing ISO/IEC 29110 standards, VSEs worldwide will be better equipped to develop products that meet customers' expectations – in terms of functionality, quality, cost and schedule. In addition, manufacturers will have greater confidence in the VSE-produced components that they integrate into their products. ■

About the authors

Dr. Claude Y. Laporte is a Professor at the *École de technologie supérieure*, Montreal, and Project Editor of ISO/IEC 29110. His published work includes two co-authored textbooks on software quality assurance. Dr. Laporte is a member of the Institute of Electrical and Electronics Engineers (IEEE), the Project Management Institute (PMI), the International Council on Systems Engineering (INCOSE), and the OIQ, the professional association of engineers.

Dr. Normand Séguin is a Professor of software engineering at the *Université du Québec*, Montreal, and Director of the software engineering master programme.

Gisele Villas Boas is responsible for coordinating standards, quality and software engineering in Riosoft, Rio de Janeiro's software production and export support agency. She is involved in several ISO/IEC JTC 1/SC 7 working groups and is Editor of ISO/IEC 29110-3. Ms. Villas Boas coordinates ISO/IEC 29110 development in ABNT, the ISO member for Brazil, and NetCenter, for VSE actions.

Sanyakorn Buasung is a member of technical committee TISI/TC 967, *Software and system engineering standards*, at the Thai Industrial Standards Institute. He is a Co-editor of ISO/IEC 29110-5 and an Assessor for ISO/IEC 15504, *Information technology – Process assessment*.

Boosting businesses in developing countries

ITC provides standardization-related support where it is needed most

by Khemraj Ramful and Ludovica Ghizzoni

For almost 50 years the International Trade Centre (ITC) has provided strong standardization-related support for small and medium-sized enterprises (SMEs) in developing countries, helping to strengthen economic growth and alleviate poverty.

Since its foundation in 1964, ITC has facilitated the success of small-business export in developing countries by providing trade development programmes to the private sector, trade support institutions and policy makers.

The overarching goal of ITC, a joint agency of the World Trade Organization (WTO) and the United Nations, is to help developing countries achieve sustainable development through exports. This involves activating, supporting and delivering projects while constantly emphasizing the importance of increased competitiveness.

Exporting challenges

Although quality products and services are needed to enter international markets, exporters, and especially SME exporters, also face the challenge of meeting technical requirements.

Compliance with International Standards is crucial for market access.

One of ITC's strategic objectives is to enable enterprises to access markets with the right products that meet International Standards.

According to ITC research, around 80 % of the problems faced by exporters are in the areas of technical barriers to trade (TBTs) and sanitary and phytosanitary (SPS) measures. It has been found that SMEs in developing countries experience four main TBTs when trying to develop new markets:

- Obtaining information about the mandatory technical requirements and voluntary standards applicable in the importing country

© ISO Focus+, www.iso.org/isofocus+

- Adapting their products to meet these requirements
- Demonstrating that the products meet relevant market requirements
- Obtaining the necessary support at each step from national quality services, which are often inadequate

ITC publications

In response to these challenges, ITC has developed a comprehensive range of export-quality management services to assist SMEs in developing countries.

As compliance with International Standards is crucial for market access, ITC has partnered with ISO to develop a number of International Standards-related publications, including:

- *ISO 9001 for Small Businesses: What to do – Advice from ISO/TC 176*
- *ISO 22000 Food Safety Management Systems – An easy-to-use checklist for small businesses – Are you ready?*
- *ISO 14001 Environmental Management Systems – An easy-to-use checklist for small businesses – Are you ready?*

Assisting the fishery industry in the Philippines to meet technical requirements of international markets.

Moreover, several of ITC's export-quality management bulletins have been prepared to provide SMEs with additional tools to understand or comply with the above standards. These include: *ISO 9001:2000: A workbook for service organizations, Introduction to ISO 22000 – Food Safety Management, Introduction to ISO 14000 – Environmental Management Systems*, and the *ISO 9001:2008 Diagnostic tool – Implementing Quality Management Systems.*

A second edition of the book *Export Quality Management: A Guide for Small and Medium-Sized Exporters* has been published by ITC in partnership with the *Physikalisch-Technische Bundesanstalt* (the German National Metrology Institute) to help SMEs better understand quality and standards issues related to export.

This guide addresses around 100 questions frequently asked by exporters about quality management. It provides answers to queries on quality, technical requirements (such as standards, technical regulations and SPS measures), management systems, conformity assessment (testing, inspection, certification), metrology, accreditation, the WTO agreements on TBTs, and applying SPS measures.

The first version of the book was tailored to the needs of 18 countries and subsequently translated into eight languages. ITC is now working with several countries to customize the second edition.

Training initiatives

Based on the publications listed above, ITC has held awareness workshops in several countries for policy makers, SMEs and officials in trade support institutions. These have been on issues relating to standards, technical regulations and quality.

> *ITC has partnered with ISO to develop a number of publications.*

In addition, a one-week "training-of-trainers" course, based on the ITC guide *Improving and Maintaining Market Access through Standards and Conformity Assessment*, has operated at national and regional levels. The technical content in seven modules covers, among other things, the WTO agreements on TBTs and SPSs and their benefits for businesses, standards, technical regulations and SPS measures, conformity assessment, quality management, accreditation and mutual recognition agreements.

Training representatives of regulatory bodies and industry from the ASEAN region to implement the Harmonized Cosmetic Regulatory Scheme.

To help SMEs face the challenge of adapting their products to meet the requirements of technical regulations and standards, ITC works with trade support institutions in partner countries to ensure that outcomes are sustained after the intervention.

A "trainer-cum-counsellor" approach has been adopted in several interventions for the implementation of quality management systems based on ISO 9001, or food safety management systems based on ISO 22000, where a pool of trainers – or potential consultants – have been trained under the guidance of an international expert.

Such interventions have helped to increase exports. In Kyrgyzstan and Tajikistan, for example, ITC advisory services on the implementation of ISO 22000 standards have enabled the export of agro-processed foods to Germany. This approach was further refined in Bangladesh where trainer-cum-counsellor competencies were upgraded to enhance post-project sustainability, and some companies were certified to ISO 22000:2005, *Food safety management systems – Requirements for any organization in the food chain*.

Stronger conformity assessment

However, SMEs in many developing countries also need access to standards or to competent conformity assessment services. ITC has provided technical assistance to review the quality or SPS infrastructure in several countries, including Armenia, Bangladesh, Chad, Kyrgyzstan and Tajikistan, that aims to develop roadmaps for improvement.

With a view to enabling SME access to competent testing and certification services, ITC has assisted several countries in reinforcing their conformity assessment services to meet the accreditation requirements of ISO International Standards (ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*, or ISO/IEC 17021:2011, *Conformity assessment – Requirements for bodies providing audit and certification of management systems*).

For example, one certification body in Uzbekistan has been assisted to become an accredited ISO 9001 certification body, while two laboratories for the testing of food and agricultural products in Tajikistan have been accredited to ISO/IEC 17025.

SMEs play their part in alleviating poverty.

Another example of ITC's support to SMEs is the assistance it provided to the competent authorities of certain countries making it possible for small businesses in the fishery sector to export their products to the European Union. This has been the case for the competent authority in the Philippines.

Vital role for SMEs

Although SMEs have an important role in poverty reduction programmes due to their potential contribution to economic growth, they also face challenges in finding and entering markets. But by improving their access to information on technical regulations and standards, assisting them with meeting the requirements of International Standards and improving their access to competent conformity assessment services, SMEs can thrive in an increasingly competitive global market and, at the same time, play their part in alleviating poverty. ■

About the authors

Khemraj Ramful is Senior Adviser in charge of the Export Quality Management programme at the International Trade Centre (ITC) in Geneva. Before joining ITC, he was Director of the Legal Metrology Services in Mauritius, Director of the Mauritius Standards Bureau, and Board Member of the Mauritius Research Council, and has been a member of the Mauritius Accreditation Service Advisory Council. He has also been very active working on different assignments in the field of standards and quality. Mr. Ramful holds of a degree in Physics as well as an MBA.

Ludovica Ghizzoni is an adviser on Export Quality Management at the ITC in Geneva. Since joining in 2004 as Associate Expert, she has designed and implemented training programmes and advisory services to enterprises and conformity assessment bodies in developing countries to help them meet requirements in export markets and overcome technical barriers to trade. Ms. Ghizzoni has a Bachelor's degree in Environmental Engineering.

© ISO Focus+, www.iso.org/isofocus+

Participants at the first meeting of ISO/TC 267.

Facilities management open for business

A new ISO technical committee, ISO/TC 267 on facilities management, held its inaugural meeting in November 2012 in Berlin, Germany. Twenty-seven delegates from nine countries representing the Americas, Asia, Europe and Oceania attended the meeting at which the committee's first two working groups were created. One group, led by Paul Stadlöder from Germany, will compile a compendium of core terms and definitions helping to define facilities management on a global level. The other, under the Convenorship of Olav Saeboe from Norway, will tackle the subject of facilities agreement. Both working groups will meet again next spring to review progress.

