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International

1. 41st Annual Pacific Area Standards Congress Meeting in Okayama

A delegation from Standards Australia recently attended the 41st Pacific Area Standards Congress (PASC) Annual Meeting (AM), held in Okayama Japan from 14-17 May. Mr Adrian O'Connell, Deputy Chief Executive Officer at Standards Australia, is the Chair of the PASC Executive Committee and plays an important role in contributing to the success of the AM.

This year the AM had three central themes that helped to structure the meetings that were held throughout the week:

1. The role of standards in supporting the United Nation's Sustainable Development Goals (SDGs);
2. The strong support for the continuation of the ISO Regional Engagement Initiative based in Singapore; and
3. A call for increased collaboration between ISO and IEC particularly in the development of software tools for contributors to the standards development process.

There was collective support on all subjects from PASC members.

One of the week's events included a workshop which took place on 15 May and provided the opportunity for PASC members and 50 delegates from Japanese national industry to work together. The workshop concentrated on how standards can help the international community to reach the UN SDGs, focusing on economic, social and environmental aspects. The workshop considered existing standards, standards that are currently under development and opportunities for future standards projects. The key recommendations that emerged from the workshop were:

- To conduct a mapping of standards against the UN SDGs and consideration for proposals of unique national standards to be put forward as international standards.
- Promoting wider awareness, stakeholder engagement and participation and use of standards supporting SDGs with underrepresented and vulnerable stakeholders.
- Development of case studies to educate regulators, young professionals and other special stakeholder categories on the benefits of international standards identified to support SDGs.

Twenty-two of the twenty-four PASC members attended the AM this year, as Russia attended their first meeting in several years and they were re-admitted to PASC in April 2018. Ms Chantal Guay, CEO of SCC from Canada was appointed as the next PASC EC Chair (2019-2021). And New Zealand will host PASC 42 in Wellington 9 to 11 April 2019.

For more information, visit the PASC website: <https://pascnet.org/>

2. DG Azevêdo calls on APEC members to help address challenges in global trade

Addressing a meeting of APEC trade ministers in Port Moresby, Papua New Guinea, on 25 May, Director-General Roberto Azevêdo called on ministers to address rising trade tensions and to step up efforts to advance the WTO's work in a number of areas. During their session on 'Supporting the Multilateral Trading System', which had a thematic focus on the digital economy, the Director-General also updated ministers on ongoing debates in Geneva following the WTO's 11th Ministerial Conference (MC11) in Buenos Aires.

The Director-General said:

"APEC members have long been champions of the global trading system. I urge ministers to stay active and engaged, and to play their part – both in resolving the critical issues before us today and in finding ways to continue strengthening and improving the multilateral trading system. An escalation in trade tensions would affect everyone across the Asia-Pacific region, and beyond. Working together through

the WTO, we have resolved previous tensions and helped to preserve the stability of the global economy. We must do the same again today.

"To remain strong, effective and relevant, the trading system must also be responsive to its members. With the global economy changing before our eyes, members should feel able to discuss issues of emerging economic importance at the WTO - including in relation to the digital economy and issues of economic inclusion. The leadership of APEC members will continue to be important here.

"Work is also continuing in Geneva to advance negotiations after MC11. On all issues, it will be essential to find new ideas that could lead to convergence. And in all of these areas, I ask for the support of APEC members. The work on fisheries subsidies is a notable bright spot. These discussions are proceeding with a real sense of urgency following the decision taken by members in Buenos Aires."

Source: https://www.wto.org/english/news_e/news18_e/dgra_25may18_e.htm

3. Standards Australia working to strengthen the Indonesia-Australia Economic Partnership

Standards Australia recently released *Standards for Enabling Trade – Mapping and Gap Analysis Study*, an early outcomes activity to support the development of the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA). The study focused on mapping the mandatory Australian and Indonesian standards to contribute to the final negotiation stages of this significant trade relationship.

"With bilateral trade between Indonesia and Australia valued at \$16.4 billion in 2016-17, and 80% of world trade affected by standards, it is critical for standards to play a central role as economic negotiations progress," said CEO of Standards Australia, Dr Bronwyn Evans.

