



50

YEARS OF
QUALITY &
STANDARDS



50 YEARS OF **QUALITY & STANDARDS**

Over the past 50 years, Quality & Standards (Q&S) have played a vital role in Singapore's economic and social success, contributing to our reputation as a trusted and thriving business hub. By ensuring that our goods and services meet international requirements and are of a consistent quality, Q&S are key to global trade for Singapore enterprises.

Q&S will become more important in an increasingly connected and globalised world. Q&S will need to evolve in tandem with the latest technologies and innovations to support the next lap of Singapore's growth.



MESSAGE FROM CHIEF EXECUTIVE



2016 is a special year as we celebrate the golden jubilee of Singapore's Quality & Standards (Q&S) journey.

This commemorative book highlights the key Q&S initiatives over the last 50 years. These initiatives have contributed to our economic growth, a safe and sustainable environment, and a better quality of life for Singaporeans. These achievements were made possible by the strong leadership and contributions from our standards and accreditation partners.

On behalf of SPRING Singapore, I thank all our partners for your dedication and commitment. I am confident the past achievements will spur even closer collaboration with you. Together, we will continue to steer Q&S developments to support the growth of Singapore's future economy.



Mr Poon Hong Yuen
Chief Executive,
SPRING Singapore



The Singapore Standards Council (SSC) was set up in 1966. Over the years, we have progressed from developing just national standards, to world-first standards in bunkering, water efficiency and business continuity. On behalf of SSC, I wish to express my appreciation to all our standards partners who have helped us make these giant strides over the last 50 years.



Mr Edwin Khew
Chairman,
Singapore Standards Council



On behalf of the Singapore Accreditation Council (SAC), I would like to thank our accreditation partners who have contributed tremendously to the national accreditation programme. SAC has built itself up to deliver accreditation as a mark of distinction and its Mutual Recognition Arrangements (MRAs) have facilitated international trade.

I look forward to working with all stakeholders and partners, to expand our footprints of "checked once, accepted everywhere" and to provide new areas of accreditation, enabling the growth of our future economy.



Mr Renny Yeo
Chairman,
Singapore Accreditation Council



DINING IN CONFIDENCE

FOOD

We strive to eat well, but we often take food safety for granted. It is almost impossible to tell, just by looking, tasting or smelling, if a food product has been contaminated.

This is why food safety management standards are important to organisations involved in food manufacturing, preparation, delivery and service. Before the food is prepared, the ingredients and raw products are extensively tested for chemical and microbiological contamination by our accredited laboratories. With such assurances, we can all indulge in culinary pleasures with confidence.



Cold chain management of vegetables, chilled pork and frozen seafood for safety, freshness and quality
SS 585
SS 552
TR 49