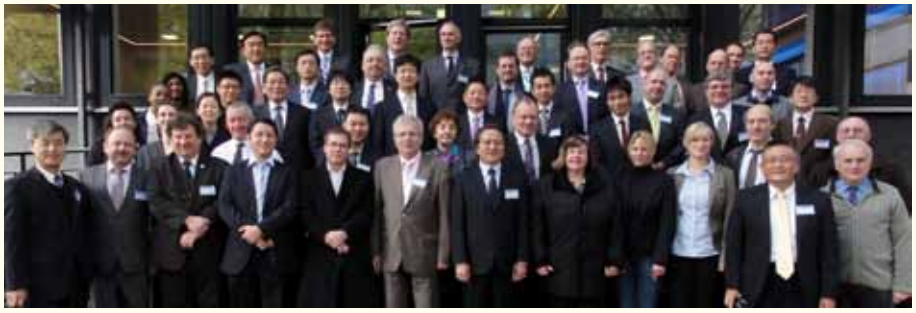
It was agreed that ISO/TC 267 would focus on developing a strategic business plan, highlighting potential areas for future international standards on facilities management that are relevant to senior executives in the areas of commerce, government and industry.

ISO/TC 267's next meeting is scheduled for September 2013, in Tokyo, Japan.

All aboard for railway standards

A new ISO technical committee, ISO/TC 269 on railway applications, held its first meeting in Berlin, Germany, in October 2012 – exactly 177 years after the first German steam train ran between Nuremberg and Fürth.

Fifty delegates came together for the meeting, which was opened by Rüdiger Marquardt, Deputy Director of DIN, the ISO member for Germany, and Dr. Alois Weschta, Chairman of the DIN/FSF Advisory Board. Franco Cavalliere, Chairman of IEC/TC 9 on electrical equipment and systems for railways, and Keith Rose, Chairman of CEN/TC 256 on railway applications, as well as representatives of the International Union of Railways, were also present.



The first ISO/TC 269 meeting was attended by 50 delegates.

The meeting focused on organizational issues. A presentation on ISO rules was given, and the Strategic Business Plan proposal, which was handed out before the meeting, was discussed. Jan Anders from Germany was appointed Liaison Officer for ISO/TC 269 and IEC/TC 9. The committee also created a Chairman Advisory Group as well as three Survey Groups that will work specifically on devising generic standards and projects on the areas of HVAC (heating, ventilation, and air conditioning) systems and calculations for braking systems.

A welcome drink on the roof garden of the DIN building and a boat trip through the city of Berlin added a social note to this dynamic event.

ISO/TC 269 will hold its next plenary meeting in Tokyo, Japan, in November 2013.

From left to right : ***Dr. Gerhard Hartmann***, *Managing Director of Austrian Standards,* ***Dr. Heinz Fischer***, *Austria's President,* ***Dr. Boris Aleshin***, *ISO President,* ***Dr. Friedrich Smaxwil***, *CEN President, Univ.Prof.* ***Dr. Walter Barfuss***, *President of Austrian Standards, and* ***Terry Hill***, *ISO President-elect.*

Austrian Standards Meeting Centre inaugurated

The then ISO President, Boris Aleshin, and ISO President-elect, Terry Hill, attended the official opening of the new Meeting Centre of Austrian Standards (AS) in October 2012.

Austria's President, Heinz Fischer, and Austrian Standards' President, Walter Barfuss, and Managing Director, Gerhard Hartmann, as well as a hundred high-profile guests from the fields of business, administration and science from 10 countries were also present at the inauguration.

In his address, President Heinz Fischer expressed the popular belief that " At first glance, standards are tedious and restrictive, but in fact, they are invaluable tools that make everyone's life easier."

ISO President-elect Terry Hill highlighted the Austrian member's innovative spirit, while ISO Vice-President (technical management) and AS Vice-Director Elisabeth Stampfl-Blaha, who also attended the ceremony, stressed the international orientation of Austrian Standards. With around 1 000 meetings each year, the new centre will welcome around 50 000 guests from Austria and abroad who contribute to the development of national, European and international standards.

Cosmetics success

Over 70 participants from 18 countries and two liaison organizations attended the 12th plenary meeting and parallel working group of ISO/TC 217, *Cosmetics*, which took place in Florianopolis, Brazil, in October 2012. The event was hosted by ABNT, the ISO member for Brazil, and the Brazilian Association of the Cosmetic, Toiletry and Fragrance Industry (ABIHPEC).

Future projects relating to microbiological standards and limits, analytical methods, sun

Award holders and representatives of ISO and UNMZ. First row from left: ***Milan Holecek****, UNMZ President,* ***Elisabeth Stampfl-Blaha****, ISO Vice-President (technical management),* ***Zdenka Buresova****, UNMZ External Relation Manager* (first from right). Second row from left: ***Jiri Kratochvil****, UNMZ Director of Standards Department.*

90th anniversary of Czech standardization

ISO's Czech member, the Czech Office for Standards, Metrology and Testing (UNMZ), celebrated 90 years of Czech standardization in the ancient Bethlehem Chapel in Prague in December 2012.

ISO Vice-President (technical management) Elisabeth Stampfl-Blaha attended this memorable occasion along with over 200 participants from industry, public administration, and the world of standardization. She congratulated the Czech member, stating that "The international network of standards bodies is an invisible global 'smart grid' which enables the flow of knowledge among various countries, various economic systems, various stakeholder groups, various perspectives."

Dr. Stampfl-Blaha also pointed out that "the customers of standardization systems are more and more demanding", requesting electronic management of their standards collections, easy 24-hour access to their working documents, the latest version of the standard, and so on. Finally, she asserted the need for strong cooperation between ISO and other standards organizations (IEC, ITU, ASTM, etc.), between ISO and its members, and between the members themselves.

Recitals by contemporary Czech violinist Jaroslav Svěcený and Markéta Mátlová, a young soprano, as well as a special awards ceremony pleasantly rounded off the event.

Taking the measure of particle characterization

ISO technical committee ISO/TC 24/SC 4 on particle characterization held its 43rd meeting in November 2012 in Tokyo, Japan. The meeting was held in conjunction with POWTEX TOKYO 2012, an international trade exhibition on powder technology, a science which finds wide application in the fields of metallurgy, the automotive industry, medical technology, aviation and aerospace, and electronics, to name but a few.

Sixty-eight delegates attended the meeting. All working groups (WGs), with the exception of WG 15, met and continued their work on standards in their particular field of activity, covering such areas as the representation of analysis data; sedimentation; classification; pore distribution and porosity; laser diffraction methods; dynamic light scattering; image analysis methods; single-particle light interaction methods; small-angle X-ray scattering methods; sample preparation and reference materials; electrical mobility and number concentration analysis for aerosol particles; acoustic methods; characterization of particle dispersion in liquids; and methods for zeta potential determination. Future areas of interest will include control of dispersibility, determination of particle density by sedimentation methods, and preparation of particulate reference materials.

ISO/TC 24/SC 4's next meeting will take place in April 2013 in Clausthal-Zellerfeld, Germany.

ISO Secretary-General Rob Steele speaking at the ISO/TC 176 plenary.

Spotlight on quality management

ISO Secretary-General Rob Steele attended the 29th plenary meeting of ISO/TC 176 on quality management and quality assurance systems, which took place at the Park Inn by Radisson Pulkovskaya Hotel Conference Centre in Saint Petersburg in November 2012.

As ISO's largest technical committee, ISO/TC 176 is a key player on the International Standards scene and in charge of the ISO 9000 series, an immensely popular family of standards that includes the high-profile ISO 9001. In his opening address, Rob Steele stressed the importance and relevance of ISO 9000 in today's world and emphasized the need to remain customer-focused.

Four think-tank workshops were offered during the meeting on such issues as vocational training management and technology-enhanced learning, portfolio review, electoral assurance, and continuous improvement assurance. The committee week included a visit to the Baltika Breweries, a high-tech leader on the Russian beer market, which also sponsored the event.

The next meeting is scheduled to take place in November 2013 in Oporto, Portugal. ■

protection test methods, and basic terminology for the cosmetics industry were the order of the day. The plenary approved all the resolutions of the ISO/TC 217 working groups and reviewed proposals for new work items on the detection and quantitative determination of Diethanolamine by GC/MS (gas chromatography-mass spectrometry) and on stability testing of cosmetic products.

ISO/TC 217 comprises 41 participating countries and 21 observers. Its secretariat is held by ISIRI, the ISO member for the Islamic Republic of Iran.

Participants at the ISO/TC 217 plenary meeting.

© ISO Focus+, www.iso.org/isofocus+

Integrated management systems

What's in it for SMEs?

by Dick Hortensius

Yearly surveys on the application of ISO management system standards (MSSs) show a steady worldwide increase in certifications based on ISO 9001 (quality management) and ISO 14001 (environmental management). However, while these surveys do not indicate the size of the organizations that have implemented the standards, experience in the Netherlands and other countries shows that a growing number of small to medium-sized enterprises (SMEs) implement multiple MSSs, though some face difficulties in doing so and need help.

Why do SMEs implement integrated management systems?

The main reason is that many SMEs are suppliers to large companies that impose quality and environmental requirements on their supply chain. In many cases, these requirements can only be met by implementing a management system and being certified. Also, governments apply quality, environmental and even sustainability criteria in their purchasing and procurement activities. SMEs are therefore forced to implement quality and environmental management systems to stay in business.

What are the difficulties and how can ISO help?

Although MSSs are applicable to any organization, regardless of type and size, it is generally acknowledged that SMEs face specific difficulties when implementing these standards, particularly when implementing multiple standards together. The reasons are manifold and partly outside the influence of ISO and its member bodies, such as limited resources (money, time, people). However, there are also reasons related to the standards themselves where ISO and its member bodies can help make life easier for SMEs.

The first reason is that MSSs are written in a language that can be quite difficult to understand and may contain elements that suggest the systems are bureaucratic and intended only for large organizations. In response, ISO has published *ISO 9001 for Small Businesses. What to do*[1] that explains each ISO 9001 requirement in easy-to-read language and provides examples on how SMEs should implement them. Similar publications exist for environmental, food safety and information security management systems.

