



Growing with Standards

A Guide for SMEs

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Enabling Enterprise

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Standards like SS 528 Series of Standards on Personal Fall Arrest Systems can help prevent industrial accidents arising from working at heights.

03

An Overview On Standards

Standards are found everywhere. You may not be aware of it, but we encounter some form of standards in our daily lives. For example, have you ever wondered why all credit cards are of the same thickness and can be read by card readers all around the world? Why do you need to only specify a paper size e.g. A4 or B3 and you will get the same dimensions wherever you are in the world? Imagine how difficult it will be for photocopier manufacturers and customers if there were no standardised paper sizes. Or just think of the storage problem if different countries choose to arbitrarily use paper of non-standard sizes.



The SS 536 : 2008 Code of Practice for the Safe Use of Mobile Cranes provides important information and guidelines on the use of mobile cranes.

“In a nutshell, **standards** provide vital information for buyers and suppliers to understand product or service requirements for their target markets.”

An Overview On Standards

Most of us tend to take standards in the products and services we use for granted. But if these standards were not in place, we would all soon notice it. Without standards, how would you be able to share files from your smart phones? In extreme cases, the use of non-standardised products may even be dangerous. How would you know if something as innocent as a baby's toy is safe to buy? How would you know if fire doors will protect you in a fire and if your medication is safe for consumption? How would you know which safety shoe or helmet is reliable?

The use of standards is becoming more important for trade around the world as it opens doors for your business. It helps to instil a sense of confidence in your product or service. Regulators around the world are also increasingly using technical standards as supplier requirements. International standards therefore have a national economic benefit besides ensuring safety and quality and protecting the environment. Taking notice of standards and complying with standards will help you become more competitive in many more markets around the world.

What Are Standards?

A standard is a published document that has a technical specification to be used as a rule, guideline or definition.

National standards and international standards are the focus of this Guide. Other types of standards are company

standards and industry standards which when become generally accepted and used widely, are often called de facto standards.

A **formal technical standard** is usually a formal document with requirements for uniform engineering or technical criteria, methods, processes and practices. Technical standards could be developed privately or unilaterally by a company, regulator, military, etc or developed by a standards organisation.

Voluntary technical standards are developed by standards organisations. These are developed by committees made up of experts from various interested parties ranging from businesses and industries to consumers of a particular material, product, process or service.

Diverse views and expertise from national representatives of manufacturers, suppliers, government bodies, research organisations, academia and consumers are obtained and the standard is then subject to a period of public enquiry and full consultation. The final standard then represents a current consensus on best practices.¹ These voluntary standards may become mandatory when adopted by government authorities.

¹ Consensus decision-making is a group decision making process that not only seeks the agreement of most participants, but also the resolution or mitigation of minority objections.

Technical standards can be:

- A standard specification for an item, material, component, system or service which is often used for procurement
- A standard test method to produce a test result that is often used as evidence of compliance to a standard by customers
- A standard practice or procedure for performing operations or functions
- A standard definition, which is terminology that has been formally established for fast and accurate communication

Why Standards Are Important For Consumers And Businesses

Standards provide guidance in areas that may include the design, use or performance of materials, products, processes, services and systems. As a result, standards make life easier and more efficient as well as increase reliability and safety in the goods or services that we use.

Businesses need standards to make the development and manufacture of products or the provision of services, safer, less costly and more efficient. It also ensures they meet customers' and export requirements. They help companies to operate with higher confidence, build more efficient supply chains at lower costs, improve customer service and hence provide a competitive edge over their rivals in the marketplace.

With standards, your business can also overcome technical regulations that can pose barriers to your markets overseas. Company involvement in the development of standards has also enabled many companies to market their innovations across borders.

Whichever area your business is in, whether you are an SME or MNC, standards bring tangible benefits to help your business grow. Our Success Stories in Chapter 6 showcase examples of companies that have benefited from the adoption of standards. It has enhanced their business, and in the process also led to higher productivity and customer satisfaction.

Is It Compulsory To Implement Standards?

In general, compliance with standards is voluntary. However, some standards are adopted by government bodies as regulations, referred to in legislation or used for administration of requirements by regulators. Mandatory standards are usually used to govern health, safety and environmental issues.

Where food is concerned, countries could have very strict food safety guidelines to protect consumers and public health. Standards, like the internationally recognised Hazard Analysis Critical Control Point or HACCP standard, help to ensure food safety throughout the food

production process and are required before food like meat and seafood can enter certain countries.

While many standards are voluntary, companies still choose to use them because they provide clients and customers the assurance of not only safety but also provide a stamp of quality. Furthermore, some voluntary standards are also used as part of the tender process such as those practised by the construction, food and medical device industries.

How Are These Standards Developed?

Standards are developed by recognised standards bodies. For example, SPRING Singapore, being the appointed national standards body, administers the Singapore Standardisation Programme, where committees with experts from industry, businesses, research institutions, academia, government bodies and consumers develop Singapore Standards.

Standards Statistics

- ◆ Singapore has 712 standards in use by industry
- ◆ Some 75% of Singapore Standards are voluntary while 25% are mandatory
- ◆ As the national standards body, SPRING Singapore collaborates closely with about 1,300 standards partners who sit in 140 committees
- ◆ Singapore industry is given an opportunity to shape international standards to reach international markets through:
 - Active participation in 38 International Organisation for Standardisation (ISO) standards committees and 7 International Electrotechnical Commission (IEC) standards committees
 - Singapore industry's leadership positions in 8 international standards committees

Four Types of Standards

- 1.** Company standards are developed by and for the company concerned.
- 2.** Industry consortia standards are set and documented by companies in specific industry sectors.
- 3.** National standards are developed by relevant stakeholders, technical, academic and government experts as well as researchers and industry associations. After national consensus is reached, the national standard is published.
- 4.** International standards are developed and published after international consensus by participating countries is reached.



SS 537-1 : 2008 Code of Practice for the Safe Use of Machinery provides comprehensive guidelines for safeguarding the dangerous parts of machinery and safe work practices.

An Overview On Standards

Should My Business Use International Standards?

Recognised international standards bodies such as the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) facilitate the development of international standards. International standards can help to facilitate cross-border trade and reduce export barriers by doing away with compliance to different national standards. International standards also help transfer of knowledge of new technology.

However, if your market is in Singapore only, locally adopted standards will serve you better as they would have taken into consideration the Singapore environment, infrastructure and regulatory requirements. Many international standards have been adapted for local use in Singapore under the Singapore Standardisation Programme. The direct use of international standards is preferred and adapted only if necessary for use locally.

On the other hand, if you are looking to expand overseas, compliance to international standards, or the standards of your target country, may be more useful to your business.

If your company is planning to venture overseas, you should keep a close watch on the developments of international standards in your industry. When an international standard becomes widely adopted, it can make a major impact on your company's business and operations as well as affect buyers' acceptance of your products or services. Hence, participating in the development of relevant international standards can help to ensure that your business needs are considered.

“The facilitation of the development, promotion and implementation of international standards required by industry is a prime objective of SPRING Singapore as the national standards body.”

International Standards Setters

The World Trade Organization (WTO) encourages alignment to ISO, IEC and ITU standards as these are considered international standards and less likely to become technical barriers to trade. As for the Codex Alimentarius, it is recognised by the WTO as an international reference point for the resolution of disputes concerning food safety and consumer protection.

The four main international standards bodies are:

1. International Organization for Standardization (ISO)

The ISO is a network of the national standards institutions representing 162 countries. It is the world's largest standards organisation. The ISO's principal activity is the development of international technical standards. The Joint Technical Committee of ISO and IEC (ISO/IEC JTC 1) is focused on the development of information technology standards.

2. International Electrotechnical Commission (IEC)

The IEC is the leading global organisation that prepares and publishes international standards for all electrical, electronic and related technologies worldwide. There are 76 member country bodies participating in IEC.

3. International Telecommunication Union (ITU)

The ITU helps to coordinate the smooth operation of telecommunication networks and services, as well

as advance the development of communications technology through its standards. Its membership includes 191 governments, known as Member States and 564 organisations, known as Sector Members.