Storage warehouses for food products
TR 35



Accredited food safety management systems
ISO 22000
SS 590



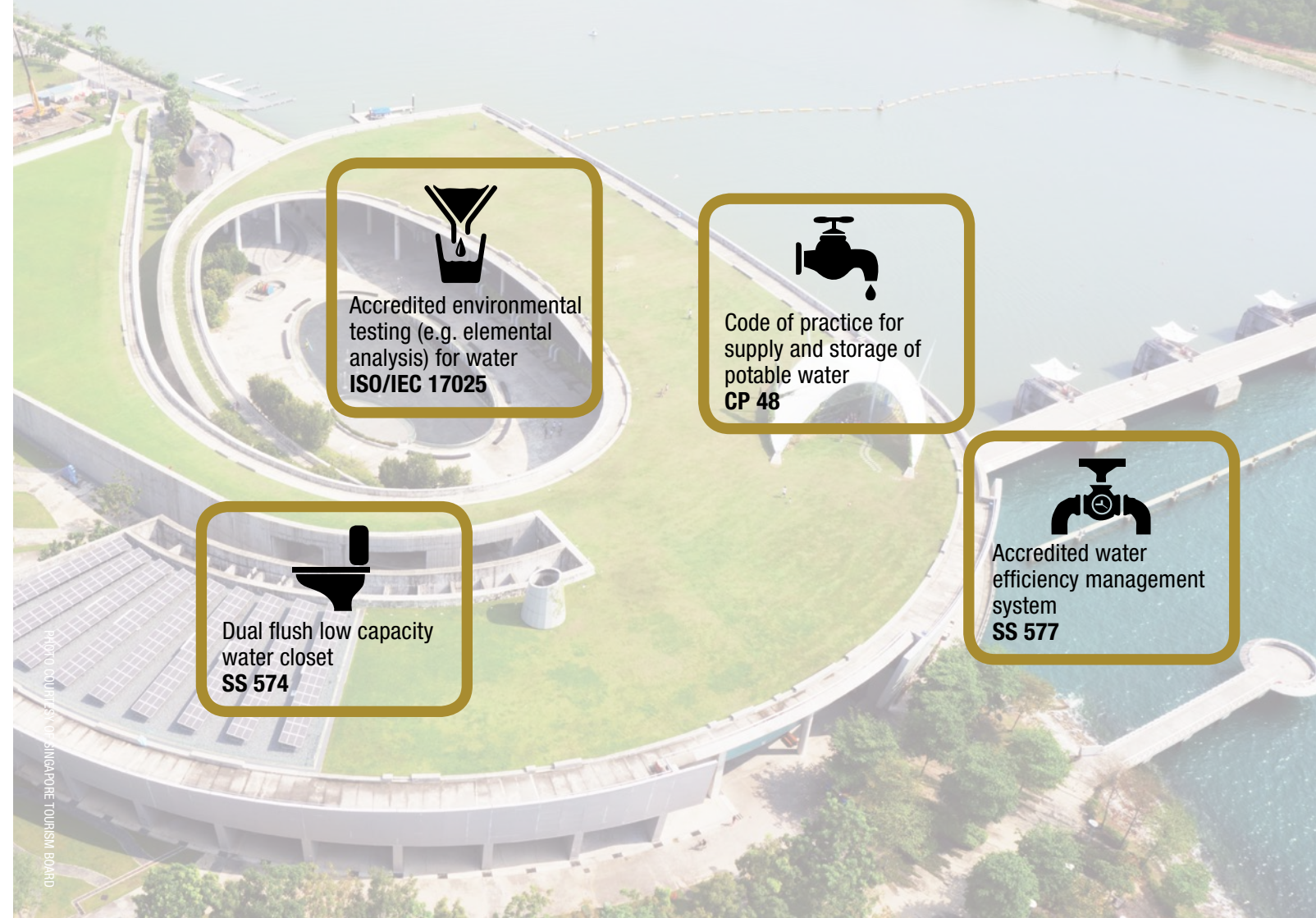
Accredited food testing for seafood and beverages (e.g. Salmonella)
ISO/IEC 17025

SUSTAINING WATER SUPPLY

WATER

The demand for water is expected to double in the next 50 years. Coupled with the uncertainty of climate change, we cannot take our water resources for granted.

Q&S have helped the nation attained sustainable water supply. Standards, such as plumbing works and water distribution systems, are developed to ensure minimum water loss. Additionally, our world-first water efficiency management system standard helps organisations plan, implement, and carry out continuous improvements in water-related processes. The water that supports our everyday living is tested by accredited laboratories. We need to preserve this precious resource for our future generations.



BUILDING SAFE HAVENS

RESIDENCES

Home is where the heart is. The structures that hold our homes are crucial in protecting lives, and must be able to sustain wear and tear. The materials used must also be durable and safe for our health. In the construction of houses, accreditation plays an important role in many aspects, such as structural steelwork inspection, pile testing and product certification of the concrete used.

As we transit into a Smart Nation, standards are even more critical in ensuring that safety and liveability are not compromised by the smart solutions which help to improve the quality of our lives.



Algae resistant emulsion
paint for walls
SS 345



Accredited ready-mix
concrete product
certification and structural
steelwork inspection
ISO/IEC 17065
ISO/IEC 17020