A management system is a tool to help achieve organizational objectives.

The second is that the various ISO MSSs are based on different models, specify different elements, and state similar requirements in different wording. Although the standards are compatible and the models are not contradictory, this does not make life easy for an SME wishing to implement the

1) *ISO 9001 for Small Businesses. What to do* is available from ISO member institutes and from the ISO Central Secretariat.

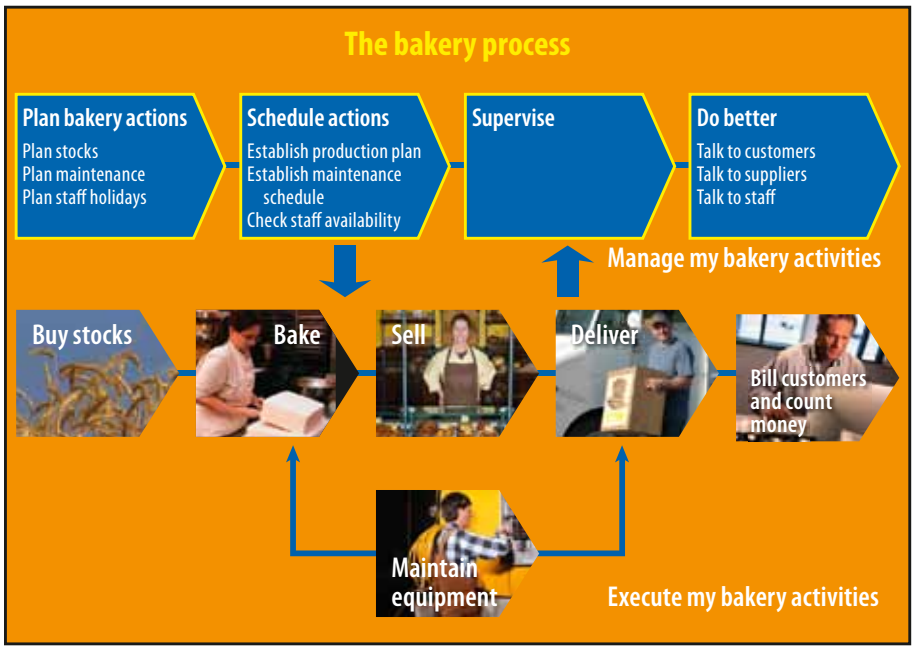


Figure 1 : *In a case study from the ISO handbook,* The integrated use of management system standards*, Jim the Baker follows a clear pathway to integrated MSS implementation and, by applying sound management supported by MSSs, his business expands to provide catering services for large organizations.*

standards in an integrated way. Recently, ISO has taken important steps to improve MSS alignment by defining the structure and core requirements that apply to any management system. This will certainly assist not only SMEs but all organizations in applying multiple MSSs to their business processes.

Integrated use of MSSs

The ISO handbook *The integrated use of management system standards*[2] addresses both of these standards-related reasons as to why SMEs struggle with the implementation of quality and environmental management. In essence, it clearly shows how the management system elements specified in abstract language are related to an organization's daily operational and management processes.

It also provides a clear pathway for integrated MSS implementation. The manual uses the imaginary case of Jim the Baker to illustrate the approach. Jim runs a bakery in the centre of a small town; by applying sound management, and supported by management system standards, his business expands to provide catering services for large organizations (see **Figures 1** and **2**).

The handbook shows how the formal elements of a single management system are related to the processes and managerial activities of a shop employing six people, and how multiple MSS requirements are related to, and support, a medium-sized catering company with a regional scope. In addition to this imaginary example, the book contains many real-life illustrations taken from case studies included in an accompanying CD-ROM.

Key factors for successful MSS implementation in an SME

There are many factors that influence the success of MSS implementation by an SME – those below are also addressed extensively in the ISO handbook.

1. *Stick to your existing management system*

Any organization that stays in business and is able to provide products and services to its customers operates a management system, however lean or informal. This system, in whatever form, should be taken as the basis and starting point for implementing an MSS such as ISO 9001. Implementing ISO 9001 does not mean you "build" a (new) quality management system, but that you evaluate your current management practices against ISO 9001 requirements, and adapt and add where necessary. Therefore, every management system is unique and an organization should not buy a handbook from the Internet or apply standard procedures provided by a consultant. The risk is that these tools may not fit, will add bureaucracy, will not be seen by employees as adding value — and are only likely to be activated when the annual certification audit is imminent!

The difficulty is to link abstract requirements to real-life processes and management practices. Once an organization has been able to do this, the extent to which the

2) *The integrated use of management system standards* is available from ISO member institutes and from the ISO Central Secretariat.

© ISO Focus+, www.iso.org/iso

requirements are already being met – and what must still be done by adapting and not by rebuilding – becomes clear. Informal management practices sometimes need to be formalized (for example, some records should be maintained to demonstrate that things have been done), but in many cases this contributes to the effectiveness and efficiency of the operations, and thus adds value to the organization. **Figures 1** and **2** show how this approach is visualized in the ISO handbook.

2. *A management system is not identical to documented procedures*

A management system is a tool to help achieve organizational objectives. Any measure taken should be consistent with the basic objective of the system: does it help in doing a better job, in being more successful, and in achieving the business plan? There are many measures that can contribute to this objective, for example raising personnel competence, adopting "foolproof" technical devices, using pictograms, handy forms to check and fill out (which later become records as well), etc. However, one should hesitate before establishing extensive documented procedures, especially in SME situations, because in many cases this does not align with organizational culture and daily practices.

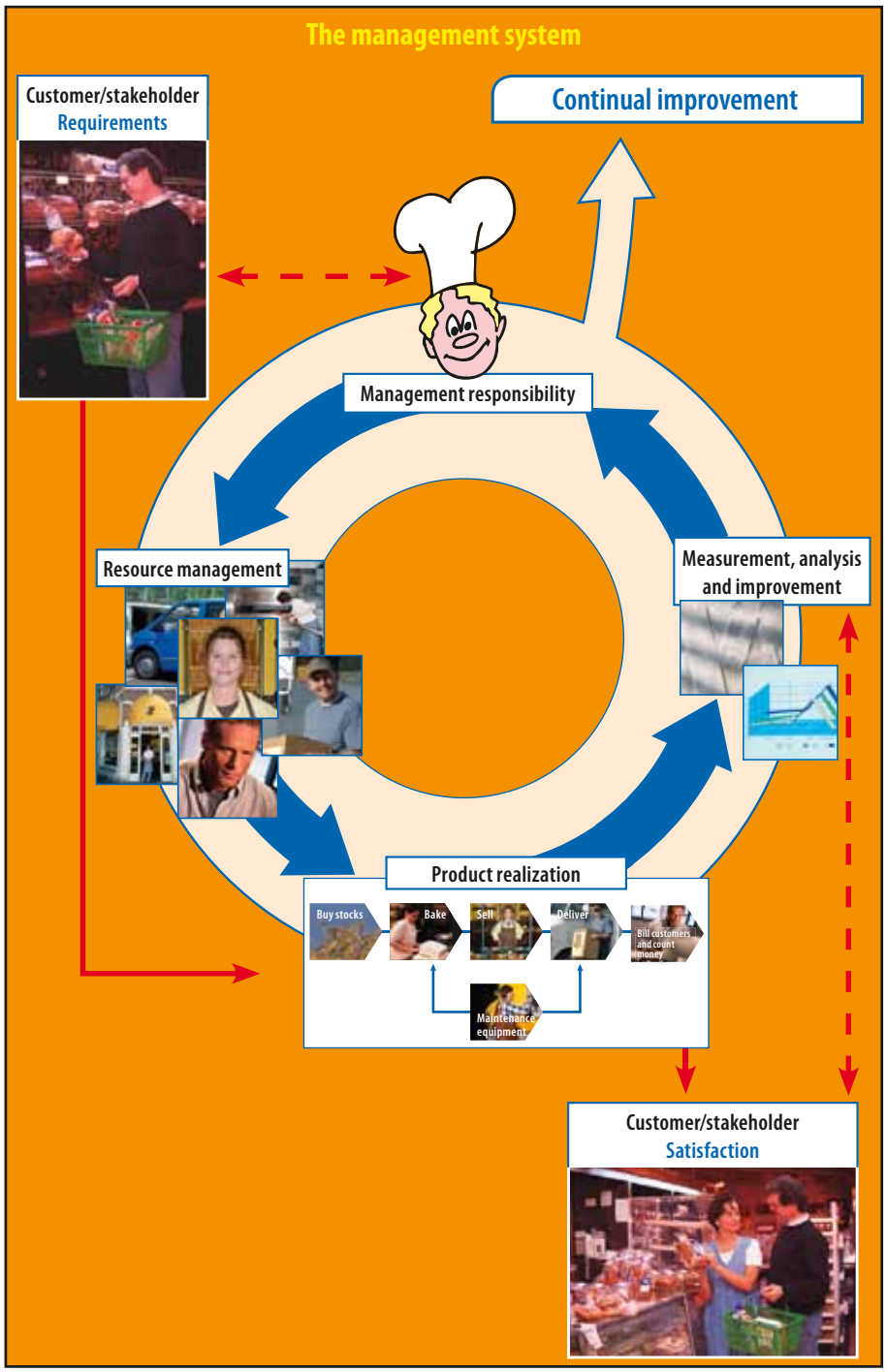


Figure 2: *In his path to continual improvement and customer/stakeholder satisfaction, Jim the Baker succeeds in linking abstract MSS requirements to his real-life processes and management practices.*

3. *Look for the commonalities between different MSSs*

Although worded differently, all MSSs are based on the same fundamental concepts:

- Process management and control: ensure that processes deliver the intended results and that applicable requirements are complied with
- Plan-Do-Check-Act approach to management and process control: establish objectives, define the processes needed, monitor progress and compliance, take action where necessary, and consider improvement opportunities
- Risk management: identify the risks that provide threats and opportunities, and implement controls to minimize negative effects on performance and maximize potential benefits

Quality management carries the risk that customers are not satisfied and that quality-related (legal and customer) requirements are not met. The risk in environmental management is that the environmental performance does not meet legal requirements, stakeholder expectations and/or the organization's own policy objectives.