"This landmark standards trade enabling study will help Indonesian and Australian businesses maximize opportunities under IA-CEPA. The study examined Indonesia's and Australia's engagement internationally and nationally and has identified future areas of cooperation that will be critical to support IA-CEPA, said Prof Dr Ir Bambang Prasetya, Chairman of the National Standardization Agency of Indonesia (BSN)."

The study has been delivered as a result of the work between BSN – Indonesia and Standards Australia. Standards harmonisation, technical alignment and regulatory coherence were key focal points of the study and will feature heavily in supporting an outcomes-based IA-CEPA.

"The IA-CEPA, supported by this study, will be an important contributor to the growing economic relationship between Indonesia and Australia, as it delivers on its goals of enabling the flow of two-way trade, lowering tariffs, and boosting bilateral investment," said Dr Evans.

For more information about this significant piece of work, please contact Senior International Engagement Manager, Mr Damian Fisher at damian.fisher@standards.org.au

4. Applications open for WTO workshop on trade and public health

The WTO, in close collaboration with the World Health Organization (WHO) and the World Intellectual Property Organization (WIPO), is holding its annual Workshop on Trade and Public Health, in Geneva from 8 to 12 October 2018. The deadline to submit applications is 8 June 2018.

The workshop takes a holistic approach to the interlinkages between trade and public health, building on similar workshops held since 2014, as well as on earlier activities on intellectual property and public

health organized by the WTO Secretariat since 2005. The event will follow the approach of the WHO-WIPO-WTO Trilateral Study on “Promoting Access to Medical Technologies and Innovation: Intersections Between Public health, Intellectual Property and Trade”.

What is the workshop about?

The workshop's main objective is to build the capacity of national policy makers to analyse policy choices at the crossroads of trade, intellectual property and public health. It will review multilateral trade agreements as part of the wider action to address needs specific to public health, and will place them in the context of the broader factors that impact on innovation and access to medical technologies.

The themes of this year's programme include: public health determinants; the intellectual property system, including special compulsory licences for export; public procurement policies and practices; competition policy and rules; market access determinants; health services; health-related provisions in regional trade agreements; regulatory issues, including approval, quality, control and effectiveness of medicines and the protection of clinical trial data; as well as health-related measures in the framework of the Technical Barriers to Trade (TBT) Committee and the Sanitary and Phytosanitary Measures (SPS) Committee. The programme is complemented by breakout sessions on topical issues, such as anti-microbial resistance and non-communicable diseases. Exercises and case studies will set these issues in a practical context.

Who should apply?

The workshop is tailored for senior government officials with direct responsibility for matters related to the interaction between trade, intellectual property and public health and who are expected to continue working or being assigned further responsibilities in this field.

Candidates should already have established expertise and experience in their field of work, a good level of knowledge of the WTO agreements and public health policy and all-round proficiency in English, the working language of the workshop. They may come from authorities responsible for trade, intellectual property, public health, foreign affairs or any other relevant authority in the areas of interface between trade agreements and public health.

How to apply?

WTO members and observers eligible to benefit from WTO training activities are invited to nominate capital-based officials by 8 June 2018. Detailed information regarding the application procedures is available [here](#).

The WTO Secretariat can fund a maximum of 30 participants from developing countries and least developed countries. Provision will also be made for up to five self-funded participants.

Source: https://www.wto.org/english/news_e/news18_e/trip_15may18_e.htm

5. DG Azevêdo in Fiji: 'WTO vital to help Pacific region respond to its unique challenges and opportunities'

In a speech at the University of the South Pacific (USP) in Suva, Fiji, on 21 May 2018, Director-General Roberto Azevêdo said that trade and trade policy had a crucial role to play in supporting Fiji and other Pacific Islands to meet the big challenges ahead, 'whether it's meeting the urgent imperative of development, or delivering improved resilience and recovery from natural disasters', and he stressed that the WTO would also help in meeting the big opportunities on the horizon as well — from boosting tourism, to creating a framework for more sustainable fisheries, to realising the benefits of improved internet access and connectivity. His remarks were broadcast at other USP campuses across the region.