Age-friendly homes
SS 605



Accredited electrical
testing for home
appliances
ISO/IEC 17025



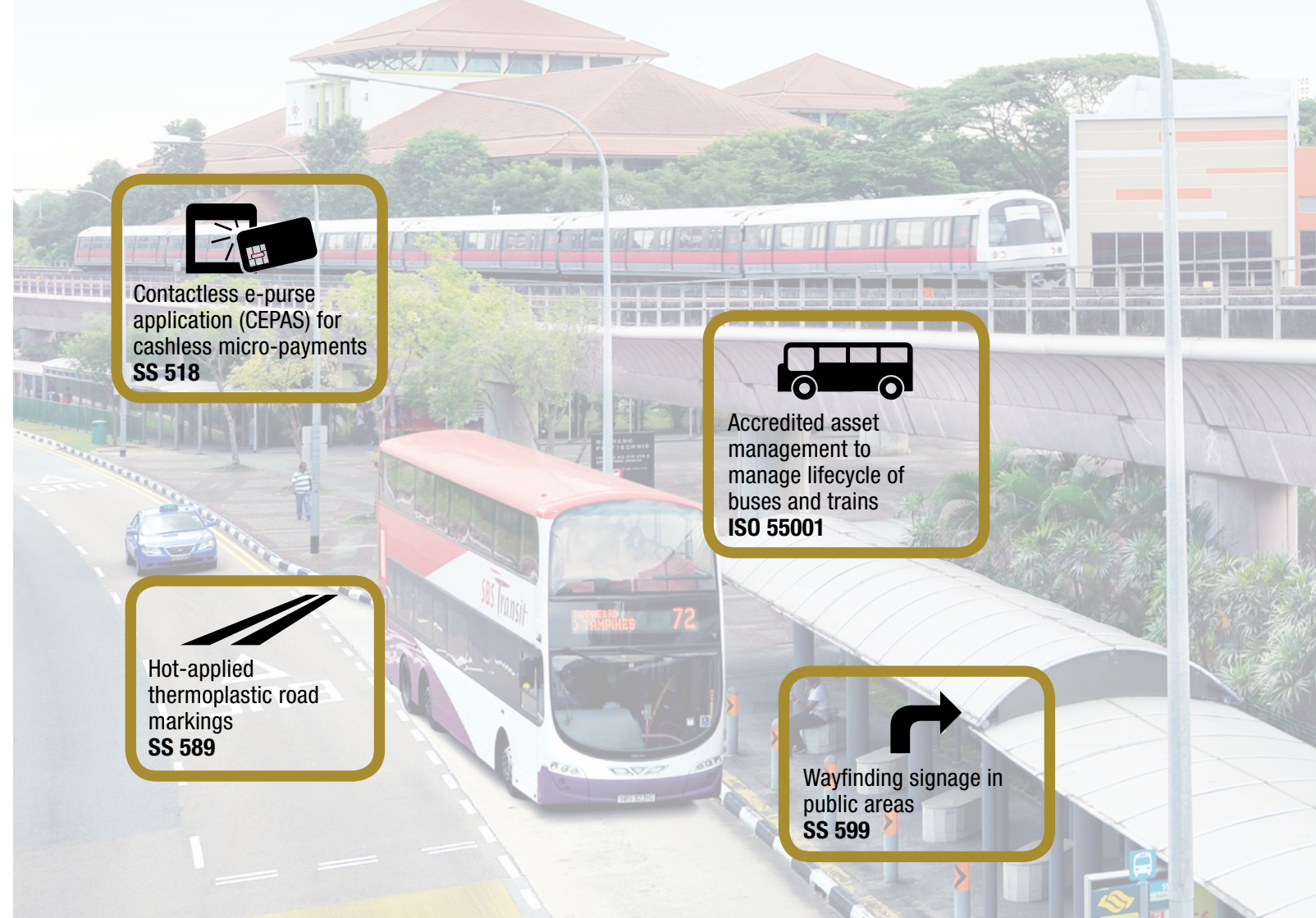
Sensor networks for
smart homes
TR 40

ENSURING SMOOTH JOURNEYS

TRANSPORT

Commuting is an integral part of our daily lives. We move from one place to another with ease, navigating our way through the busy city.

Commuters are able to travel smoothly, often paying for their seamless transit with the tap of a card that is based on the CEPAS standard. The wayfinding standard was developed with enhancing accessibility in mind, with special consideration for the elderly. Our transport providers are able to use the asset management system standard to manage the lifecycle of their assets, such as buses and trains. This efficient transportation system is anchored by Q&S, ensuring that we remain safe as we move about.



Contactless e-purse application (CEPAS) for cashless micro-payments
SS 518



Accredited asset management to manage lifecycle of buses and trains
ISO 55001



Hot-applied thermoplastic road markings
SS 589



Wayfinding signage in public areas
SS 599

MOVING UNDERGROUND

SUBTERRANEAN

In land-scarce Singapore, underground infrastructure is critical in expanding our work and living space. It connects us across the island, provides storage space for chemicals and perhaps to be used for future labs and offices.

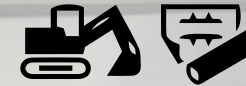
Safety is a priority in enclosed and hard-to-reach spaces. This is where Q&S mitigate the hazards of underground infrastructure construction and maintenance. Accredited ground investigation and soil testing services contribute to the integrity of underground structures.