4. Codex Alimentarius Commission

The Codex Alimentarius Commission, created by the Food and Agriculture Organisation (FAO) and the World Health Organisation (WHO), develops food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme. The main objectives are to protect the health of the consumers, ensure fair trade practices in the food trade and promote coordination of all food standards work undertaken by international governmental and non-governmental organisations.

Codex Alimentarius is Latin for "food code" and there are 180 country members of the Codex Alimentarius Commission.

How Does Singapore Keep Track Of International Standards Development?

Singapore is a member in all four of these international standards bodies with SPRING Singapore holding Singapore's memberships in ISO and IEC². Thus, Singapore is able to access information on the available ISO and IEC standards committees. Participation in these committees is through the formation of a Singapore national committee to mirror the international standards committee. Singapore representative(s) can attend these international standards committee meetings to provide Singapore's opinions and positions.

To date, three standards submitted by Singapore have been incorporated into three completed international standards, for three industries namely the exhibition industry and security industries for infocomm and freight containers. As a result of our strategic participation in international standardisation activities, Singapore is better able to nurture enterprise growth and innovation.




Where feasible, Singapore Standards are aligned with international standards to facilitate access for Singapore goods and services to overseas markets. So far, about 99.4% of the Singapore Standards have been aligned to international standards.

SPRING Singapore also actively supports the use of relevant international standards by industry and works closely with industry partners to promote international standards. ISO standards for the logistics industry and for the medical device industry are some standards which were piloted to determine the adoption benefits so as to encourage wider industry adoption.

² The Infocomm Development Authority of Singapore holds the membership for ITU while Agri-Food and Veterinary Authority of Singapore holds the membership for Codex Alimentarius Commission.

“The HACCP standard is the platform driving our growth. Introducing HACCP into our company operations has enabled our firm to retain our competitive advantage in our field. Tangible results are not only in the growth of sales (15%), but also much cost savings (\$40,000) through reduced wastage and inventory obsolescence.”

Mr Cheong Chung Kin, Chief Executive, Win Sin



SS 508 Series of Standards on Specifications for Graphical Symbols provides a systematic approach for the visual layout of safety signs.

DANGEROUS

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The Benefits Of Standards

Standards are important for both the development and expansion of your business. Market entry may not be even possible for local markets without standards as you may face regulatory barriers or a mismatch of your product with current market standards.

Whichever business you are in, implementing standards can give you a competitive advantage and increase your business footprint in new markets.



The SS 529 : 2006 Standard on Smart Card Identification specifies the data structure, security and application protocol for secure use of smart cards with personal identification data.

1 Increase Your Sales And Market Share

Products and services which comply to standards give confidence and assurance to customers. Many multinational companies (MNCs) require their suppliers to meet certain national, or global standards on top of their own requirements before any business transactions can take place.

2 Improve Business Efficiency Through Better Supply Chains

A secure and efficient supply chain with strong links and free from incidents involving terrorism, thefts and damage, is key to a company's viability and profitability. For example, the **ISO 28000 Series of Standards on Supply Chain Security** allows you to identify and strengthen the gaps in your supply chain, hence enabling your business to establish a secure supply chain partnership with your local or international partners.

3 Reduce Your Business Costs

Standards can enhance your company's productivity and efficiency and make your business more profitable. By following standards, your business will be able to minimise wastage of resources and reduce costs. For example, the **Technical Reference for Cold Chain Management of Vegetables or TR 24 : 2007** helps to increase

the shelf life of the product and reduce wastage along the supply chain, which translates to lower business costs.

4 Transfer Of Technology And Know-how

As every new technical standard often contains technology and know-how, you and your staff will benefit from the knowledge contained in the standard. The **Amendment 1 to CP 5 : 2008 Standard** is a good example. Used by electricians, technicians and engineers, it contains technical know-how on the best practices for the change of cable colour codes and for the connection of solar installation to the electrical grid. Getting involved in the development of such standards will give your company's personnel opportunities to obtain early information of these changes from the committee experts.

5 Improving The Quality Of Your Products And Services

The quality of your company's products and services can be greatly enhanced by the use of standards which would lead to fewer rejects or recalls. This results in less wastage, higher customer satisfaction and retention.



The SS 531 : 2008 Series of Standards on Indoor and Outdoor Lighting of Work Places provides lighting requirements for visual comfort and work performance.

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Introducing Standards Into Your Business

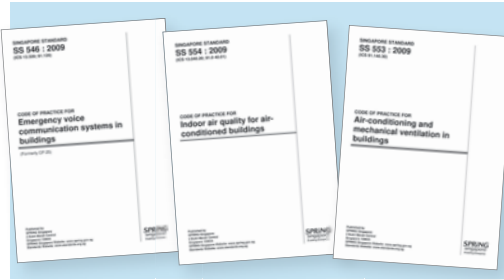
Standards are used in the design and manufacture of many products and services ranging from chemical, electrical, engineering, construction to food and medical industries. Businesses have long used standards to maximise their production, optimise their management systems as well as ease market acceptance by conforming to safety, health and environmental requirements.

You can make standards work for you too, by finding and implementing the right standards for your business – it is not as expensive or complicated as you might imagine.



Organisations with the ISO 13485 : 2003 Standard on Quality Management Systems for Medical Devices have proven their ability to consistently provide medical devices and related services that meet regulatory standards.

Introducing Standards Into Your Business



Which Standards Should I Use?

You can seek advice on the relevant standards to use for your business from your industry association, regulatory body for your industry or SPRING Singapore. SPRING Singapore's standards website at www.standards.org.sg provides you with the latest information on the standards developed for a wide spectrum of industries.

To search online for standards to purchase, please visit our eshop at www.singaporestandardseshop.sg. It provides a complete list of available standards in Singapore. Singapore Standards are available in both hard copy and electronic copy. Information on ISO and IEC standards and a selection of widely used overseas standards are also available on the eshop.

Toppan Leefung Pte Ltd (formerly known as SNP Corporation Pte Ltd) is SPRING Singapore's appointed sales vendor for the sale of Singapore Standards and international / overseas standards that SPRING Singapore can sell in Singapore. Toppan Leefung can help you source for both overseas and Singapore Standards, depending on the needs of your business and you may buy, browse and make enquiries on standards with them. Toppan Leefung can be contacted at:

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What If There Are No Singapore Standards In My Area Of Interest?

International standards, such as ISO and IEC standards, are always available to provide a robust backbone for your business. If you plan to export your goods overseas, you will need to check which are the standards you must adhere to in that country.

How Do I Implement Standards In My Company?

To ensure that the standard is used correctly, all the contents and requirements in the standard must be carefully read and understood. You may even need to consider changing certain aspects of your products, services or processes to accommodate the standard's requirements.

You may also wish to engage a consultant to help you with the implementation of the standard. SPRING Singapore will also be able to help you bring together your supply chain partners and other members of your industry for a joint implementation project.



TR 24 : 2007 on Cold Chain Management of Vegetables covers the proper management of vegetables from harvesting to distribution and sale, to ensure their freshness and safe consumption.

Introducing Standards Into Your Business

How Will I Know If My Product, Service, Process Or System Meets The Standard?

You could either perform some tests or engage an independent testing or certification body to determine if your products or systems meet the standard. Once your company conforms to the standard, the testing or certification body will issue you a certificate.

If you are exporting your goods overseas, be sure to be certified to a standard that is recognised and accepted in the countries you are exporting to. It is also important that the testing or certification body is recognised in that country.

My Products Have Met The Standards. What's Next?