During his visit to Fiji, the Director-General met President Jioji Konrote to discuss how the WTO can continue to support the country's development goals and strengthen the bonds that exist between the region and the WTO. He also signed a Memorandum of Understanding with Dame Meg Taylor of the Pacific Islands Forum Secretariat (PIFS), extending collaboration between the WTO and PIFS in a range of areas, including capacity building assistance. While in Suva, DG Azevêdo also opened a 'regional trade policy workshop' event, designed to deliver training on trade issues and the WTO for the Pacific region. The workshop was co-organized by the WTO and PIFS, and the Director-General was joined at the launch by Dame Meg Taylor and Minister Faiyaz Siddiq Koya. The Director-General's remarks at the opening session of the workshop are available [here](#).

DG remarks at the University of the South Pacific

Dame Meg Taylor, Professor Armstrong, Ladies and gentlemen,

Good afternoon – and hello to those watching this online. Thanks for tuning in.

I am very pleased to be here today at the University of the South Pacific. Thank you for your kind invitation. This is actually my first visit to Fiji and to the Pacific Islands as WTO Director-General – so it is a real pleasure to join you.

I think that there is a special link between this region and the World Trade Organization. This is down to the strong bonds that exist between the countries of the region and the important role of the Pacific Islands Forum Secretariat.

I have often found that smaller nations are more outward-facing than others, and more engaged with the world outside their borders. Countries that are not great powers rely more on the global system of cooperation and rules to ensure that they have a fair go. And of course smaller economies desperately need access to other markets in order to grow and develop.

The WTO provides all of this. It provides a platform for you to engage in the global economy under multilaterally-agreed rules, and it provides an opportunity to pursue your interests. And that is what you do. Working together, the Pacific Islands have become important players in the debate at the WTO over the years. You have used the global system to address your needs. I will detail some areas where real progress has been made in a moment – but of course there is much more to do. So I urge you to stay active and stay engaged.

With a strong and united stance, sharing many common interests, you really do have a voice in Geneva, and your representatives there do an excellent job in making sure that it is heard. In fact, when I talked about 'smaller economies' a moment ago, perhaps I should have chosen my words more carefully.

According to some estimates, the members of the Pacific Islands Forum cover over 40 million square kilometres of land and sea. That is a bigger area than the European Union and ASEAN combined. This offers great potential in terms of access to natural resources. At the same time of course it also poses challenges of distance and vulnerability to natural disasters. Again I think your desire to meet these opportunities and challenges stands behind your record as champions of international cooperation and multilateralism.

We all know that the hard work of the Pacific Island nations was essential to securing the Paris Climate Agreement in 2015. And Fiji of course played a key role in presiding over COP23 in Bonn last year. Pacific Island countries were also a driving force behind the Oceans Conference in New York last year – focused on the implementation of Sustainable Development Goal 14 on the conservation and sustainable use of the oceans and marine resources for sustainable development.

The simple fact is that we are better placed to deal with the challenges before us when we work together. And your leadership and advocacy is particularly important today.

These are challenging times for multilateralism. This applies on a number of fronts, but let me focus particularly on what we are seeing in the trading system.

We have all seen recent headlines about rising tensions among major trading partners. Despite this, trade is actually performing very well, and it continues to help drive the global economic recovery. Trade grew at a rate of 4.7% in 2017 – the strongest performance since 2011. And we expect this growth to continue, with economic cycles between China, the United States and the European Union synchronizing in a way that we have not seen for a decade. This is all good news. It means that trade is playing its part in supporting growth, development and job creation.

However, all of that could be put at risk if the tensions that we have been seeing continue to escalate. The global economy is profoundly interconnected today, and this multiplies the complications that trade-restrictive actions can cause. Two-thirds of world trade now occurs through global value chains. In this context, the effects of any shocks to the trading system would likely be globalised, reaching far beyond those countries who are directly involved.

The Pacific region is unlikely to be immune to this, so we have to do everything we can to avoid further escalation. I have been working closely with WTO members and urging them to take every action possible to avoid going down this road.