Accredited civil
engineering testing in
tunnelling
ISO/IEC 17025



Code of practice for
earthwork activities to
minimise damages to
nearby electricity cables
SS 576



Design and construction
of deep excavations
TR 26



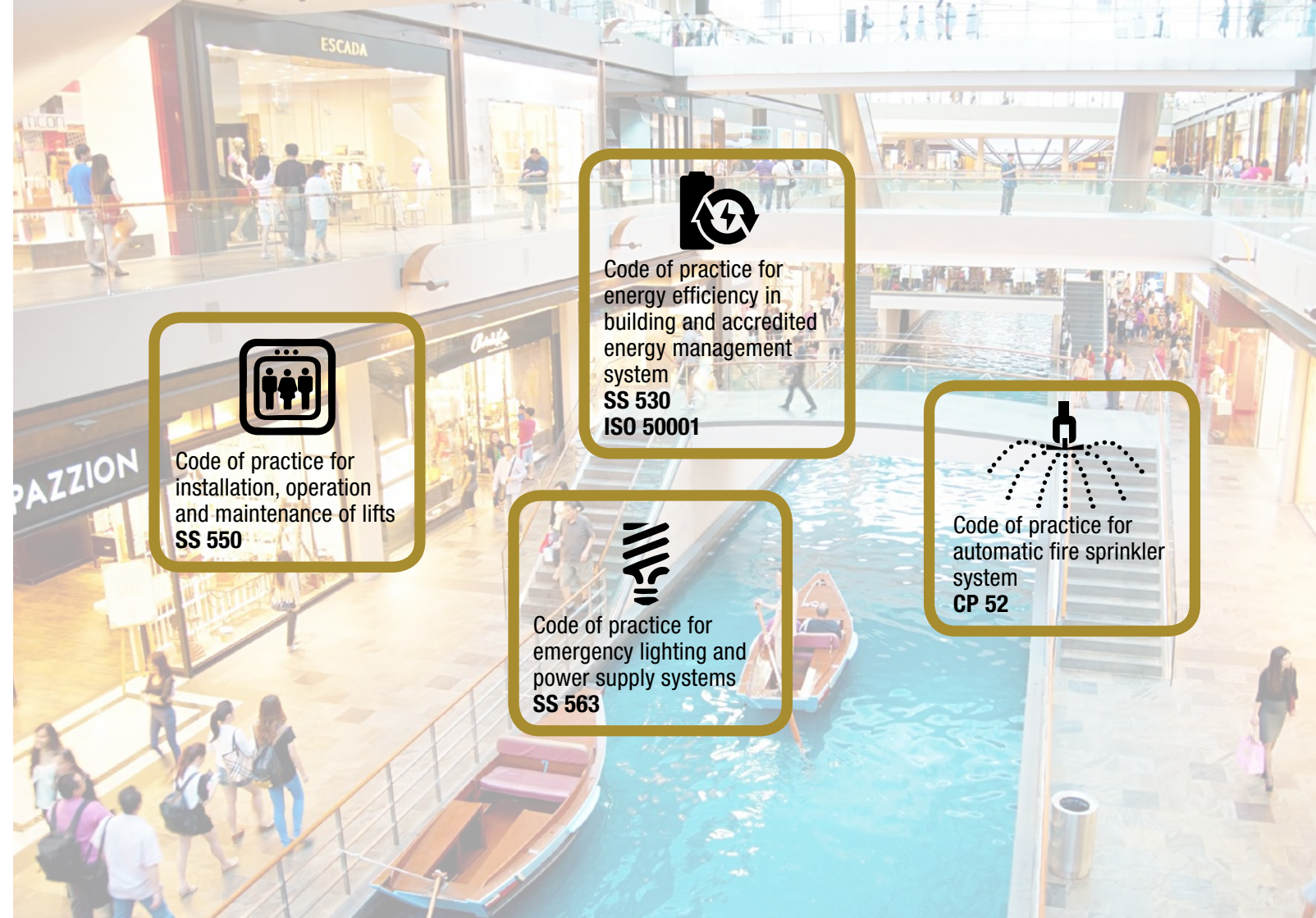
Geotechnical design -
Ground investigation
and testing
SS EN 1997

SHOPPING WITH EASE

MALL OPERATIONS

For many Singaporeans, shopping is part of daily life. From food and clothes, to beauty and education services, we frequent shopping malls for our needs.

Every aspect of a mall's operations runs like well-oiled machines. Safe lifts and escalators transport shoppers from one floor to another; strategically placed lights and signs silently steer people in the right direction, even in an emergency. Implementation of standards helps ensure that the mall remains a safe and fun haven for shoppers, young and old.