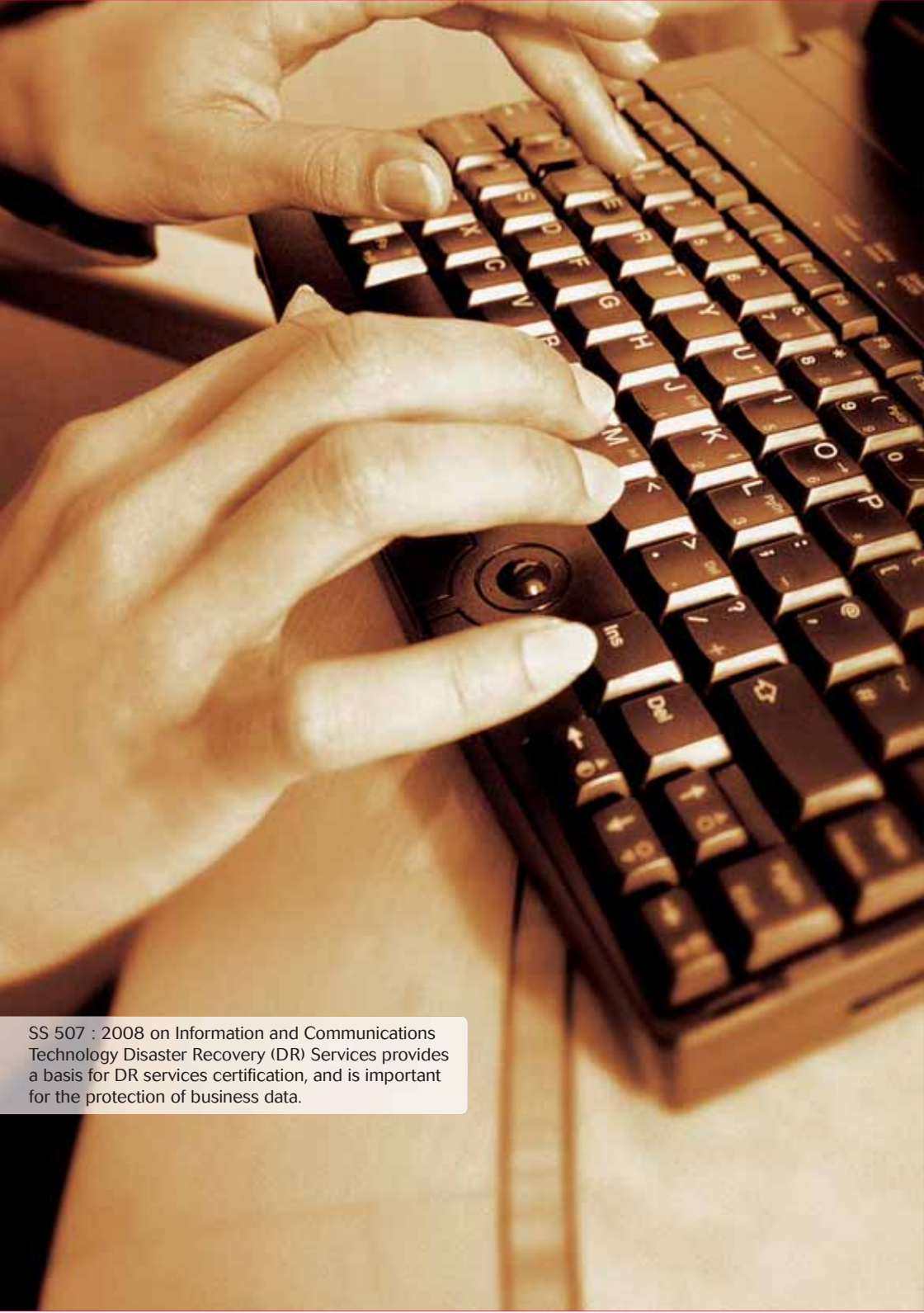
You can promote your company's compliance to standards in various ways. These include using your corporate website, marketing collaterals, packaging and business stationery including name cards to promote that you have complied with the standard. Such marketing efforts will give your customers greater confidence when they purchase your products and services. Ultimately, this will help to increase your sales.

Keeping Up

After implementing these standards, you may find that new or revised standards have been released in the market. Some standards are revised to keep up with changing world trends, technology changes, industry shifts, regulatory requirements, new market information, consumer demographics, etc. With these new developments, you may then need to upgrade to the most current version of the standards that affect your business.

Keeping track of the latest standards not only puts you at the forefront of industry and business developments, but helps you maintain or increase your market share for your products or services.





SS 507 : 2008 on Information and Communications Technology Disaster Recovery (DR) Services provides a basis for DR services certification, and is important for the protection of business data.

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Through Standards Implementation for Productivity (SIP) pilot projects, SPRING Singapore helps companies build up their competitive edge so that they can stand out from the crowd.

SPRING Singapore works closely with various industry associations which act as project managers for these pilots to determine the benefits of the use of standards that have a high impact on productivity and competitiveness. For small businesses and their partners, SIP is a good path to take to enhance your competitiveness and productivity.

Standards Implementation For Productivity (SIP) Pilot Projects

SPRING Singapore brings together major players, SMEs and other stakeholders in the industry's supply chain to participate in SIP projects.



SIP pilot projects cover both the manufacturing and services sectors. International, national and widely accepted industry standards can be used in these pilots.

SMEs which have participated in SIP pilot projects have reaped tangible benefits such as cost reductions, better connectivity and improvements in productivity, quality, safety and health.

Co-funding of SIP pilots is also available to encourage and speed up the adoption of standards for your industry, particularly among SMEs. Pilot projects can involve both large and small companies. Some companies have reaped more than \$20 million savings through their participation in these pilots.

Pilot projects can involve both large and small companies and have achieved the 10 times returns of the grant amount for the projects.

“SPRING Singapore works closely with industry associations to encourage the use of standards with a high impact on productivity. For small businesses and their partners, SIP pilot projects are a good way to enhance industrial competitiveness and productivity.”

Sharpening Your Competitive Edge

Companies Which Have Benefitted From SIP Pilot Projects

Pallet Standardisation for the Fast Moving Consumer Goods (FMCG) Industry

Work on standardising pallet sizes in Singapore was initiated by leading members in the industry in 1999 as part of efforts to improve operational efficiency. It sought to reduce the 16 sizes of pallets in use by the FMCG industry in Singapore to just one size. The pilot study showed that among the tangible benefits gained was a 155% internal rate of return (IRR) on the financial investment in the project over five years on a recurrent basis. More than 300,000 standard pallets are currently in use, resulting in savings of \$7.8 million per year for the FMCG industry.

Cold Chain Management of Milk and Dairy Products Standardisation

The successful trial implementation of the Singapore Standard for Cold Chain Management for Milk and Dairy Products or CP 95 : 2002 extended the average shelf life of milk and dairy products being by over 30% – from 18 to 24 days. Better handling of these products enable them to be kept on the shelves until their expiry dates. This benefits consumers as well as manufacturers and retailers. The Singapore Standard is currently being used by a number of major retailers and their suppliers.

Standard for Computer-Aided Design

The use of CP 83 Parts 1 to 5, Code of Practice for Computer-aided Design (CAD), resulted in substantial savings for the construction industry, many which are made up of SMEs. A survey on the benefits of having standardised rules for the naming and layering for CAD drawings showed that data re-entry was significantly reduced. Based on an estimate of 800 major fresh projects for the industry per year, the extrapolated manpower savings for the whole industry each year was estimated to be \$2.4 million. This standard is now used widely by building and construction industry professionals.

“At FairPrice, fresh food such as fruits and vegetables are handled through a stringent and well-executed cold chain management system. The strict guidelines that FairPrice observes on temperature control guarantees that we bring the freshest foods possible to our customers.”

*Mr Tan Kian Chew
Group CEO of NTUC
Fairprice Co-operative Ltd*



SS 510 : 2005 is the Code of Practice on Safety in Welding and Cutting to help minimise risks involved with using high-heat welding and cutting equipment.

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Partnerships For Growth

Your business can benefit from standards development too. Early alerts on impending standards requirements and networking opportunities with national and international experts on global industry trends helps you pre-empt market requirements and stay ahead of your game. We welcome companies of all sizes to join us in shaping the standards of tomorrow.



The Amendment 1 to CP 5 : 1998 Standard on the Code of Practice for Electrical Installations provides an important revision of cable core colours for wiring, to keep in line with international standards.

Standards Partners

“Participating in the drafting of the new Singapore Standard on Emergency Alarm and Communication Systems has given me an in-depth understanding of the current and upcoming industry practices locally and internationally. Being a SME with limited resources, the opportunities to access and review other standards as well as the knowledge contributed by other industry experts, have enhanced my company’s products to meet local and international requirements. Because of this, my company has gained a sharper competitive edge and are more recognised now.”