Instead of escalating tensions, we need to find ways to resolve them constructively. The WTO has a key role to play here. The organization was created as a forum for members to find ways to cooperate, resolve issues and hold each other to account. And this is what we've been doing. In fact, I would argue that, without the WTO, we would have started a trade war some years ago.

After the crisis of 2008 we did not see an outbreak of protectionist policies, as we did in the past. This could have dramatically worsened the economic fallout. In fact, the share of world imports covered by import-restrictive measures implemented since October 2008 is just 5%. This quite contained reaction to the post-2008 protectionist pressures is precisely because of the framework of rules and practices provided by the multilateral trading system - by the WTO.

We need to safeguard the system so that it can keep playing this role – and so that it can keep supporting growth and development around the world. But just preserving the system is not enough. We also have to ensure that it helps to provide more opportunities – especially for those who need them the most.

Ensuring that everybody has the skills and tools they need to participate is an essential part of creating a trading system that is truly global and inclusive. For this very reason we put a special focus on the trade conditions of the Small Island Developing Economies through our Work Programme on Small Economies. And this has delivered some important decisions in your favour.⁽¹⁾

We also have a number of initiatives to help countries build trading capacities. For example, small economies have been permitted to use regional bodies for SPS and TBT notifications instead of each having to notify nationally

Through the WTO's Aid for Trade initiative we provide developing countries with targeted assistance to improve their trading infrastructure. Since 2006, the initiative has committed around 4.1 billion dollars to Pacific Island economies.

We also support an initiative called the Enhanced Integrated Framework, which helps least developed countries to build their capacity to trade. The EIF has developed a number of projects in the Pacific, helping countries leverage their trading potential. For example, Vanuatu has been helped in rebuilding its tourism infrastructure in the aftermath of Cyclone Pam.

On all these fronts, we work very closely with the Geneva mission of the Pacific Islands Forum Secretariat, to ensure that these initiatives deliver to your needs.

I should note, as well, that a number of Pacific members – namely Fiji, Solomon Islands and Vanuatu – have also opened missions in Geneva and I am hopeful that others will follow in due course. Greater engagement gives you the chance to learn more about the WTO, and to help shape the trading system in your favour.

Members are making progress in this direction, by delivering new reforms to the system. In recent years, we have delivered a number of meaningful agreements. In 2013 in Bali, we delivered the Trade Facilitation Agreement. It was the biggest multilateral deal in a generation and will have huge economic significance, potentially cutting trade costs globally by an average of 14.3 per cent – with the biggest gains going to the developing and least-developed economies, including here in the Pacific. Indeed, these measures are particularly significant when your trade costs are already high due to the great distances that your imports and exports have to travel. Fiji, Papua New Guinea and Samoa have ratified this deal, and I encourage the other Pacific Island WTO members to do so as swiftly as possible.

Two years later, in 2015 in Nairobi, members came together to deliver the biggest farm reform since the creation of the WTO, with the decision to abolish agricultural export subsidies. Members have also agreed on a number of steps on cotton, and measures to help the poorest countries to boost their trading potential.

All this has shown that the WTO's 164 members can work together in a meaningful way to solve the most complex problems they face, and deliver on the priorities of the most vulnerable. The latest stage on this journey was our ministerial conference in Buenos Aires last year. While no major, final agreements were struck, members laid some positive foundations that we are now working to build on.

Levels of political support were high in Buenos Aires, and members committed to continuing negotiations in all areas, including the Doha issues. This is very important. And ministers took an important decision on fisheries subsidies which I know is a key area of interest for the region.

While we didn't get the ambitious outcome that many were hoping for – including myself – it was a significant step forward.

Members committed to adopt an agreement on disciplines that prohibit certain forms of fisheries subsidies that contribute to overcapacity and overfishing, and to eliminate subsidies that contribute to illegal, unreported and unregulated fishing. This a key target of Sustainable Development Goal 14 on the conservation and sustainable use of our oceans.