Effective implementation of management system standards by SMEs is key.

MSSs specify very similar elements based on these concepts that should be part of the organization's overall management system. Considering the requirements of the standards with these basic concepts in mind will assist SMEs in interpreting and applying them in an integrated way.

4. *Keep it simple*

Less is better and small is beautiful in many situations where management systems are implemented – especially for SMEs. By keeping the first three key factors in

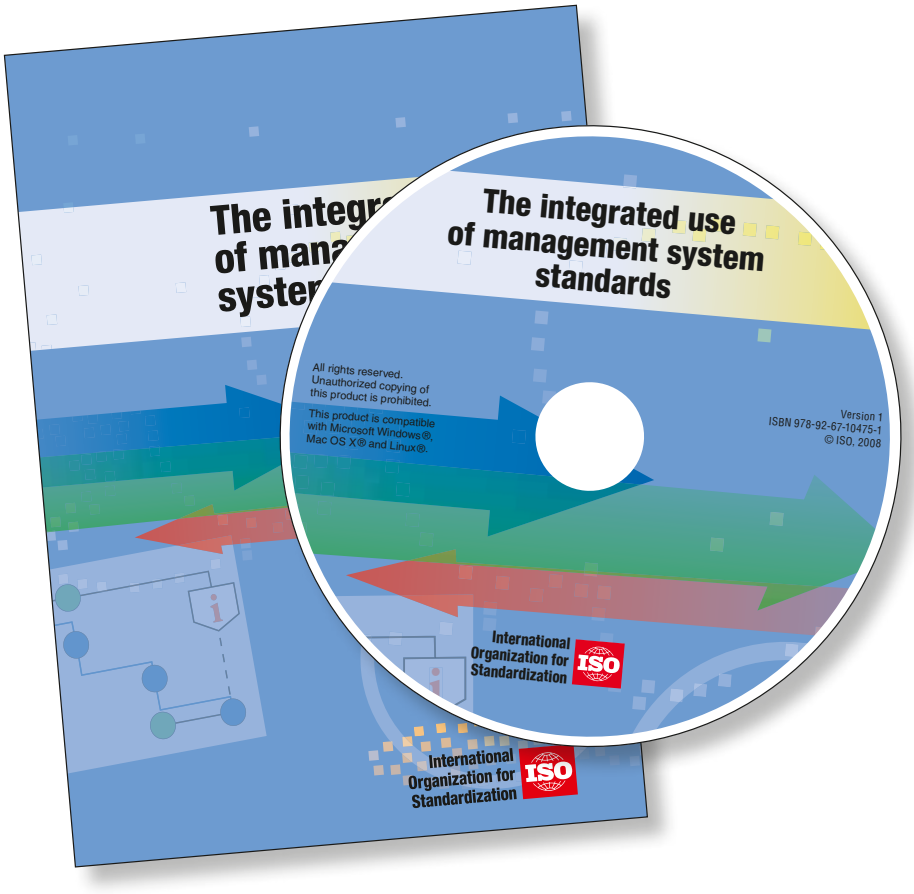
mind, SMEs should be able to adapt the system to suit the size and complexity of the organization. It is possible to conform to the requirements of ISO 9001 and ISO 14001 without extensive documentation.

ISO can help make life easier for SMEs.

Flowcharts and forms are in many cases more effective than documented procedures, and records often provide more added value than process descriptions. Specifying *what* to do is preferable to describing *how* to do it, and can be done more concisely. It is important that the design of controls be in line with the culture of the organization and the level of competence of the personnel.

Not just for large organizations

Management systems and MSSs are not just tools for large organizations. Given the trend towards outsourcing activities and the growing importance of cooperation in the value chain, effective MSS implementation by SMEs is of key importance in facilitating trade and promoting sustainable development.



ISO MSSs can be implemented in an integrated way by SMEs, and can add value to their businesses as long as some key factors for success are taken into account. ISO has already published useful SME guidance and will develop its future standards in a way that facilitates the implementation and integration of multiple standards. ■

About the author

Dick Hortensius works as a Senior Standardization Consultant for NEN, the Dutch member of ISO. He has extensive experience in International Standards development projects, training, consultancy and publications in the field of management systems and related subjects. He is responsible for the secretariat of ISO technical committee ISO/TC 207/SC 2 on environmental auditing.

Singapore

How International Standards helped HISAKA grow

ISO 9001 certification has facilitated regional expansion for HISAKA into markets such as China and India.

Established in Singapore in 1992, HISAKA has transformed into a leading automation solutions provider in the Asia-Pacific region, specializing in mechanical motion products.

The Group's principal activities can be broadly classified into services and manufacturing segments, with supply chain management forming an integral part of both. The services segment consists of mechanical motion components management while the manufacturing segment is made up of metallic precision manufacturing and mechatronics integration.

Under supply chain management, the Group provides customer-centric value-added services such as logistics and inventory management, administration and customer service management, and technical support services.

***Jackie Cheng** is the Chief Executive Officer (CEO) of the HISAKA Group, and assumes overall responsibility for its management and business development. He was invited to join HISAKA in 2002 to manage the company's investment portfolio, and was the Vice-President of Sales and Marketing before his appointment as CEO. Mr. Cheng successfully listed HISAKA on the mainboard of the Singapore Stock Exchange in 2008, and the Taiwan Stock Exchange in 2011.*

The following case study illustrates how International Standards, specifically ISO 9001, can be a valuable tool for small and medium-sized enterprises (SMEs), in general, and HISAKA, in particular.

"Punching above their weight"

"ISO 9001 for quality management has served HISAKA well, especially since we have grown into a medium-sized company. Our quality management system provides clear guidance to existing and new employees on our procedures, controls and improvements," says Jackie Cheng, CEO of HISAKA, a Singapore-based precision engineering firm.

Mr. Cheng sees standards as an important way for smaller companies to punch above their weight, as they work to establish themselves in the market and expand their operations.

"In Asia, applying International Standards and quality management systems is an accepted prerequisite for most established businesses. The ability and willingness to conform to international quality criteria gives a business instant credibility and accountability, especially for SMEs," he adds.

HISAKA is a testament to this view, having grown significantly in the past decade. From a headcount of around 20 and revenues of less than SGD 10 million (USD 8.2 million) in 1999, the company now employs more than 130 staff and boasts an annual turnover of close to SGD 70 million (USD 57.2 million). It has also expanded its operations beyond Singapore to include offices in Shanghai and Suzhou in China, and Chennai in India.

Improving practices

In the precision engineering sector, quality is a critical factor, making standards such as ISO 9001 all the more important. For HISAKA, standards played an important role in the company's evolution from a trading firm providing mechanical parts to Japanese and American multinational corporations based in Singapore to a leading automation solutions provider across the Asia-Pacific region.

> *ISO 9001 certification has facilitated regional expansion.*

Mr. Cheng notes that standards helped the company and its management understand what needed to be in place to deliver sustainable quality and growth. "International Standards provide critical guidance to SMEs such as ourselves when they are formulating business procedures, controls and improvements. They serve as yardsticks for SMEs to verify and test their processes and procedures, and have them independently inspected."

One area that has improved significantly as a result of ISO 9001 is the documentation of processes. Prior to the company's certification, there were fewer controls and less accountability in HISAKA's processes than there are today, largely due to a lack of documentation. By introducing documentation requirements, the company has seen process improvements and enhanced product and service delivery.

The development of all future medical devices, including the latest digital stereo microscope system (above), would be much smoother with a stronger and more versatile quality system and workforce.

Mr. Cheng cites the processes involved in product failure as a clear example. In the past, incoming or outgoing product rejections were handled verbally or via e-mail. This, however, did not lend itself to effective analysis of the causes and the subsequent development of remedies or solutions. Following HISAKA's certification to ISO 9001, staff has to fill out forms to document the quality checks performed and capture the product failure data. The result has led to an improved ability to take corrective and preventive actions and, at the same time, to reduce or eliminate recurrence.

This is just one example of the improvements that ISO 9001 certification has brought the company. Indeed, its influence can be seen in all areas of the business, from customer engagement and product management to service delivery. "Our quality management system is now the backbone of our entire operation," adds Mr. Cheng.

Sending a strong message

While examples such as the rejection-handling process demonstrate how International Standards can help SMEs to develop good practices and stringent procedures, Mr. Cheng believes that they can also play an important role as a marketing tool for smaller companies looking to establish themselves in the market.

Positioned effectively, International Standards can be a valuable marketing tool for SMEs that, given their limited resources, may not have the ability to promote themselves to wider markets regionally or globally. The instant recognition of an ISO standard, for example, can raise the standing of a company in the eyes of potential customers, as it has done for HISAKA.

"In 1999, we decided to obtain certification to ISO 9001 to gain recognition from customers and suppliers that our procedures meet the standards of this certification, and to show that we have a quality management system in place to ensure quality products and services," Mr. Cheng explains.

He cites ISO 9001, with its stringent third-party auditing and certification process, as one of the most trustworthy and reliable indications of an organization's commitment to quality products and services, continual improvement and customer satisfaction.