Mr David Goh, Managing Director, Vanguard Fire Systems Pte Ltd

Mr Goh is one of 1,000 partners — from the public and private sectors — who play an active role in standards development. By chairing the Working Group on Emergency Voice Communication System in Buildings, he helped develop and launch the SS 546 : 2009 Code of Practice for Emergency Voice Communication System in Buildings. His company, Vanguard Fire Systems Pte Ltd, a small and medium-sized enterprise in the fire prevention and protection industry, gained a headstart on implementation of crucial standards affecting his industry.

Partnerships For Growth

Your business will stand to benefit from your participation in both national and international standards development. The benefits include:

- Early alerts on impending standards requirements to pre-empt regulatory or market requirements
- Information from your standards partners on upcoming market and industry developments affecting your industry
- Opportunities to facilitate the market access of your products or services
- Access to both national and international industry experts and leaders for networking and market intelligence opportunities

As a partner in standards development, you too can be involved in one of the 55 Technical Committees and 75 Working Groups under SPRING Singapore's standards committee. You will play an important role in shaping the standards that affect your business, and keep abreast of global industry trends.

Be A Standard Setter To Open Markets

If your company has developed an original product, process, service or management system, your company could also consider setting a national or international standard that would open markets for your industry.

Shaping The Standard During Public Enquiry Stage

You can also take part in shaping the draft standards during the public comment period when the public and relevant stakeholders are given an opportunity to provide feedback on the draft standards before it is finalised. Draft standards are circulated for public comments prior to their finalisation, gazetting and publication.

Take this opportunity during the public comment period to provide feedback on areas which affect you and your industry. The contents of the standards are drafted by national representatives from the industry, professional trade and industry associations, academia and government agencies. By adding your voice to the drafts, you can influence the standards to the benefit of your company and your industry.





The SS 540 : 2008 for Business Continuity Management provides a framework and guidelines to help companies enhance their preparedness so as to minimise the impact of any disruptions and ensure business resilience.

Success Stories

Standards can bring about considerable value to your business. It can provide cost savings, new customers, market differentiation, lower risks and support product innovation, all of which can make the difference to your organisation's growth and survival. Use standards to become more competitive today.

Food Safety That Makes Business Sense

One of Singapore's leading supplier of fresh chicken products, KSB Distribution Pte Ltd, was the first chicken slaughterhouse to obtain the HACCP certification under a SPRING Singapore initiative; as well as one of the first companies to be selected as a Food Safety Partner by the Agri-Food & Veterinary Authority (AVA) of Singapore.

HACCP, which stands for the Hazard Analysis and Critical Control Point system, refers to the global Codex standard or **Singapore Standard, SS 444 : 1998 on Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for Its Application**. It identifies where potential hazards might occur during food production processes and puts into place stringent actions to prevent them from occurring.

In other words, it puts in place measures that go beyond the traditional "touch, see and smell" approach towards food inspection with emphasis on the prevention of possible contamination in the various stages of production and transportation.

In fact, KSB, a subsidiary of Elite KSB Holdings, which is listed on the Singapore Exchange, had the food safety measures in place in 2002. Chew Keng Wah, the Chief Operating Officer of Elite KSB Holdings remarked, "This was at least two years ahead of the deadline set by the AVA for HACCP implementation by all slaughterhouses."



Mr Chew Keng Wah, Chief Operating Officer, Elite KSB Holdings

"To us, it was not just a matter of abiding by government regulatory standards but it's a business decision as well as to ensure that all our staff are familiar with safe practices at all times when handling food so as to prevent occurrences of food safety breaches. In the food business, food safety is the primary concern above all others since public health or even lives are at stake, not to mention the reputation of the company."

The management has also implemented a quality management system that is ISO 9001 : 2000 certified to complement its

HACCP-certified food safety system. KSB has also engaged PERGAS Cooperative, the commercial arm of the Association of Muslim Scholars and Teachers, to ensure daily compliance of its products with halal requirements for Muslim consumption.

KSB goes the extra mile to make sure that all its staff receive the Basic Food Hygiene training that is complementary to the HACCP food safety system. Staff that have undergone the courses are also encouraged to attend refreshers when new employees are being trained.

“With the HACCP system, there is also a reduction in wastage from food spoilage. A well-managed cold chain system means not just safe products, but also better quality products that last longer. This is important to our customers, which include major supermarket chains such as Cold Storage, NTUC FairPrice and Shop N Save”, said Mr Chew.

He added that such reassurances are crucial given the fact that KSB slaughters between 30,000 and 40,000 live chickens daily (three times that volume for festive seasons) and delivers to more than 400 locations each day, most by 7 a.m.

With its state-of-the-art equipment, the company’s machines can even trace any whole chicken to its organ parts, should any defect be found in any of the chickens’ internal organs. At KSB, whole poultry and chicken parts are kept below

4 degrees Celsius even when they are loaded onto the company’s refrigerated trucks, while thawing of imported frozen chicken parts is done under controlled temperatures over a three-day period according to HACCP requirements.

“Bacteria growth thrives at temperatures between 4 and 60 degrees Celsius and under abundance of oxygen. Apart from controlling temperature, we also use vacuum packing to help prolong shelf life. A more effective but more expensive packaging called Modified Atmosphere Packaging (MAP) involves using special packaging material that contains inert gases between layers of film to prevent contact with oxygen. Products packed with MAP have a longer shelf life of up to 7 days,” said Mr Chew.

With such quality systems in place, KSB has been able to enjoy increased sales as well as enlarge its customer base. About 50% of its output is shipped daily to supermarket outlets with the rest shipped mainly to wet markets, chicken rice stores and domestic F&B outlets.

The company also provides value-added products to supermarkets such as marinated chickens and other meats for barbecues or ready-to-cook packages. It also acts as a third-party slaughterhouse for other smaller poultry suppliers. Mr Chew estimates that KSB processes approximately 25% of Singapore’s daily demand for fresh chickens.

DART Races To Develop e-Passport Reader Software

Governments around the world have started to develop biometric passports as part of their relentless efforts to tackle terrorism. One local company, Digital Applied Research and Technology Pte Ltd or DART, has developed software with the international standards being used to test e-passport readers.

Biometrics technology has gained new ground since September 11. The United States government advocated that all visitors entering the US must carry passports imbedded with contactless smart card chips by October 2006. These chips contain the personal identification information of the traveller.

Around the world, governments rushed to comply with the US regulation. In March 2006, the Singapore government announced the availability of the BioPass biometric passport.

With the biometric passport comes the need for biometric passport readers. These passport readers are being developed by various companies worldwide. But how can immigration authorities ensure that the biometric passport reader reads the information embedded in the RFID chip accurately?

Here is where standards play an integrated role. Recognising the advantage and need for international e-passport standards, the ICAO (International Civil Aviation Organization) requested the Subcommittee 17 (SC 17) – Cards and Personal Identification under

the Joint Committee of the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) (JTC1) – to look into the standardisation of contactless smart passports with biometrics inside the chip.

Singapore is an active member of this subcommittee and its working groups. The Cards and Personal Identification Technical Committee (CPITC) of the Information Technology Standards Committee, an industry partnership supported by SPRING Singapore and the Infocomm Development Authority of Singapore tracks the activities of this



Mr Lin Yih, Director, Digital Applied Research and Technology Pte Ltd

ISO/IEC JTC 1 subcommittee and drives the application of international biometric standards development locally.

In early 2005, technology development project house, DART started developing testing software that can read and verify different passport readers in their reading of different biometric passports. Called e-Passport InterFest Testing Software, this software adheres to several **ISO/IEC JTC 1 Standards on Smart Cards and Personal Identification** as the biometric passport has two components — biometrics and smart card technology.

“It is important to write a software which cannot be disputed,” said Mr Lin Yih, Director, DART. “If not, passport reader companies will come up with their own software to demonstrate that their readers work. But when different biometric passports cannot be read by the reader, which is to blame — the biometric passport or the reader?”

The testing software developed by DART reads thumb prints and facial features. This testing software is available on the Internet for any passport reader company as a standard to test their passport readers against.

Developing software that adopts international standards has benefited DART. According to Mr Lin, who is also the Chairman of CPITC, the DART developed software is available for sale to passport reader companies to incorporate into their product.

About International e-Passport Standards

The ICAO 9303 – Machine Readable Travel Documents (MRTDs) series of standards are widely recognised standards for MRTDs (including passports and visas) developed by the International Civil Aviation Organization (ICAO).