Clearly the ocean is a tremendous resource – but it must be used responsibly and sustainably, so that the Blue Economy can continue to serve future generations. But I don't think I need to tell you that. According to the World Bank, a more sustainable fisheries economy could boost public revenues in the Pacific Islands by 300 million US dollars per year by 2040. And it could create 15,000 additional jobs. This is a huge opportunity. And I think that our work at the WTO can make an important contribution. Members have agreed on a work programme for the fisheries subsidies negotiations for the coming months. Meetings started in Geneva last week. So let's make sure we deliver on this vital issue.

Also in Buenos Aires groups of WTO members announced new initiatives in a number of other areas. They included talks on:

- how to help promote electronic commerce for inclusiveness,
- how to support smaller businesses to trade, so that they are not crowded out by bigger players,
- how to facilitate investments, and
- how to ensure that trade contributes fully to the economic empowerment of women.

There have been meetings under each of these initiatives in recent months. And in each case there seems to be real momentum. It is very positive that members are seeking to use the WTO to tackle matters that they consider to be of pressing economic importance. And it is interesting to look at the make-up of these new groups. They encompass developed, developing and least-developed countries, big and small.

Of course each member needs to determine for themselves whether and how best to engage in these areas. That said, there could be interesting opportunities for the Pacific Islands here.

Studies show that improved Internet connectivity in the Pacific Islands could add more than 5 billion US dollars to the region's GDP and close to 300,000 additional jobs by 2040. More investment - particularly in infrastructure - could also help the region tackle many of its trade costs, and boost the Pacific's integration into the global economy.

We know that building resilient infrastructure is a priority in the Pacific, especially due to the ever-present risk of natural disasters. The economic costs of such events are very high – to say nothing of the human cost. Some estimates show that these disasters can hit GDP by 0.5 to 6.6 per cent annually. And climate change will only increase the level of risk and vulnerability.

Rigorous studies suggest that the frequency and severity of natural disasters are likely to increase. This issue is not going away. So we need to be better prepared and better informed the next time we are called upon to respond. In this vein, WTO members have started a dialogue on how trade policies and practices can help in dealing with natural disasters.

The wrong measure could stifle recovery, erode resilience, and restrain development. But the right policy can help improve supply side capacity and restore trade after a disaster, boosting recovery. So we have to get this right and contribute in any way we can.

To help inform this discussion, just last month we launched a new research project to help countries analyse how trade can help them respond to and recover from natural disasters and build resilience to such events. It is a very important piece of work.

I am confident that the trade community can play a positive role in responding to this urgent issue. I am ready to support members in this effort. The WTO is here to serve its members. It is here to serve you.

I want to see the WTO helping this region to meet the big challenges ahead – whether it's meeting the urgent imperative of development, or delivering improved resilience and recovery from natural disasters. And I want to do all we can to help you seize some of the big opportunities on the horizon too – whether it's boosting tourism, creating a framework for more sustainable fisheries, or realising the benefits of improved internet access and connectivity.

That's our job. But to deliver it we also need your support – especially at a time when multilateralism is under strain. So I urge all countries in the region to use the system, and speak up for the system and for your interests in it.

Global cooperation is a precious resource. It is the only way that we will meet the challenges before us, and seize the opportunities. It is the only way to deliver the kind of future that I believe people in this region want and deserve.

I look forward to working with you all to that end.

Thank you.

Source: https://www.wto.org/english/news_e/news18_e/dgra_22may18_e.htm

1. Building standards for the future we want

Despite the international community's best efforts, extreme weather events and slow-onset climate change continue to wreak havoc on our lives and livelihoods. Adaptation measures, however, will help us prepare for the worst – and new ISO standards are filling a gap by providing a badly needed high-level framework, helping organizations to cope and adapt.

Ever since the first Earth Summit in Rio in 1992, the climate change mitigation race has been on. From summit to summit, governments everywhere were urged to put in place measures to bring greenhouse gas (GHG) emissions down, along with Earth's temperature.