Code of practice for
installation, operation
and maintenance of lifts
SS 550



Code of practice for
energy efficiency in
building and accredited
energy management
system
SS 530
ISO 50001



Code of practice for
automatic fire sprinkler
system
CP 52



Code of practice for
emergency lighting and
power supply systems
SS 563

PROTECTING INFORMATION

CYBERSPACE

In this digital era, information security is vital to any organisation. There is an increasing need for greater information sharing, while at the same time upholding business integrity. Information shared on the cloud is now more protected by accredited multi-tiered cloud computing security certification.

As data storage is energy-intensive, standards have been developed to help organisations establish the necessary systems and processes to improve the energy efficiency of their data centres.



Last mile delivery for
eCommerce transactions
TR 46



Accredited multi-tiered
cloud computing security
management system
SS 584



Energy and
environmental
management systems for
green data centres
SS 564



Information security
management
ISO/IEC 27001

CREATING CONDUCTIVE WORKPLACES

WORKSPACE

In this bustling cosmopolitan city, individuals spend a good amount of time at their workplaces. To safeguard their health and well-being, standards help define the quality of air in air-conditioned buildings, cover the fundamentals of office ergonomics as well as provide guidance on optimum lighting.

The accredited laboratories test the electrical products, e.g. laptops used at the workplaces. Collectively, this optimises the quality of life in a dynamic workplace.



Code of practice for
indoor air quality in air-
conditioned buildings
SS 554



Safety glazing on glass
materials used in
buildings
SS 341



Code of practice for
office ergonomics
SS 514



Accredited testing for
electrical/electronics
components
ISO/IEC 17025



Code of practice for
lighting in work places
SS 531

PROVIDING QUALITY HEALTHCARE

WELL-BEING

In a medical emergency, there is no room for errors. Standards on medical testing and medical devices help ensure that patients receive optimum treatment and care. Accredited medical testing ensures high reliability of the medical results, delivering confidence.

Facility design guidelines can also direct hospitals towards quality and efficient medical care. Collection of patient data using the remote vital signs monitoring standard supports patients' recovery at home. Q&S help to provide quality healthcare from hospitals to homes.



Facility design guidelines
for acute general hospitals
TR 42



Remote vital signs
monitoring
TR 45



Quality management
system for design and
manufacture of medical
devices
ISO 13485



Accredited medical
testing (e.g. cytogenetics,
immunology and
haematology)
ISO 15189

CONNECTING THE WORLD

AIR TRAVEL

Changi Airport has been voted the World's Best Airport by air travellers for the fourth year in a row at the annual Skytrax World Airport Awards in 2016. This is no easy feat for an airport that handled more than 55 million travellers in 2015.

Q&S contribute towards helping Changi Airport run smoothly, while maintaining security against terrorism and diseases. Among the many processes that ensure safety in our airport are biometric systems that screen visitors entering and leaving Singapore, as well as thermal imagers that scan human body temperatures.



Thermal imagers for human temperature screening
SS 582



Common biometric exchange formats
ISO/IEC 19785



Accredited quality management system for planning and design of airport infrastructure
ISO 9001

CALLING AT A TRUSTED PORT

PORT OPERATIONS

The Port of Singapore sees more than 130,000 vessels calling annually, with a ship arriving or leaving its waters every two to three minutes. Singapore is connected to 600 ports in over 120 countries.

To help Singapore's bustling port maintain its integrity, capabilities and efficiency, standards spell out the best practices needed for key operations such as bunkering and freight container management. Accredited inspection services provide for a fair custody transfer between the numerous parties working in the port and minimise disputes for bunkering operations, thus keeping the port operations swift and smooth-sailing.