The MRTDs make it easy for automated systems to scan a travel document. ICAO works closely with the ISO/IEC JTC1 SC17 for machine readable passports. The ICAO 9303 is accepted and endorsed by SC17 as the ISO/IEC 7501 series of standards.

“Do I see the e-passport software and smart cards making big bucks?” added Mr Lin. “Maybe. But the technology business is highly volatile. We don’t fix ourselves on one sector and not change. As technology changes, demands change too.”

Nonetheless, DART has been doing well with an annual sales turnover of S\$1–1.5 million, all thanks to the software it has developed.

Common Standard Cuts Layers For Construction Industry

With the **Code of Practice for Computer-Aided Design (CAD) Symbols** or **CP 83**, the construction industry can exchange electronic information, without having to 'translate' different symbols into a common standard. This improves productivity as well as prevents errors. Ms Rita Soh, Director of RDC Architects Pte Ltd, shares more details on how CP 83 can be a boost to the industry.



In the construction industry, architects and engineers communicate through technical drawings which are transmitted electronically. For example, after an architect draws the initial design for a room, civil and structural engineers will supplement the design with drawings of supporting columns and beams. The mechanical and electrical engineers will then add drawings of light fittings, air-conditioning vents and electrical sockets.

All these are then stored as 'layers' in a single CAD file. Understandably, things can get complicated if these layers are done haphazardly. For example,

an architect might refer to a wall as 'WL' while another might use a different term, which thus makes the integration of all these layers difficult.

Fortunately, the situation has improved since the introduction of a common standard — CP 83.



*Ms Rita Soh, Director,
RDC Architects Pte Ltd*

"Standardising the way of naming the construction data information will facilitate more effective and efficient communication among various parties in the industry," said Ms Rita Soh, the co-chairman of the Design Work Group which was actively involved in the drafting of CP 83. "A common standard removes the need to 'translate' these languages, saving time and money as well as avoiding the

possibility of introducing errors during the process.”

Indeed, one key benefit of having a common standard is the significant reduction of data re-entry. Moreover, the standardisation of CAD files also means that architectural and engineering firms save time when filing their electronic plan with government agencies for approval through the Construction and Real Estate Network (Corenet).

Ms Soh, President of the Singapore Institute of Architects (from 2004–2007) and also a Director at RDC Architects Pte Ltd, can attest to the benefits of the standard to the industry. RDC Architects is a leading architectural practice that is a pioneer in the adoption of a Quality Management Programme for all its projects. The company is, in fact the first in the industry to obtain ISO 9000 certification in Singapore.

Since its inception in October 1974, the over 30 staff-strong company has achieved a string of accolades, including the BCA Greenmark GoldPlus Award in 2008, Facade Design Excellence Award (Gold) by the Singapore Institute of Architects (SIA) and Construction Excellence Award by the Building Construction Authority (BCA) for Tanamera Crest in 2006, Regent Grove in 2003, the Singapore Post Centre in 1999, and Best Buildable Design Award by Building and Construction Authority (BCA) in 1998, for the Singapore Godown as well as third prize in the

What is CP 83?

A series of construction IT Singapore Standards developed to aid the efficient exchange of electronic information among developers, architects, engineering consultants, contractors and quantity surveyors. The different parts of the standards were developed between 2000 and 2004.

design competition for the Al Khor Beach Development in Qatar in 2005.

Notably, its usage of construction standards have played a major role in the company’s success. “Standards can address and improve certain aspects of professional work as well as help to innovate and increase efficiency within an organisation and between the different players in the building industry,” said Ms Soh.

“And, standards help achieve that by ‘functioning as a common platform to allow better integration of services and work processes,’” Ms Soh added. “This will allow better communications as well as set benchmarks for quality and value-added progress.”

Moving forward, Ms Soh urged fellow players in the industry to leverage on standards to increase their business competitiveness. “We need to keep abreast of the times and technology,” she said. “It is critical that we embark on processes and use standards that are relevant and meaningful to our work.”

Priceless Returns From e-SCM System For Aw Transport & Warehousing

Aw Transport & Warehousing Pte Ltd had been building itself up the old-fashioned way for more than three decades until the company took a “quantum leap” back in February 2006.

That was when one of its principal clients, Sankyu Singapore, which is one of the largest third-party logistics providers in Singapore, approached the company to set up an e-supply chain management (eSCM) system.

The pilot project had come about in 2005 as an initiative under the e-SCM Assessment Programme which was launched by SPRING Singapore and the Singapore Manufacturer’s Federation (SMA). The aim of the programme was to help local small and medium-sized enterprises (SMEs) enhance their competitive edge and raise their productivity by adopting industry wide standards.

The e-collaboration pilot project is to align supply chain best practices with e-business infrastructures between customers and suppliers, based on the **Technical Reference, TR 9 : 2003 – Maturity Assessment for e-Supply Chain Management.**

For Aw Transport & Warehousing, it was also the opportunity to finally become a fully integrated logistic provider through the implementation of an electronic data network that would link its supply chain system with those of its clients and partners.

“From the start, we knew it would be a



Mr Ngim Shyr Yong (centre), Director, Aw Transport & Warehousing

good thing. We knew we had to change our business processes because it was inefficient,” said Mr Ngim Shyr Yong, Director of Aw Transport & Warehousing.

“A lot time was spent on processing. There were loads of paperwork as all our documents were handled manually. Orders were faxed to and fro between the company’s administrative staff and our clients. Information such as serial numbers of containers, for example had to be keyed in repeatedly at different stages of a delivery.”

The locations of transit shipments were often relayed verbally over the phone

to the clients. Those that went ‘missing’ had to be physically tracked down which would sometimes involve the efforts of the management team. There was no way to know at an instant where they were held up, whether it’s at the port or other transit points,” Mr Ngim recalled.

Implementing the e-SCM system took seven months or about 200 man-hours, involving both the management and its staff. The exercise cost the company about \$72,000 in consultancy fees and software costs after a grant from SPRING.

But the benefits reaped in return from the efforts were “priceless”, said Mr Ngim. With the e-SCM in place, all the internal processes at Aw Transport & Warehousing have become fully integrated and automated. Every department now works more efficiently. The accounts department, for example has shaved 30 minutes off the processing of each order. Overall, two hours were saved on each order due to tighter traffic control and greater visibility of the shipments. This has increased the efficiency of its business process with principal clients such as Sankyu, which resulted in increased business opportunities.

Said Mr Ngim, “We can now keep the clients posted at all stages of the delivery process. Whereas in the past, our staff would only raise the invoices after they have received and verified all the documentation, it is now fully automated

and seamless. There’s no need to key in data manually or paperwork to deal with.”

Human errors and miscommunications have also been cut down to a minimum. Consequently, both employees and clients are now happier as instances of working beyond regular office hours are now a thing of the past. Customer service has definitely improved as a result, noted Mr Ngim.

He reckoned that the company has saved at least 15% in operational costs, and more importantly, management can now devote more of its time and energy to improving yields and developing forward-looking strategies.

“Nowadays, the managers would only get involved in exceptional events and issues. Before the system was installed, I had to spend 80% of my time making calls and tracing shipments. Now I spend 80% of my time on strategising and developing the business.”

Besides savings on the operational front, Aw Transport & Warehousing has also seen improvements at both topline revenues and bottomline profits due to better utilisation of its fleet of 22 prime mover trucks.

“With better visibility, we have also been able to deploy our trucks more efficiently and raise the fleet utilization rate by 10%, which gives us the ability to take on more business and build a more diversified clientele base,” said Mr Ngim.

Staying Ahead Of The Pack Through SS 600



Despite the impact of the global recession on global trade, Singapore remained the world's top refuelling destination or bunker port for sea-faring vessels with almost 35 million tonnes of bunker worth some S\$25.8 billion being unloaded here in 2008.

These figures represented a 10.8% increase over 2007, and is twice the amount of bunker sold at each of the next two major bunkering ports, Fujairah in the United Arab Emirates (UAE) and Rotterdam in Europe.

Most of the refuelling is done at sea by bunker tankers or barges mooring

alongside a vessel, much like how cars get refuelled except that with ships, it's usually the 'fuel station' that goes to them. And we are talking about unloading 200 tonnes to 8,000 tonnes of fuel, depending on the size of the vessel.