Solar panel incentive schemes, hydroelectric dams, wind farms, electric transport and recycling campaigns are just some of the ways the world is tackling the issue – and yet, according to The Emissions Gap Report 2017 published by UN Environment, total global GHG emissions continue to rise, although the rate of growth has decreased over the past few years.

Paying the price

We all continue to pay a high penalty, not only in fatalities and injuries from extreme weather events, but also in financial terms, with livelihoods lost, communities destroyed and massive rebuilding required. Last year was the costliest on record for insurance pay-outs from natural disasters, with the most expensive hurricane season ever known in the United States and devastating floods in South Asia.

Extreme weather, made worse by climate change, along with the health impacts of burning fossil fuels, has cost the US economy at least USD 240 billion a year over the past ten years, according to the report *The Economic Case for Climate Action in the United States*, published by the Universal Ecological Fund, a non-profit that disseminates scientific data to address climate change.

In the UK, extreme water events, such as droughts or floods, attributed to climate change, have been taking a toll on both communities and business. Anglian Water, the UK's largest water and water recycling company, can vouch for that. "Over the last 40 years, there have been a number of droughts far worse than anyone had planned for, which had a big impact on our customers in terms of severe water restrictions," said Christopher Hayton, Anglian Water's Head of Public Affairs.

"At the same time, flood events are becoming far more difficult to predict, increasing risk, not only for our customers, but also for our own vital assets. These risks are being compounded by the rapid economic and housing growth that is forecast over the next 25 years."

Urban migration, of course, is not just a challenge for the UK, it is a worldwide issue that will have a huge impact on global resources that are already under strain. Add to that the continued growth in the world's population – projected to reach 9.7 billion by 2050, according to the United Nations Department of Economic and Social Affairs – and the pressure on our environment is not likely to lift any time soon.

Taking appropriate action

There is no denying that the world needs to have measures in place to cope with the adverse weather effects this will bring. One important measure is adaptation to climate change, i.e. taking appropriate action now to prevent or minimize damage when disaster hits, helping to save lives and money.

Although adaptation plans are already in place in some countries, more needs to be done, according to Zelina Zaiton Ibrahim, Vice-Chair of ISO's subcommittee SC 7, *Greenhouse gas management and related activities*, of technical committee ISO/TC 207, *Environmental management*.

"Studies published last year have shown a direct link between human causes of climate change and recent extreme weather events experienced," she said. "Thus, the actions required to mitigate climate

change and measures for adaptation must be done hand in hand. Mitigation and adaptation are two sides of the same coin in tackling climate change.”

At the United Nations Climate Change Conference in 2016 (COP22), one year after the Paris Agreement, USD 100 billion were pledged annually until 2020 to help developing countries, some of the worst affected by climate change, to both reduce their emissions and adapt to climate change. Of that, USD 20 billion will be dedicated to adaptation. Then at COP23 in 2017, a number of initiatives were launched to help countries adapt to the realities of climate change. One initiative is to help protect people living in Small Island Developing States from the health impacts of climate change; another is to improve the climate resilience of women in the Sahel region of Africa, between the Sahara and the Sudanian Savanna.

Governments and national authorities are also putting into place national adaptation plans, which often require businesses and industries to submit progress reports regularly. Japan, for example, launched its Climate Change Adaptation Strategy in January 2017 to contribute to the Paris Agreement, with many local governments developing their own adaptation measures to fit.

The Hyogo Prefecture, for instance, located in the Kansai region, whose capital is Kobe, has developed its own Plan for Promotion of Measures against Global Warming, which incorporates the national policies and takes into account the goals, target and action plan of the Climate Change Adaptation Strategy. To engage local residents, the Prefecture also held workshops to establish the true impact of global warming.

Hiroshi Koshio, Director of Hyogo Prefecture’s Global Warming Solutions Division, said: “By better understanding the impacts, we can better consider what adaptation measures individuals or local communities can take. Ultimately, we hope that the results will be incorporated into the future adaptation plan.”

Improving resilience

Adaptation also makes good commercial sense and John Dora, of John Dora Consulting Limited, has a wealth of experience in this area. A consultant to governments, regulators, infrastructure operators and service providers on resilience to weather and climate change, Dora is also the Convenor of one of the working groups of ISO/TC 207/SC 7, involved in developing standards for climate change mitigation and adaptation.