> *International Standards can be a valuable marketing tool for SMEs.*

"An SME exhibiting the ISO logo on its letterhead or marketing collateral sends a powerful marketing message to potential customers and suppliers," says Mr. Cheng.

HISAKA attained ISO 13485 certification in 2011 in order to commercialize its first medical device – the Portable Blood Bag Warmer.

Expanding into new markets

Importantly, this message translates well in virtually any market around the world. Indeed, ISO 9001 certification is almost a prerequisite for large existing and potential customers and suppliers, both locally and internationally, notes Mr. Cheng.

Moreover, International Standards are a critical tool for overcoming technical barriers in international commerce caused by differences among technical regulations and standards developed independently by each country, national standards organization, or company. This international recognition means that companies looking to expand into new markets cannot afford to ignore standards.

For HISAKA, its ISO 9001 certification has facilitated regional expansion into markets such as China and India. However, it was another ISO standard that led to one

© ISO Focus+, www.iso.org/isofocus+

of the company's most exciting developments in recent years – its expansion into the medical devices sector.

As part of HISAKA's efforts to capitalize on new growth opportunities and create new streams of revenue, it collaborated with Singapore's Agency for Science, Technology and Research (A*STAR) to commercialize its first medical device, the Portable Blood Bag Warmer system. A key milestone was attaining certification to ISO 13485 for quality assurance in medical device design and manufacturing in 2011.

"ISO 13485 for quality management systems of medical devices is a mandatory standard for HISAKA as the company diversifies into the medical space. Getting there was not easy as there were a number of requirements that were very strict and unique to medical devices. Along the way, we devised, developed and improved our quality management system, as well as training and equipping our employees with new and improved knowledge and skills," explains Mr. Cheng.

HISAKA emerged from the certification exercise with a stronger and more versatile quality system and workforce. This has paved the way for the development of new medical devices, including a digital stereo microscope system, which is in the process of being commercialized.

Implementing standards

The effort that goes into certification can sometimes turn a company off. In HISAKA's case, Mr. Cheng says that employees found it a hassle to adapt to the new or additional procedures and forms, but notes that it was simply a natural resistance to change. By clearly communicating the importance of standards to employees, the management was able to get their buy-in to the need for a more structured approach to quality assurance.

Companies looking to expand into new markets cannot afford to ignore standards.

"As we grew bigger, our employees recognized that information must be documented and shared, and that the company could only function effectively with a clear and standardized procedure to eliminate mistakes and inconsistencies," says Mr. Cheng.

Employees also came to realize that standards are prized by the industry and would be a solid competitive advantage for the company – an advantage that has played an important role in HISAKA's ongoing success and bright future prospects. ■

HISAKA Singapore is a leading automation solutions provider in the Asia-Pacific region, specializing in mechanical motion products.

United Kingdom and Japan

ISO/IEC 27001 brings major benefits and savings to IIJ Exlayer Europe

by Manabu Yamamoto and Edward Humphreys

IIJ Exlayer Europe Ltd. is a Japanese information technology services provider based in London. Formed in 2001, the company provides project management services such as office relocation, system integration services such as the building of geographically dispersed international network systems, and on-site and remote support services.

In addition, IIJ Exlayer Europe provides a wide range of outsourcing and cloud-based services, and offers business and Web-based application development. Its consultancy services include assisting customers with achieving certification to ISO 9001 for quality management and ISO/IEC 27001 for IT security management.

The following case study illustrates how ISO/IEC 27001 certification is proving popular among small and medium-sized enterprises (SMEs) in general, and IIJ Exlayer Europe in particular.

Act to prevent

IIJ Exlayer Europe's own management system is certified to ISO 9001 and ISO/IEC 27001, and also conforms to ISO 22301 for business continuity management. Its integrated management system (IMS) covers all three standards.

The company believes that a management system is actually a management philosophy. Its directors have therefore wholeheartedly embraced the Deming principles of Plan-Do-Check-Act, including in all meetings of the Board.

IIJ Exlayer Europe has a paperless office. The documented information required by the standards is maintained in a database and presented to the reader via a browser interface. To do this the company uses *IMS-Smart* technology and has embraced the *IMS-Smart* management system philosophy.

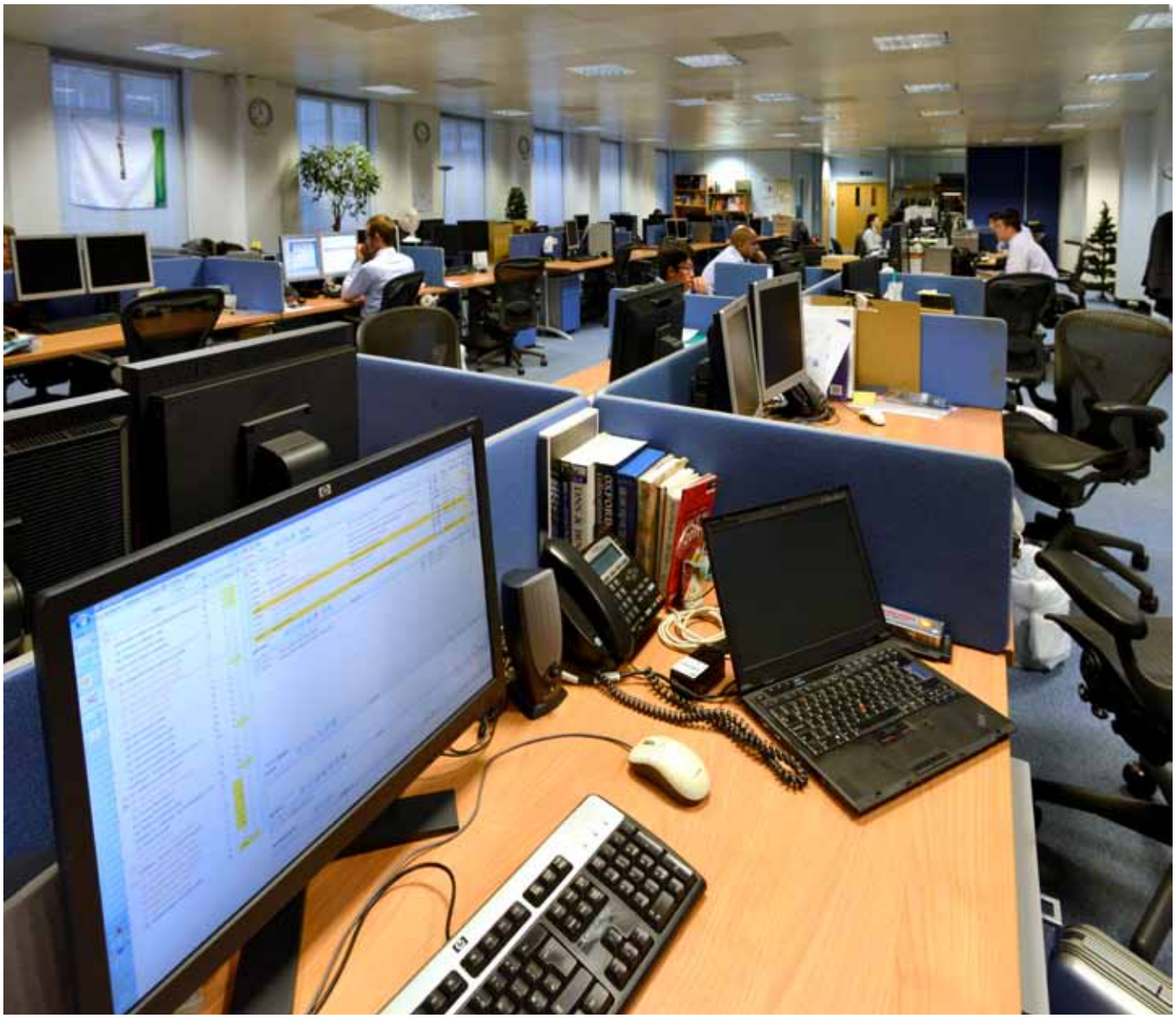
Part of this philosophy is a powerful scenario-based risk assessment/risk treatment method that analyses the likelihood of a quality, security and disruptive event occurring, and its consequences. Since results are expressed in terms of business, it is a useful management tool.

ISO/IEC 27001 is making the corporate world a safer and more secure place.

By regularly using *IMS-Smart*, IIJ Exlayer Europe's directors have taken ownership of the risk management problem and its solution. It is then a simple matter to accept responsibility, through the review and audit functions, of the check and act processes. This ensures that the management system delivers on their expectations.

A particular use of the *IMS-Smart* risk assessment/risk treatment method has been to identify and design IIJ Exlayer Europe's

© ISO Focus+, www.iso.org/isofocus+



A secure open-office workspace at IIJ Exlayer Europe.

quality controls. Starting with the product life cycle, the directors identified what could go wrong and how it could be prevented, or otherwise detected in enough time to act to prevent an undesired consequence.

ISO/IEC 27001 can bring major benefits and savings.

These quality controls are enforced through an in-house-developed workflow application called ExJob. From its inception as a customer enquiry, a project cannot be progressed to the next stage until the responsible manager, sales person or engineer has performed the necessary work and obtained the necessary approvals. ExJob covers all marketing, sales, engineering and support activities, including goods inwards and billing.

Staff competence and training is dealt with by an equally sophisticated in-house-developed application called ExSas.

Management strategy

IIJ Exlayer Europe's directors first took an interest in management systems in 2003. At the time, particularly as a new company, they saw it as a means to gain credibility in the market and decided that a management system approach would be best. They started by buying an off-the-shelf management system for a few thousand pounds.