The job of refuelling in Singapore waters is carried out by some 110 bunker suppliers, most of them local SMEs, with additional support from about 70 surveyor companies whose job is to ensure that the right quantity and quality of bunker fuel is pumped into the fuel tanks of the vessels. One of these bunker suppliers is Hong Lam Marine, which owns and manages a fleet of 34 vessels

that also transports lubricating oil, gas oil, jet fuel, palm oil and chemicals besides bunker.

Said Hong Lam Marine's director, Goon Ghen Cheit, "Singapore sets one of the most exacting standards for bunker quality assurance in the world. The great confidence that customers have in Singapore's bunkering services, explains why we are in the pole position." Much of this assurance can be attributed to the **Code of Practice for Bunkering** or **SS 600** bunkering practices used until recently, governed using SS CP 60 : 2004 for bunker operators and suppliers and SS CP 77 : 1999 for bunker surveyors, which cover the documentation process, use of equipment and verification of the bunkering process.

With the busy traffic plying our sea lanes, he noted that it is vital that all bunker deliveries be carried out according to a consistent and fair yardstick for all parties concerned – from vessel owners, ship charterers, crews, bunker suppliers and operators to surveyors – in order to minimise any room for disputes, which could otherwise clog up not just the court dockets but also trade in this part of the world.

One of the most remarkable statistics is that out of the 53,500 bunkering operations carried out in the port in 2008, there were only about 20 cases



Mr Goon Ghen Cheit, Director, Hong Lam Marine

or 0.037% that saw disputes over their bunker supplies.

SS CP 60 : 2004 and SS CP 77 : 1999 – these two yardsticks have since been updated, with the procedures streamlined, amalgamated and replaced by the new SS 600 standard. SS 600 ensures that the means of measurement and sampling techniques are now more uniform for both bunker suppliers and surveyors alike.

Other key changes include the requirement to make declarations for meeting International Maritime Organization (IMO) regulations aimed at preventing air pollution from ships as well as the standardisation of all bunkering related documents.

The new SS 600 standard was developed with the help of the Maritime and Port Authority (MPA) and SPRING Singapore with the participation and feedback of industry players.

All bunker suppliers and bunker craft operators are now required to comply with the SS 600 as a licensing requirement by MPA from 1 July 2009.

LHT Holdings: Savings And New Business Opportunities With Standardisation

Standardising 16 different pallet sizes used in the market to just one size has revolutionised the FMCG industry, bringing about many benefits in improving both productivity and work efficiency. Standardisation for pallet sizes results in economy of space and facilitates automation, as well as reduction of unloading time and warehouse storage costs. In addition, there is also reduction of damaged goods losses through minimal handling, reduction in the number of transportation trips and minimization of the wastage of pallets.

There are approximately 300,000 standardised pallets in use today, generating an estimated annual savings of about \$7.8 million for the FMCG industry.

A project which was started to standardise the size of pallets used in Singapore's Fast Moving Consumer Goods (FMCG) industry, has not only led to improvements in productivity and work efficiencies, but also paved the way to a new business venture for local wooden pallet manufacturer, LHT Holdings.

LHT was one of 35 companies that were part of an ambitious project started back in 1998 to reduce supply chain costs and increase productivity in the FMCG industry through the standardisation of pallet sizes. The Working Group for this project was jointly led by SPRING Singapore and Grocery Logistics of Singapore.

The pallet manufacturer was roped in to manufacture the 1 metre by 1.2 metre-sized pallets, which can take loads up to one tonne for the project.



*Mr He Wei, Senior Research Engineer, A*Star, Ms May Yap, Executive Director, and Mr Thomas Yeo, Manager (RFID-FMCG), LHT Holdings*

"Prior to the introduction of the standardised pallet for the FMCG industry, we had to custom-make pallets for each customer. It was very labour-intensive. Now the production process for the standardised pallets is semi-automated. This has improved our production efficiency," said Ms May Yap, the Executive Director of LHT Holdings.

The involvement in the pallet standardisation project led LHT to set up a new business unit, Kim Hiap Lee Co Pte Ltd, whose core business is in the rental of pallets, which has since seen a 5% to 10% rise in utilisation rate since the use of standardised pallets.

“As it is much cheaper to rent a pallet than to purchase one, companies in the FMCG industry can now rent the standardised pallets when they need them rather than make or purchase excess pallets to store in their warehouses for peak seasons use such as Chinese New Year,” said Ms Yap.

With leased pallets of the same size, she noted that there would not be a need to sort pallets for returns, or the requirement to fit warehouse shelves to cater to different sized pallets. Loading and unloading times are also shortened leading to cost savings and improved productivity for all parties.

Taking this a step further, LHT is exploring the use of Radio Frequency Identification (RFID) technology in their pallets. These small electronic tags which are attached to the pallets can embed or capture new data as the products are passed along a supply chain from a manufacturer or warehouse operator to retail shops and supermarkets.

The data captured by RFID readers can then be saved as delivery, issue, inventory or transfer notes as well as other documents, which allows real-time tracking and transparency for all parties involved in the supply chain and movement of goods.

The 15-month project, which is done in collaboration with Singapore Institute of Manufacturing Technology (SIMTech) with funding support from the government is expected to go ‘live’ by March 2010. The RFID technology utilises the Electronic Product Code or EPCglobal standard design to enable EPC-related data sharing within and across enterprises in Singapore and worldwide.

The Electronic Product Code (EPC) refers to a coding scheme in which a globally unique serial number is assigned to identify an item in the supply chain. This allows inquiries to be made about an item wherever it is within the supply chain. It is similar to the current barcode system except that the RFID tags can store much more information as the goods are passed down the supply chain.

The information can be captured automatically and instantaneously by an RFID gantry mounted with readers without the need to scan each individual crate with a barcode reader for example, in the case of barcoding for warehouse workers. This enables huge savings in labour costs as well as improvements in staff productivity.

For LHT, the deployment of RFID technology will mean a further 35% manpower savings in inventory tracking time. Its customers will benefit too as the RFID tracking system will enhance traceability of goods and result in increased efficiency.

“With RFID all the standardised pallets are not the same. They each carry its own identity that will help us and our customers trace accurately and minimise disputes over who is the right leasing owner of the rented pallets,” noted Ms Yap.

For its customers, the use of standardised pallets as well as RFID will also lead to optimisation of storage space, reduced warehouse costs, lower instances of damaged goods given the reduction of double handling, and fewer transportation trips.



SS 600 : 2008 on the Code of Practice for Bunkering specifies the procedures and requirements for bunker delivery operations, to create a fair and orderly business relationship between ship owners and bunker suppliers all over the world.