Accredited inspection for
bunkering
ISO/IEC 17020



Code of practice for
bunkering
SS 600



Freight container
equipment interchange
receipt
TR 39



Mass flow metering to
measure bunker fuel
TR 48



Accredited quality
management for bunker
supply chain
SS 524

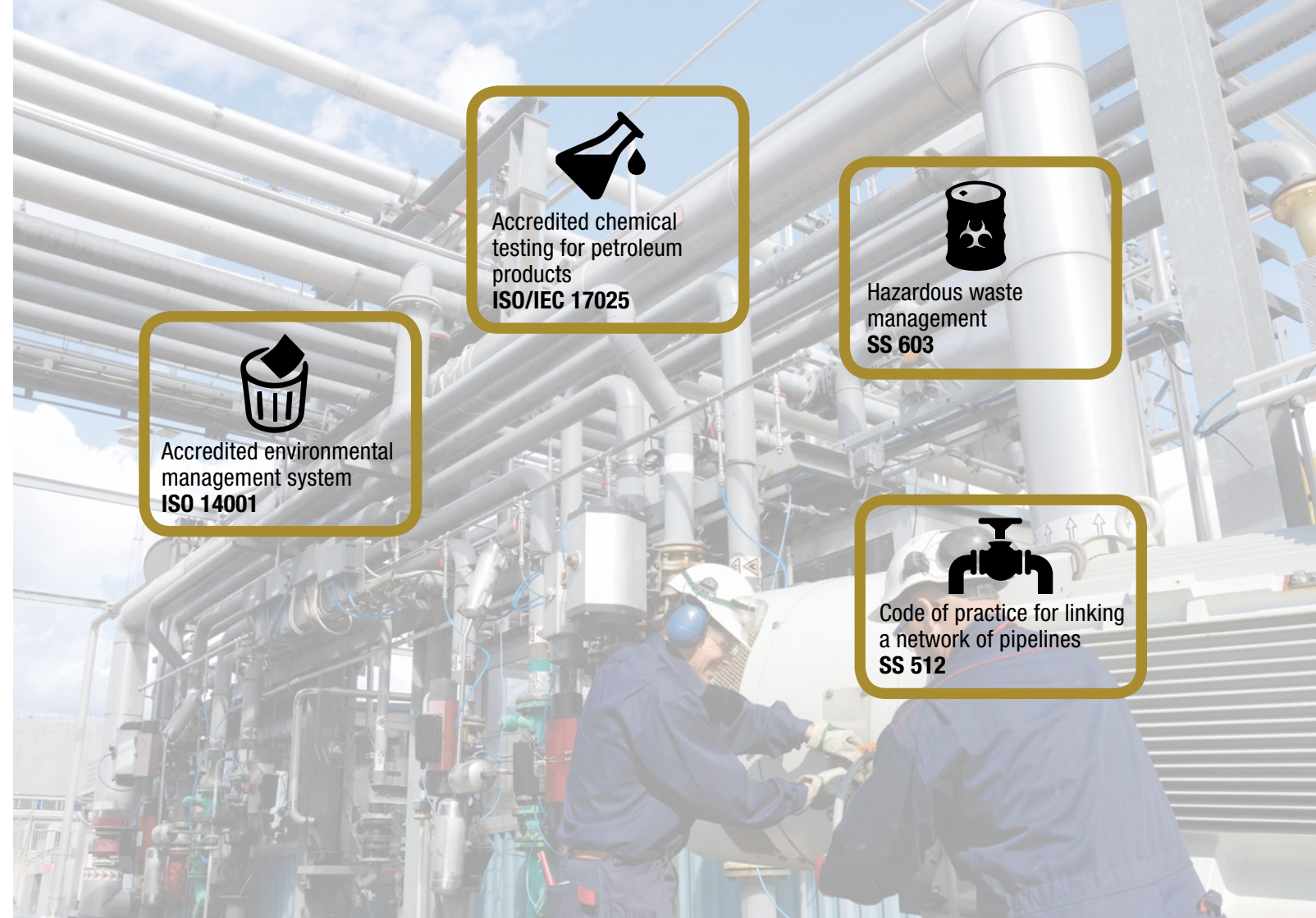


CREATING A WORLD CLASS HUB

OIL & GAS

Today, Singapore is one of the world's top three export refining centres, making it the undisputed oil hub in Asia. The centre of oil and gas activities is Jurong Island – home to more than 95 leading oil and gas, petrochemicals and specialty chemicals companies from around the world.

The oil and gas products from these companies are tested by accredited laboratories. Q&S play an important role in ensuring safety, efficiency and the protection of the environment. Examples include the proper disposal of hazardous waste generated from oil- and gas-related activities and proper linkage of pipelines.