“The disruption of an organization’s infrastructure by extreme weather damages both revenue and reputation,” he said. It can also have an impact on an organization’s duty of care and diligence. “Legally, heads of organizations have a duty of care and diligence and climate change is now seen as a risk that is both capable of causing harm and one that can be foreseen,” he said. “Therefore, directors should be considering the impact of climate change on their business, and failure to do so may bring liability for future losses.”

Anglian Water, for instance, considers this to be essential. It has invested over five billion pounds sterling in the past five years on schemes to build resilience and provide new infrastructure for growth. “We are now in the process of planning for the 2020-2025 period and will be investing even more in critical schemes and programmes to further our resilience to these challenges,” Hayton said. “To put it quite simply, if no action is taken to mitigate and adapt to the impacts of climate change, then it will not be possible to put enough water into the supply to meet the demand,” he added.

Becoming “climate adapted”

For Dora, resilience is key. To be considered resilient and “climate adapted”, organizations must embed the capacity for adaptation into all their functions, he said. They must have an understanding of how current and future weather conditions could affect their organization, and have operational and management strategies in place that enable it to respond, both in the present and over time, to climate challenges.

“Organizations need to have strategies in place to adapt to climate changes, ideally before climate change affects them,” he said. “And all of this needs to be part of ‘business as usual’, with the cost

taken into account so that it ultimately only has a marginal impact on financial performance.” Not an easy task... which is why standards can help.

Realising a vision

A vision and framework are needed to anticipate weather changes and their impacts, and to incorporate these, along with adaptation measures, into an organization’s operations and management strategies. Hence, work is under way on a series of ISO International Standards to do just that.

The future ISO 14090, *Adaptation to climate change – Principles, requirements and guidelines*, will help organizations of all kinds put in place a structure to help them prepare for changes in weather patterns and implement adaptation measures.

It will be useful to any organization wishing to better understand the vulnerability, impacts and risks to these changes, allowing it to improve its resilience through adapting appropriately. Complementary standard ISO 14091 for vulnerability, impacts and risk assessment and technical specification ISO/TS 14092 for local governments and communities are also in the pipeline.

Filling the gap

Dora believes the standards will fill an important gap. “The United Nations Framework Convention on Climate Change (UNFCCC) developed *Annotated guidelines for the preparation of national adaptation programmes of action* and *Technical guidelines for the national adaptation plan process for least-developed countries*,” he said. “But there is a gap in that there is no high-level framework for adaptation at organization or community level to support the guidance. The standards are being designed to help all kinds of organizations, regardless of how far they are in developing an adaptation plan.”

For the Hyogo Prefecture, the standards will make a big difference. “We expect the upcoming adaptation standards to support local governments to contribute to the Paris Agreement and implement effective adaptation measures,” said Koshio.

Anglian Water also expects to benefit, even though its adaptation plans and programmes are already well established. “We await with interest the publication of these standards,” said Hayton, “and feel that international standardization in this area will be a valuable tool to help organizations anticipate and adapt to climate change.”

Source: <https://www.iso.org/news/ref2289.html>

2. Nominations for 2018 Lawrence D. Eicher Award are now closed!

The Lawrence D. Eicher Award recognises excellence in standards development and is open to all ISO and ISO/IEC Technical Committees. The award is decided by a selection committee after receiving nominations for committees by interested persons within the international standards sphere.

ISO thanks all those who submitted nominations for the 2018 Lawrence D. Eicher Award. The selection committee, composed of selected members of the ISO Technical Management Board, will meet on 15th June and decide on the winner. The winner will be officially announced at the General Assembly in September 2018. Below are the nominated committees:

1	JTC 1/SC 36 Information technology for learning, education and training
2	TC 8 Ships and marine technology
3	TC 44/SC 3 Welding consumables
4	TC 58 Gas cylinders
5	TC 84 Devices for administration of medicinal products and catheters

6	TC 173 Assistive products
7	TC 181 Safety of toys
8	TC 197 Hydrogen technologies
9	TC 199 Safety of machinery
10	TC 204 Intelligent transport systems
11	TC 215 Health informatics
12	TC 249 Traditional Chinese medicine
13	TC 276 Biotechnology
14	PC 288 Educational organizations management systems - Requirements with guidance for use

3. New technical specification for auditors of ISO 45001

Hot on the heels of the world's first International Standard for occupational health and safety comes a technical specification to ensure those auditing it are up to scratch.