However, the directors realized that their products and services were actually outside the scope of their bought management system. They also had to review their strategy

Business benefits

Over the past few years, businesses, governments and other organizations have found that ISO/IEC 27001 can bring major benefits and savings. For example, a certified organization's customers, trading partners and stakeholders are usually comforted to know that it is protecting the confidentiality, integrity and availability of its customer and its own personal information.

The ISO/IEC 27001 certification process itself demonstrates credibility and trust in the organization's implementation of an information security management system, adherence to relevant laws and regulations, and complete commitment to information security.

ISO/IEC 27001 is making the corporate world a safer and more secure place in which to do business. The standard benefits large organizations and SMEs (small and medium-sized enterprises) alike.

after the management system failed to deal with a major quality incident.

What they really needed was an integrated quality and information security management systems implementation based on ISO standards that could be independently audited by a third party. This would demonstrate their quality and information security, validated by a certificate of conformity.

High-level management commitment to implementing information security management systems.

This new recognition led to a change of management system strategy in 2007, when they hired a consultancy and the managing director became a full-time member of the management system development team.

IIJ Exlayer Europe's certified IMS has come a long way.

The ISO/IEC 27001 component of IIJ Exlayer Europe's new IMS was certified in 2008, and the ISO 9001 component in 2009. The company successfully underwent its triennial reassessments in August and December 2011.

IIJ Exlayer Europe enjoys an excellent working relationship with its chosen certification body. The directors look forward to the two surveillance audits each year, as they provide further opportunities to identify potential improvements.

Greatest benefits

IIJ Exlayer Europe's certified IMS has come a long way and will of course continue to develop. It has generated respect both in the market and with the management of IIJ Exlayer Europe's parent company.

For IIJ Exlayer Europe, ISO/IEC 27001 has provided:

- A framework for better overall company management
- A stronger customer focus, leading to the better exploitation of business opportunities
- Sound risk management, particularly in the key area of information security
- Greater security by ensuring thorough preparations for a disaster. ■

About the authors

Manabu Yamamoto is Managing Director of IIJ Exlayer Europe.

Prof. Edward Humphreys is Convenor of the working group responsible for developing and maintaining ISO/IEC information security management system standards.

© ISO Focus+, www.iso.org/isofocus+

Canada

Improving project management for small projects

by Claude Y. Laporte, Frédéric Chevalier and Jean-Claude Maurice

A consulting firm, which is also one of Canada's largest engineering companies, has implemented an improvement programme which consists in defining and implementing new management processes for small-scale projects. This company provides a variety of engineering services to industrial and business companies, major institutions and municipalities. It is subdivided into five "divisions" or special business units.

Efficient project monitoring

The programme's objective was to avoid cost overruns and project delays, standardize practices to facilitate the integration of new managers, increase the level of customer satisfaction and reduce risk-related planning deviations.

The new series of standards, ISO/IEC 29110, *Software engineering – Lifecycle profiles for Very Small Entities (VSEs)*, was used to document the company's small- and medium-scaled project management processes, while the ISO Methodology was used to calculate the economic benefits of implementing ISO/IEC 29110.

The project management process improvement programme was targeted at one division of the company, which was created a decade ago and now boasts around 500 employees across 10 offices throughout Canada. As a relatively new entity, it had no efficient tools or project management processes suited to managing small-scale projects. The strong growth of the division in recent years made management aware of the need to improve its methods in order to remain competitive. For this reason, most of the projects managed by this division include project plans and cost-time estimates. In most cases, these projects involve updating or improving existing infrastructures. Hence the challenge of handling multiple small-scale, fast-moving projects allowing little room for unwieldy management processes, but still requiring an efficient and straightforward monitoring process.

The ISO Methodology was also used to calculate the economic benefits of implementing ISO/IEC 29110.

Managing projects of varying scale

Projects in this division are classified into three categories according to duration,

	Small-scale projects	Medium-scale projects	Large-scale projects
Project duration	Less than 2 months	From 2 to 8 months	Over 8 months
Team size	Up to 4 people	From 4 to 8 people	More than 6 people
Number of engineering disciplines involved	One discipline	One or more disciplines	More than one discipline
Engineering fees	Between CAD 5 000 and 70 000	Between CAD 50 000 and 350 000	Over CAD 350 000

Table 1: *Classification of the division's projects (CAD = Canadian dollar).*

size, number of disciplines involved and engineering fees. It was decided to subdivide the projects into three categories: small-, medium- and large-scale projects (see **Table 1**).

For this improvement programme, the company developed and implemented project management processes for small- and medium-scale projects.

The goal-problem approach developed by Potter and Sakry[1] was used to set the improvement programme's priorities and to ensure that the goals set by the programme addressed tangible problems that the company wished to solve. This approach includes the following steps:

- Identifying the business goals (see **Table 2**) and the problems that the company wishes to solve
- Grouping goals and problems
- Prioritizing problems
- Developing an action plan

Then, the managers grouped the problems relative to the different goals. Finally, they evaluated the goal priorities and cost for each improvement in order to prioritize goals and establish implementation phases for each one.

Moreover, a risk management plan was developed in order to prevent – i.e., reduce the probability and minimize the impact of – certain events on the project process.

Benchmark selection

There are several documents describing recognized practices for project management, among which guides such as *A Guide to the Project Management Body of Knowledge (PMBOK Guide)* published by the Project Management Institute, maturity models such as the *Capability Maturity Model Integration (CMMI) for Development* of the Software Engineering Institute, and standards such as the new ISO/IEC 29110 series for very small entities.

A meeting with the improvement programme project sponsors helped define a selection of criteria with a view to determining the most suitable project management benchmark for the company. The following criteria were selected:

- The benchmark is suitable for the management of small-scale projects (small team and limited means)
- The company's management knows the benchmark
- The benchmark is recognized by the company's customers
- Tools are available to facilitate the use of the benchmark
- The benchmark may easily be used and integrated into the existing processes
- A recognition mechanism through accreditation for the company is available
- Benchmark documents are readily available

Identification number	Description
0-1	Facilitate the integration of the new project managers.
0-2	Achieve a global customer satisfaction level of 80 %.
0-3	Meet the deadlines and costs planned for the projects, within a fluctuating margin of 5 % of all projects.
0-4	Reduce resource overload by 10 %.
0-5	As a consequence of poorly managed risks, reduce time delays to one week and cost overruns to 5 % of the initial budget.
0-6	Reduce corrective work during the quality control phase by 10 %.
0-7	Reduce non-chargeable time for resources by 10 %.

Table 2: *Division's business goals.*

Before analysing the selected benchmarks, each criterion was weighted by its importance according to the project sponsors' perception. ISO/IEC 29110 was the standard selected for the improvement project. Even if the company's division comprises more than 500 employees, a significant number of small-scale projects are carried out by separate teams focusing on one customer only. Since the ISO/IEC 29110 series applies to enterprises, organizations, departments and projects of up to 25 people, it is perfectly suitable for this company.

Management process

The simplest profile of the ISO/IEC 29110 series – the entry profile – was used as the basis for developing the small-scale project management process. The basic profile was used to develop the medium-scale project management process or for basic project management.

The project management practices used by the company's managers were assessed against the ISO standard's basic profile. **Figure 1** shows the results obtained. It displays the percentage of the tasks performed for each of the following activities of the ISO/IEC 29110 management and engineering guide:

- Project planning (15 tasks)
- Project plan execution (6 tasks)
- Project assessment and control (3 tasks)
- Project closure (2 tasks)

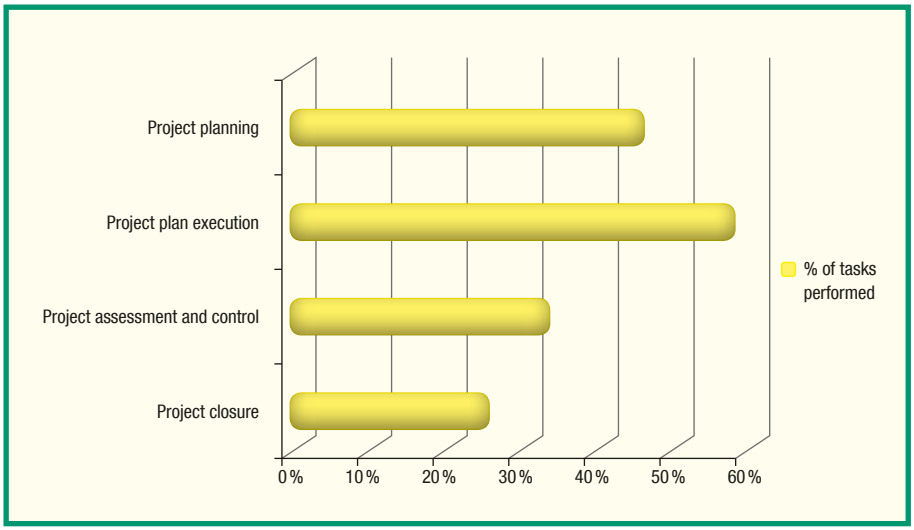


Figure 1: *Performance assessment of activities and tasks of the basic profile.*

1) Potter, N., Sakry, M., *Making Process Improvement Work*. Addison-Wesley – Pearson Education, 2002.