45 Appendices

Appendix 1: About SPRING Singapore

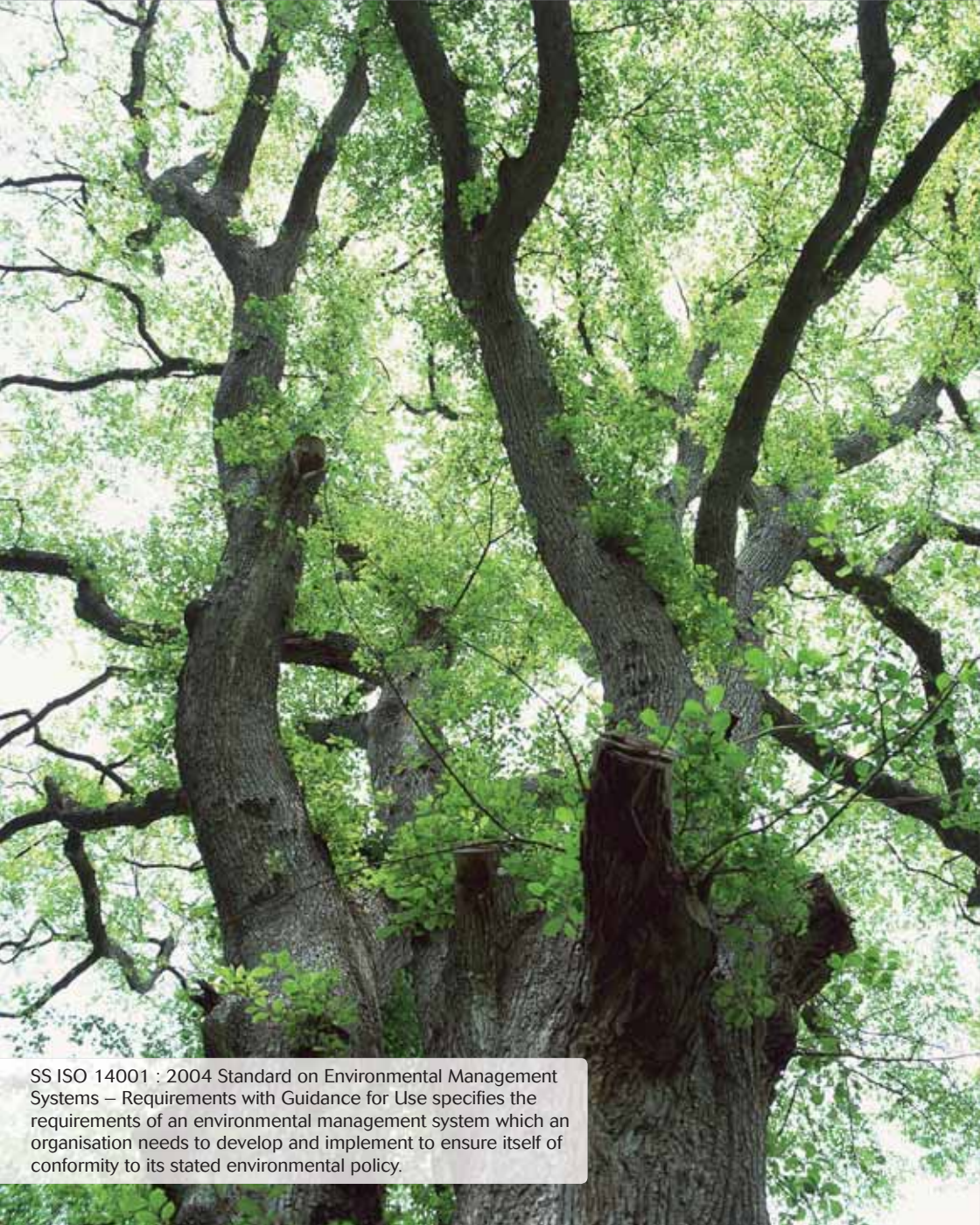
Appendix 2: About The Singapore Standardisation Programme

Appendix 3: Standards Implementation For Productivity (SIP) Projects

Appendix 4: Useful Information And Contacts

Regulatory Authorities In Singapore

International And Regional Organisations



SS ISO 14001 : 2004 Standard on Environmental Management Systems – Requirements with Guidance for Use specifies the requirements of an environmental management system which an organisation needs to develop and implement to ensure itself of conformity to its stated environmental policy.

Appendices

Appendix 1

About SPRING Singapore

As the national standards and conformance body, SPRING Singapore helps to lower technical barriers to trade, provide quality assurance for products and services and promote industry use of Singapore and international standards.

SPRING Singapore is also the agency for enterprise development, which aims to enhance the competitiveness of enterprises. We help to nurture a pro-business environment, facilitate the growth of industries and enhance innovation and enterprise capabilities of SMEs for better access to markets and business opportunities.

Please visit www.spring.gov.sg for more information about SPRING Singapore.

Appendix 2

About The Singapore Standardisation Programme

As the national standards body, SPRING Singapore works closely with industry to develop, promote and help industry in the use of national standards. Under the guidance of an industry-led Standards Council, we actively promote and encourage companies to use and adopt Singapore Standards and other relevant standards in manufacturing products, services, processes and management systems.

Where feasible, Singapore Standards are aligned with international standards to ease entry into overseas markets for Singapore's manufactured goods and

exports. As at August 2009, there are 698 Singapore Standards and 14 Technical References, and 156 standards have been aligned to international standards.

The alignment strategy supports Singapore's open trade policy and reduces the likelihood of standards becoming unnecessary technical barriers to trade. Where there are international standards that can be used directly by the local industry without modification, SPRING Singapore helps to raise industry awareness and use of such international standards.

Appendix 2

About The Singapore Standardisation Programme

SPRING Singapore actively supports and facilitates the development of new international standards by Singapore industry to ensure that they do not hinder trade or limit market access. Key industry players currently sit on 38 International Organisation for Standardisation (ISO) committees and 7 International Electrotechnical Commission (IEC) committees. Singapore now leads in 8 international standards committees.

SPRING Singapore has successfully promoted 7 national standards to international standards committees. This is done through a process of consensus and approval within the relevant international bodies. These standards are:

1. CP 60 : 2004 Code of Practice for Bunkering by Bunker Tankers
2. SS 505 : 2003 Exhibition Terminology and Audit Procedures
3. SS 507 : 2004 Business Continuity/ Disaster Recovery (BC/DR) Service Providers
4. SS 540 : 2008 Business Continuity Management
5. TR 15-1 : 2003 Thermal Imagers for Human Temperature Screening- Requirements and Test Methods
6. TR 15-2 : 2004 Thermal Imagers for Human Temperature Screening- Implementation Guidelines
7. TR 17 : 2004 Technical Reference for Fingerprint Image Quality Metrics

What Is The Standards Council?

The **Standards Council** is responsible for:

- Providing strategic directions for the national standardisation programme
- Mapping out the overall standardisation policies and priorities
- Determining the areas of standards work
- Providing the necessary guidance for the implementation of the Singapore Standardisation Programme

Appendix 2

What Are Standards Committees?

Standards Committees are appointed by the Standards Council to develop and promote Singapore Standards for target industries. To ensure that all viewpoints are considered in the preparation of Singapore Standards, all committees appointed consist of representatives from various stakeholder groups including professional bodies, industry associations, consumer bodies, trade associations, government agencies and tertiary institutions.

There are currently **eight Standards Committees** covering:

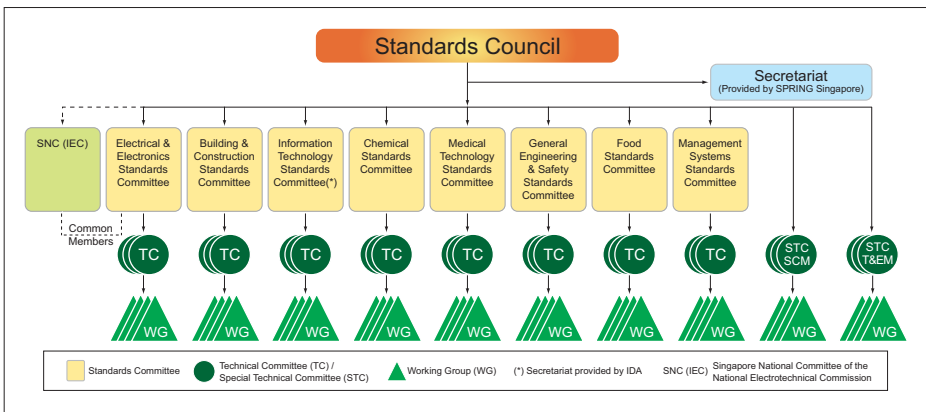
1. Electrical and Electronics
2. Building and Construction
3. Information Technology
4. Chemical
5. Medical Technology

6. General Engineering and Safety
7. Food
8. Management Systems

Two Special Technical Committees (STC) covering supply chain and for tourism and exhibition services report to the Standards Council.

Three policy committees have also been formed under the Standards Council to advise the Standards Council on these following new areas:

1. Renewal Energy and Energy Efficiency which mirrors the ISO Strategic Advisory Group on Renewal Energy and Energy Efficiency
2. Energy and Environment
3. Security which mirrors the ISO Strategic Advisory Group on Security



Appendix 3

Standards Implementation For Productivity Projects

A total of 111 **Standards Implementation for Productivity or SIP projects** have been initiated since 1997. They cover areas such as chemical, electrical and electronics, food, general engineering and safety, information technology and services standards.



You And Your Industry Can Benefit From SIP

SIP is a key initiative of the Singapore Standardisation Programme to encourage industry to carry out pilots of standards that have a high impact on productivity and competitiveness. This will then encourage the relevant industries to implement the standards.