Accredited chemical testing for petroleum products
ISO/IEC 17025



Hazardous waste management
SS 603



Accredited environmental management system
ISO 14001



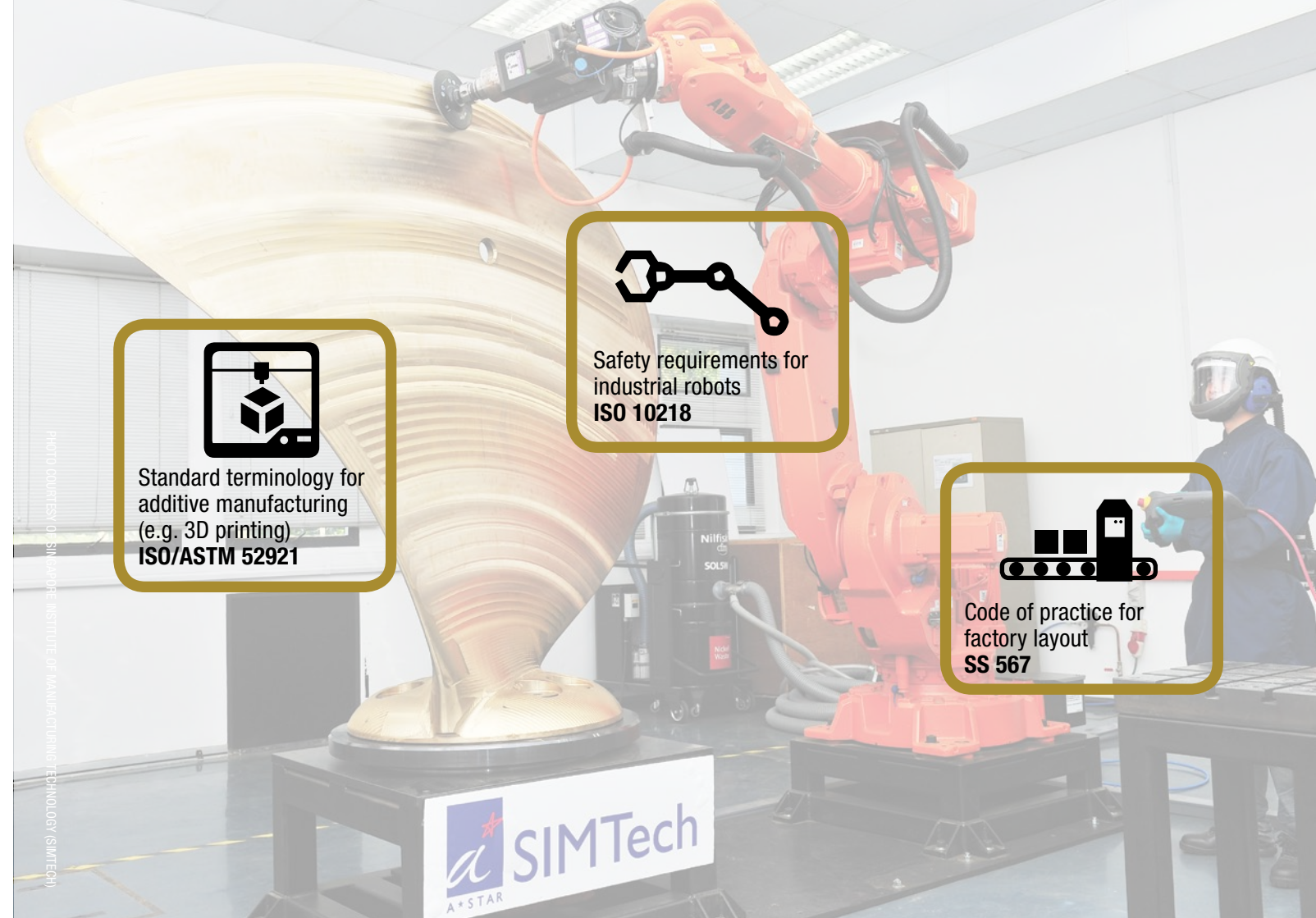
Code of practice for linking a network of pipelines
SS 512

BUILDING FUTURE FACTORIES

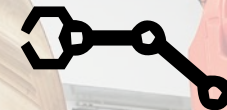
MANUFACTURING

Industrial robots have enabled and accelerated the evolution of automation technology. New standards are crucial in ensuring the safe working conditions for humans working alongside these robots.

Similarly, standards provide occupational safety and health guidelines for companies. These include basic requirements for ventilation, noise and lighting levels. Additionally, a standard terminology can help manufacturers adopting 3D printing technology to make their products using a common language.



Standard terminology for
additive manufacturing
(e.g. 3D printing)
ISO/ASTM 52921



Safety requirements for
industrial robots
ISO 10218



Code of practice for
factory layout
SS 567

CONSTRUCTING SAFE INFRASTRUCTURE

BUILDINGS

In our highly urbanised landscape, it is easy to take for granted the engineering feats required to construct some of our mega structures.

With the advancements in architectural technology and the growing complexities of building designs, the standard for construction computer-aided design helps to streamline the processes and align the different parties on a common platform. This has brought about savings of over \$300 million to the industry from 2003 to 2012. Construction safety is more important than ever before and standards ensure the health and safety of workers. Safety guidelines cover the safety practices at worksites, as well as the safety gear for workers.