© ISO Focus+, www.iso.org/isofocus+

Value driver	Description	Performance indicators	Importance
Quality of the design process	Quality in terms of execution time, costs and quality of deliverables	Time spent on corrective engineering work. Cost overruns related to quality control. Guarantee of the company's long-term viability.	Very important (company viability) [1]*
Efficiency vs costs	Ability to complete the work at minimum cost	Meeting budgets allocated to each sub-project. Meeting overall project budget.	Very important (company viability) [1]*
Project management capacity	Capacity to manage projects according to plans	Cost performance indicator	Very important (completing projects is the company's core activity) [1]*
Technical expertise	Ability to solve complex problems	Schedule performance indicator	Important [2]*
Geographic positioning	Geographic proximity of customers	Resource usage time (additional time)	Average importance [3]*
Partnership	Capacity to initiate partnerships with other companies	Number of partnerships and recurring customers	Average importance [3]*
Flexibility	Capacity to adapt to different customer needs	Number of services provided and type of service compared with competitors	Important [2]*

* [Number] shows the degree of importance and the prioritization of each value driver (1 representing the highest importance).

Table 3 : *Table of value drivers.*

We note that a low level of implementation of ISO/IEC 29110 activities was achieved within the company at the beginning of the improvement programme. Also, during the interview with managers, we noted they were not performed systematically. In addition, the assessment revealed that practices varied from project manager to project manager, and that no guidelines had been defined for some of the tasks. A similar assessment against the entry profile was also carried out.

Development of processes

The development of processes and tools such as checklists and evaluation forms was the central element of the solution to the problems identified. These documents were published on the division's Intranet.

The three project management processes are as follows :

- Small-project management process
- Medium-project management process
- Major-project management process

ISO/IEC 29110 was selected for the improvement project.

Discussions with project managers of the organization revealed that they were often burdened with technical tasks in addition to managing the project. This situation often affected their ability to perform management tasks despite their level of expertise in project management. It was therefore decided that checklists might provide a useful tool for project managers for the following reasons :

- They are a good way to explain or briefly summarize the tasks to be performed by the project manager
- They help identify quickly the forms and templates available to perform the project management tasks
- They provide quick links to additional references
- The provide guidance to the project manager for storing the project management documents
- They provide an easy means of assessing the implementation of processes

Within the scope of this programme to improve project management practices, the following five checklists were developed :

- Small-project management process
- Medium-project management process
- Major-project management process
- Drafting of service proposals
- Detailed project planning

Pilot projects were carried out to test the solutions thus developed. Checking the solutions in the context of a real-life project helped verify that the proposed solutions were consistent, achievable and comprehensive. It was noted that project managers would appreciate examples of how to implement the tools.

Development of a deployment strategy

Once the final adjustments to the project management processes and tools had been made, a deployment strategy for the solutions was developed, covering the following three aspects :

- Communication aimed at informing project managers in order to dispel any concerns they may have and mitigate the negative impacts that may be generated by unknown situations during a

Functions	Activities	Impact number	Impact	Description	Prioritization [1-high, 3-low]	Performance indicator
Production	All activities	P-1	Better internal information transfer	The use of standardized documents and specifications enables a more efficient internal information transfer.	2	Meeting budgets allocated to each sub-project. Meeting overall project budget. Cost performance indicators.

Table 4 : *Example of impacts of ISO/IEC 29110.*

change programme. Different communication methods were used to inform all employees
- Training of project managers
- Dissemination of accepted solutions to the managers working in the company's various offices throughout Canada. The medium used to circulate the solutions was the corporate Intranet

ISO/IEC 29110 was used to document the company's project management processes.

Support of the ISO Methodology

ISO has developed "The ISO Methodology to assess and communicate the economic benefits of standards"; its key objectives are to provide:

- A set of methods that measure the impact of standards on organizational value creation
- Decision makers with clear and manageable criteria to assess the value associated with using standards
- Guidance on developing studies to assess the benefits of standards within a particular industry sector

The approach used by the company comprises four steps:

- Understanding the company's value chain
- Analysing the value drivers
- Identifying the impacts of standards
- Assessing and consolidating results

After discussion with the members of the company's governance board, the elements shown in **Table 3** were identified as the main value drivers for an engineering consulting firm.

The most significant impacts of the improvement programme on the company were then selected based on the Standards Impact Map of the ISO Methodology. **Table 4** provides an example of such impacts. The link between the impacts of standards used and the performance indicators identified during the previous step are also shown in this table.

An estimate of anticipated costs and benefits over a period of three years was made by the improvement programme project sponsors. **Table 5** shows the results for the first three years.

Description of the management process

The ISO/IEC 29110 management and engineering guide describes a project management process and an implementation process. The purpose of the project management process is to establish and carry out in a systematic way the tasks of the project in order to meet the objectives in the expected quality, time and costs.

During the project planning activity, the project plan is developed. Then, the process assessment and control tasks are used to assess the project's progress against the project plan. Action is then taken, if needed, to eliminate deviations from the project plan or to incorporate changes to the plan. The project closure activity groups together the deliverables produced by the implementation process, such as the software or the user manual, and gets the customer's written acceptance to finalize the project. A physical and digital repository is established to save the work products and to control their versions during the project.

A successful programme

The new ISO/IEC 29110 series enabled the engineering consulting firm to develop project management processes that offered a structured approach to its project managers. The actions required by such processes are restricted to the most essential ones, in order to limit the management effort per project.

The tools developed to support the project management processes proved very useful and helped the project managers rapidly integrate the knowledge required to execute the processes.

For the first time, the company has documented management processes for small-scale projects. Besides, some project managers have joined forces to promote project management practices within this engineering firm's division.

The improvement programme was so successful that managers of the company's other divisions have shown an interest in learning this approach in order to implement it within their respective divisions. ■

	Year 1	Year 2	Year 3	Total
Implementation and maintenance costs	CAD 59 600	CAD 50 100	CAD 50 100	CAD 159 800
Net gain	CAD 255 500	CAD 265 000	CAD 265 000	CAD 785 500

Table 5: *Anticipated costs and gains from the improvement programme (CAD = Canadian dollar).*

About the authors

Dr. Claude Y. Laporte is a Professor of Software Engineering at the *École de technologie supérieure*, Montréal, Canada (**www.etsmtl.ca/Professeurs/claporte/**). He is Project Editor of ISO/IEC 29110.

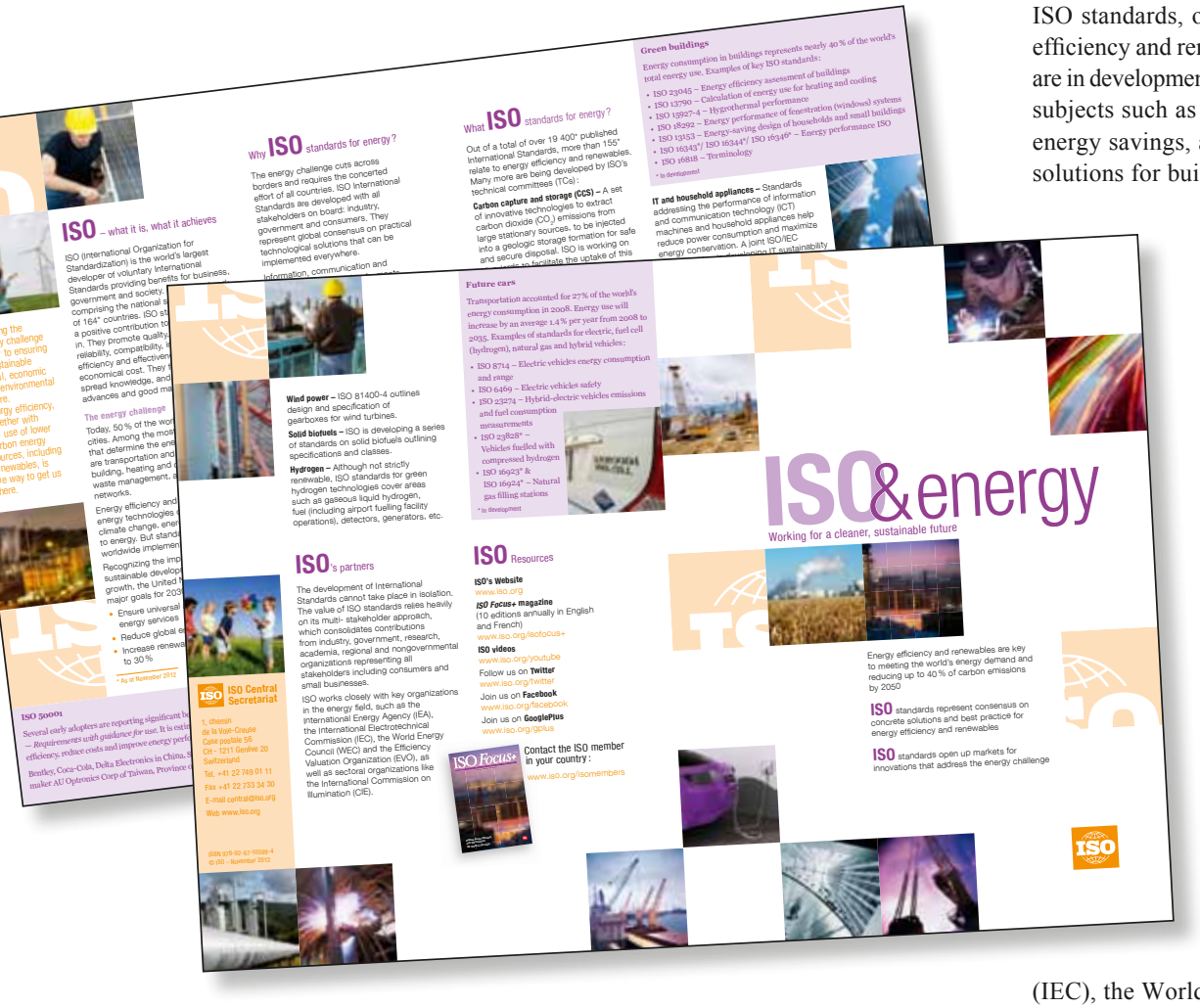
Frédéric Chevalier is an electrical engineer and project leader. He is the change agent of the intervention programme which consists in defining and implementing a procedure to improve project management practices for the engineering company.