SIPs will help Singapore-based enterprises in the use of Singapore Standards or other relevant standards that have a high impact on productivity and competitiveness. The intent is to catalyse the use of standards through pilots involving at least three enterprises that will eventually benefit the entire industry concerned. Co-funding is provided for the SIP pilot projects which will determine the benefits of the standard to encourage other industry members to adopt the standard.

To participate, call us at + 65 6279 1802, fax us at + 65 6659 0639, e-mail sip@spring.gov.sg, or visit our website at www.spring.gov.sg/sip

Appendix 4

Useful Information And Contacts

Name	Area	Contact Details
1. Standardisation Division	National standards authority that establishes, publishes, promotes and assists companies in the use of Singapore Standards. It also promotes and assists companies in the use of ISO, IEC and relevant industry standards	www.standards.org.sg www.spring.gov.sg/standards
2. Sale of Standards	Sale of National and International Standards	www.singaporestandards.eshop.sg
3. National Metrology Centre	National metrology authority offering a broad range of calibration and measurement services	www.nmc.a-star.edu.sg
4. Singapore Accreditation Council	National agency for accreditation of conformity assessment bodies	www.sac-accreditation.org.sg
5. Consumer Product Safety Department	Electrical, electronic and gas appliances	www.spring.gov.sg/safety
6. Weights and Measures Office	The Weights and Measures Office administers the weights and measures programme that aims to protect consumers and traders by regulating the use of weighing and measuring instruments for trade use by weight or measure and pre-packaged goods	www.spring.gov.sg/wmo



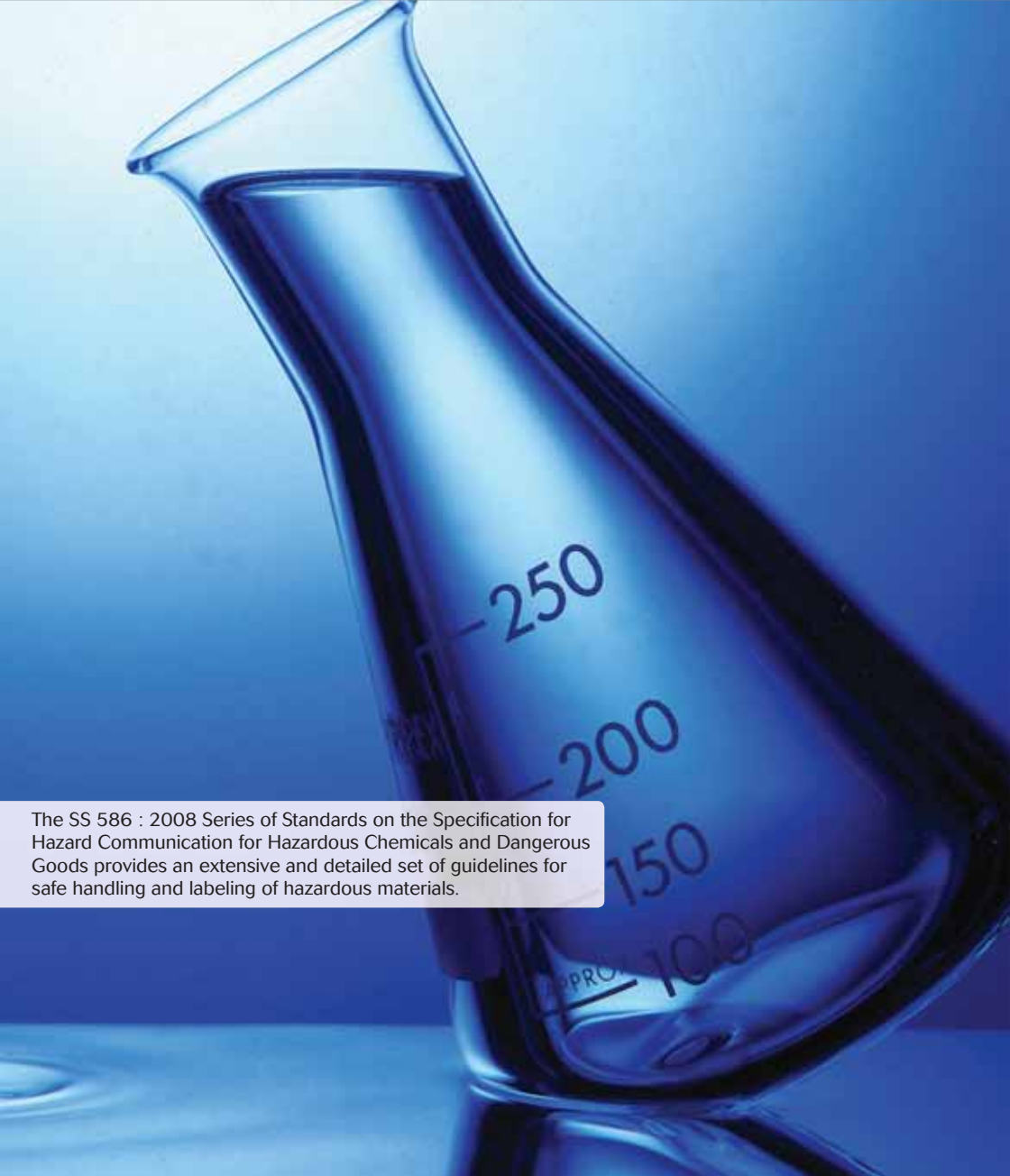
The TR 9 : 2003 Technical Reference for Maturity Assessment for eSupply Chain Management (eSCM) helps you build supply chain capability.

Appendices

Appendix 4

Regulatory Authorities In Singapore

Name	Area	Contact Details
1. Agri-Food and Veterinary Authority	Food safety (fresh produce, manufactured or cooked)	www.ava.gov.sg
2. Building and Construction Authority	Building and construction	www.bca.gov.sg
3. Energy Market Authority	Electrical and gas safety; Energy	www.ema.gov.sg
4. Fire Safety and Shelter Department, Singapore Civil Defence Force	Fire-related equipment	www.scdf.gov.sg
5. Health Sciences Authority	Pharmaceutical products and medical devices	www.hsa.gov.sg
6. Infocomm Development Authority of Singapore	Information and telecommunication equipment	www.ida.gov.sg
7. Ministry of Manpower	Workplace safety and health	www.mom.gov.sg
8. National Environment Agency	Environment and public health issues, meteorological services, markets and food centres, public toilets, public cleansing, pollution and recycling	www.nea.gov.sg www.mewr.gov.sg



The SS 586 : 2008 Series of Standards on the Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods provides an extensive and detailed set of guidelines for safe handling and labeling of hazardous materials.

Appendices

Appendix 4

International And Regional Organisations

Name	Area	Contact Details
1. ASEAN Consultative Committee on Standards and Quality	ASEAN cooperation committee to facilitate trade by reducing technical barriers to trade	www.aseansec.org
2. Asia Pacific Economic Co-operation Sub-committee on Standards and Conformance (APEC SCSC)	Cooperation activities within APEC for standards and conformance	www.apecsec.org.sg
3. ASTM International	Develops standards for a diverse range of industries e.g. construction, electrical and electronic, and medical technology	www.astm.org
4. British Standards Institution (BSI)	Facilitates, drafts, publishes and markets British standards and other guidelines	www.bsi-global.com
5. Deutsches Institut for Normung eV (DIN)	Defines specific standardisation requirements and records the results as German standards	www.en.din.de
6. International Electrotechnical Commission (IEC)	Prepares and publishes international standards for all electrical, electronic and related technologies	www.iec.ch
7. International Organisation for Standardisation (ISO)	Develops voluntary technical standards to help raise levels of quality, safety, reliability and interchangeability	www.iso.org
8. Japanese Standards Association (JSA)	Research and development, publication and distribution of Japanese Industrial Standards and other international standards	www.jsa.or.jp

Notes

Whether you are a big corporation or a small start-up, standards are important to give your business that extra competitive edge. Adopting standards in your business can:

- Increase your sales
- Lower your costs
- Improve the quality of your products and services
- Keep your customers satisfied
- Attract new customers
- Grow your business overseas

Find out how standards can be applied to your business today.

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