Code of practice for safety management system for construction worksites
CP 79



Accredited occupational safety and health management system
SS 506



Code of practice for construction computer-aided design for efficient e-submission
CP 83



Code of practice for the safe use of mobile cranes
SS 536



Personal fall-arrest systems to prevent accidents from working at heights
SS 528

ESTABLISHING BUSINESS RESILIENCE

COMMERCE

Business continuity planning gives organisations a competitive edge. Accredited business continuity management certification helps organisations mitigate the effects of disruptive incidents while assuring their clients that they are able to continue to provide key products and services even in times of crisis.



Accredited business
continuity management
ISO 22301



Infocomm technology
disaster recovery
services
SS 507



Electronic data
interchange between
financial institutions
**ISO 20022
SS 611**

CONGRATULATIONS



On behalf of ISO, it is my honour to attend this 50th anniversary event of our ISO member and friend, SPRING Singapore. As home to our first Regional Engagement Initiative Office, I would like to thank SPRING Singapore for the key role they play in support of ISO and international standardisation.

Standardisation has been an important pillar in building this great nation and ISO wishes Singapore continuing prosperity, for the next 50 years and beyond!



Dr Zhang Xiaogang
President
International Organization for Standardization



On behalf of the IEC, I would like to congratulate SPRING Singapore on this important milestone. Besides being an active participant of IEC, Singapore is also exemplary in its adoption and use of IEC International Standards and IEC Conformity Assessment Systems by the industry and government.

We look forward to continuing our fruitful cooperation for many years to come.



Dr Junji Nomura
President
International Electrotechnical Commission



I would like to congratulate the Singapore Accreditation Council (SAC) for the 30 years of accreditation journey. As a valued signatory to the IAF, SAC has made contributions to the international accreditation community and to Singapore's economy through the extensive MRAs. I wish that SAC and its leaders continue these great successes for many more years to come.



Mr Xiao Jianhua
Chairman
International Accreditation Forum



Congratulations on your longevity milestone. On behalf of ILAC, I appreciate and thank you for the contributions that SAC has made to the international community of accreditation bodies and its stakeholders. May you have many more years of success in supporting Singapore's national quality infrastructure through internationally recognised SAC accreditation.



Mr Peter Unger
Chairman
International Laboratory Accreditation Cooperation





Formed more than

200

standard committees,
technical and working
groups



Collaborated with over

1,600

standards partners



Published more than

1,300

Singapore Standards
since 1966



Enabled some

8,000

management systems
certifications (e.g. ISO 9001,
ISO 14001 & ISO 22000)



Conferred

550

accreditations



Implemented

36

accreditation programmes



Collaborated with over

500

assessors and partners



Forged MRAs with over

80

economies



MARKET ACCESS TO OVER 80 ECONOMIES

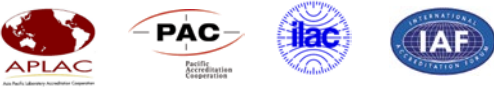
PARTNER ACCREDITATION BODY FOR MYANMAR

12 MUTUAL RECOGNITION ARRANGEMENTS

28 OVERSEAS ACCREDITATIONS

MUTUAL RECOGNITION ARRANGEMENTS

Globalisation is vital to economic success. Yet for those bringing their products and services to different markets around the world, conformity assessment could be a laborious affair if each territory required its own assessment process. This is where SAC Mutual Recognition Arrangements (MRAs) come in to serve as a global passport for enterprises in Singapore. These MRAs promote cross-border trade and imports by the recognition of SAC accredited certificates and reports in different markets.



LEADERSHIP POSITIONS IN INTERNATIONAL & REGIONAL FORA

- ISO President**
1997 - 1998
- ISO Council Member**
2003 - 2004
2007 - 2008
2015 - 2017
- IEC Council Board Member**
1998 - 1999
2000 - 2002
2016 - 2018
- PASC Secretary**
2014 - 2016
2017 - 2019
- PAC Chairman**
2016 - 2019
- APLAC Chairman**
2011 - 2012



The success of SPRING Singapore's role as a national standards and accreditation body is a result of the strong partnership between SPRING Singapore and our key stakeholders from both industry and government agencies. We are deeply grateful to the 2,000 partners from the various technical committees and working groups, who have voluntarily contributed their time and expertise to our programmes. We would also like to express our appreciation to our overseas partners who have collaborated with us in the development of international standards and accreditation schemes, as well as capacity-building initiatives.

To each and every one of these individuals and organisations, thank you for playing a part in the development of this national Q&S infrastructure that we are all proud of.



Ms Choy Sauw Kook
Assistant Chief Executive
Quality & Excellence
SPRING Singapore



SPRING
singapore
Enabling Enterprise

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