Jean-Claude Maurice is an engineer and entrepreneur with 25 years of experience. A Senior Manager in the energy sector, he has managed a significant number of multidisciplinary projects. He is one of the project sponsors of the programme to improve project management practices for the engineering company.

© ISO Focus+, www.iso.org/isofocus+

Energy challenge

ISO standards offer solutions



by Maria Lazarte

ISO solutions for energy efficiency and renewables are the subject of a new brochure – *ISO & energy* – which provides a concise overview of International Standards available and how they can help.

Energy efficiency and renewables are crucial to meet the world's energy demand and reduce up to 40 % of carbon emissions by 2050, key for a sustainable social, economic and environmental future. The brochure argues that the energy challenge cuts across borders and requires the concerted effort of all countries.

ISO International Standards are developed with all stakeholders on board: industry, government and consumers. They represent global consensus on practical technological best practice that can be implemented everywhere. ISO standards help drive and disseminate innovative solutions in both developed and developing countries. They are therefore powerful tools for taking action on global challenges.

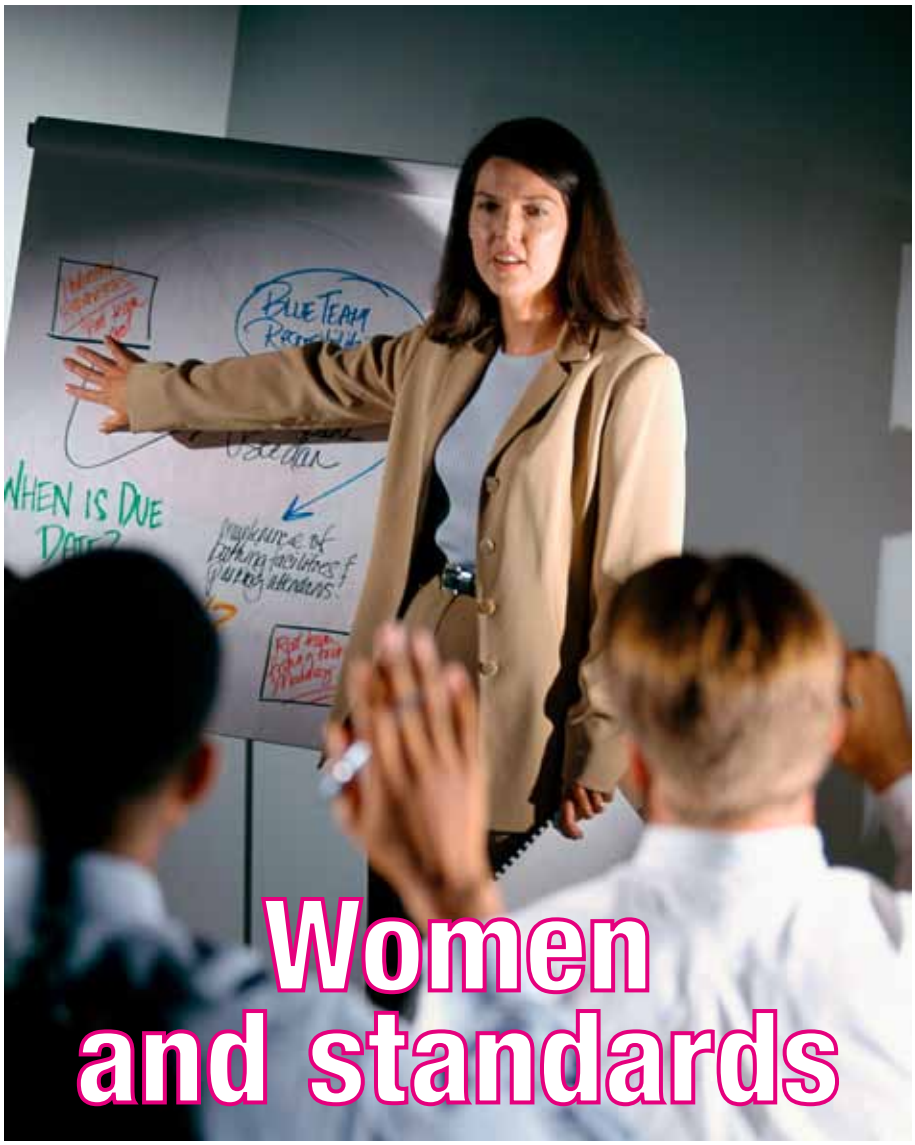
Out of a total of over 19 500 published ISO standards, over 155 relate to energy efficiency and renewables, and many more are in development. They cover both generic subjects such as energy management and energy savings, as well as sector-specific solutions for buildings, IT and household appliances, industrial processes and transport among others. ISO standards for renewables tackle subjects such as bioenergy, biofuels and solar power.

The brochure argues that because organizations can use ISO standards for energy and renewables to commit to sustainability, while saving costs and avoiding reinventing the wheel, they are also good for business.

ISO works closely with key organizations in the energy field, such as the International Energy Agency (IEA), the International Electrotechnical Commission (IEC), the World Energy Council (WEC) and the Efficiency Valuation Organization (EVO), as well as sectoral organizations like the International Commission on Illumination (CIE).

ISO & energy, published in English and French, is available free of charge from the ISO Central Secretariat through the ISO Store (**www.iso.org**) or by contacting the Marketing, Communication & Information department (**sales@iso.org**). It can also be obtained from ISO national member institutes. The brochure can also be downloaded as a PDF free of charge from the ISO Website. ■

Maria Lazarte is Assistant Editor, *ISO Focus+*.



Women and standards

To celebrate International Women's Day (8 March) and highlight their valuable contribution to standardization, the March 2013 issue of *ISO Focus+* will be dedicated to women standardizers.

Standardization has traditionally been a male-dominated field, but much has changed over time as more and more women take up the challenge, demonstrating leadership and skill.

This issue of *ISO Focus+* gives a voice to a selection of outstanding women, from CEOs of national standards bodies to experts in ISO technical committees. Although each has a unique story to tell, there is a common message: gender diversity enriches our work. What matters is not whether we are female or male, but the talent and contribution individuals bring to the field.

The issue comes on the heels of the International Labour Organization's announcement that women and girls are in danger of being shut out of careers in science and technology, such as engineering, computer science and physical sciences. Its findings demonstrate that women tend to be overrepresented in areas such as the humanities and social sciences.

Dr. Boni Mehlomakulu, CEO of the ISO member for South Africa, says, "Historically, women have not been encouraged to pursue careers in the sciences, so I take pleasure in hosting small groups of Grades 11 and 12 girl pupils in my office throughout the year. They get exposure to the work of SABS [South African Standards Bureau], learn about standardization and get exposure to the level of responsibility that comes with the Chief Executive position."

So while the stories told in the next issue of *ISO Focus+* emphasize progress, they also call for continued vigilance as the gender agenda continues to gain momentum. ■

Management systems

ISO 50001 win-win for Bridgestone

One of the latest companies to have gained ISO 50001 certification is the Bridgestone Americas Tire Operations (BATO) manufacturing facility at Wilson County, N.C., USA. Bridgestone also requires that all its manufacturing facilities obtain ISO 14001 certification, and, to date, 52 US sites have qualified.

The March 2013 issue of *ISO Focus+* features an interview with Letha Barnes, a Bridgestone electrical engineer and project manager for ISO 50001, on the process and benefits to the company. She says, "Since implementation of ISO 50001, team mates have been more conscious of how they can impact energy, and more proactive with submitting energy reduction ideas."

Find out more in the next issue of *ISO Focus+*. ■

ONLINE

ISO Focus+

The electronic edition (PDF file) of *ISO Focus+* is accessible free of charge on the ISO Website **www.iso.org/isofocus+**. In addition, the entire collection of previous issues of *ISO Focus+* editions, plus *ISO Focus* (2004-2009), plus *ISO Management Systems* magazine (2001-2009) is also available free of charge as electronic files.

ISO Update

The *ISO Update*, a monthly supplement to *ISO Focus+* is available electronically (PDF) in both English **www.iso.org/isoupdate** and French **www.iso.org/fr/isoupdate**.

The *ISO Update* informs readers about the latest developments in the ISO world, including ISO member bodies' CEO and address changes, draft standards under circulation, as well as newly published, confirmed or withdrawn standards. It also includes a list of upcoming technical committee plenary meetings.

© ISO Focus+, www.iso.org/isofocus+

You have to be organized.

ISO's "animal ads" were shortlisted for a prize in the Corporate Advertising category of the European Excellence Awards 2009.

The integrated use of management system standards.

Organizations face multiple challenges. Quality and environmental management, information security, food safety, supply chain security and occupational health and safety among others. More and more are turning to management system standards (MSS) to help them meet such challenges efficiently and effectively. The combined book and CD, **The integrated use of management system standards**, explains how to integrate the required elements of different standards within the organization's overall management system. Based on the practical experience of organizations large and small, the book identifies methodologies, tools and good practice.

Available from ISO national member institutes (listed with contact details on the ISO Website at **www.iso.org**) and from the ISO Central Secretariat Webstore at **www.iso.org/isostore** or e-mail to **sales@iso.org**.

ISBN 978-92-67-10473-7

International Organization for Standardization – **www.iso.org**

ISO Central Secretariat
1, ch. de la Voie-Creuse
Case postale 56
CH-1211 Genève 20