ISO 45001, *Occupational health and safety management systems – Requirements with guidance for use*, made standardization history when it was published in March this year. Now, a new complementary technical specification – ISO/IEC TS 17021-10 – has just been published, defining the required skills and knowledge of those bodies auditing organizations that have implemented the health and safety standard.

ISO/IEC TS 17021-10, *Conformity assessment – Requirements for bodies providing audit and certification of management systems – Part 10: Competence requirements for auditing and certification of occupational health and safety management systems*, is intended to guarantee a harmonized approach to the accreditation of an ISO 45001 certification.

The new technical specification is aimed at auditors, or anyone making certification decisions related to ISO 45001, and will ultimately serve certification, accreditation and regulatory bodies by confirming that auditing and certification decisions related to ISO 45001 have been carried out by those who have the competence to do so.

Catherine Montagnon, Co-Convenor of the working group in charge of ISO/IEC TS 17021-10 and Head of the French delegation involved in developing ISO 45001, explained that many of those responsible for the development of the technical specification also contributed to the writing of ISO 45001, providing the benefit of their extensive knowledge and experience.

“ISO 45001 contains a number of requirements for which specific skills related to occupational health and safety are required to audit it effectively, such as those relating to terminology, principles, concepts, tools and techniques,” she said.

“Therefore, it is necessary to have a dedicated conformity assessment document to ensure auditors have the right skills to do the job well.”

Standards Australia is a participating member of ISP Project Committee 283, responsible for the development of ISO 45001.

Source: <https://www.iso.org/news/ref2283.html>

4. 2018 Editions of the ISO/IEC Directives (Parts 1 and 2) and the ISO Supplement - now available

The 2018 editions of the ISO/IEC Directives Part 1, Consolidated ISO Supplement, and ISO/IEC Directives Part 2 are now available (French versions will also be available shortly).

The 2018 editions are applicable as of 01 May 2018.

You can access these documents in html, PDF, e-pub and Word format:

- [Consolidated ISO Supplement](#)
- [ISO/IEC Directives Part 1](#)
- [ISO/IEC Directives Part 2](#)

If you would like more details about the changes made since the last editions, PPT presentations are available for Part 1 and the ISO Supplement, and for Part 2. A track changes version of the Consolidated ISO Supplement is also available.

If you have questions, don't hesitate to contact the International Governance Manager Karen Batt, at karen.batt@standards.org.au

5. Education sector to benefit from a new international management system standard

Helping educational providers deliver a better service is the aim behind the world's first international management system standard for the sector just published.

From pre-school to university, to vocational training and coaching, the world of learning is constantly changing and evolving. As the trend to move away from the traditional customer-supplier relationship towards a collaborative partnership grows, so, too, do learners' expectations. Learning providers now need to adapt to these new ways of working, while at the same time providing a high level of service.

ISO 21001, *Educational organizations – Management systems for educational organizations – Requirements with guidance for use*, is intended to meet this challenge by defining the requirements of a management system that will help education providers better meet the needs and expectations of their learners and other beneficiaries, and demonstrate greater credibility and impact.

Developed by project committee ISO/PC 288, the new International Standard focuses on the specific interaction between an educational institution, the learner and other customers.

Educational organizations will benefit through delivering a more impactful and relevant learning experience that is aligned with the organization's own mission and vision. Learners will benefit even more because the education service they receive can be more personalized and suited to their needs, ultimately leading to better learning outcomes.

By making available a comprehensive set of practices that are applicable to learning service providers across the board, ISO 21001 will help build a stronger education sector and provide positive knock-on effects in terms of stimulating innovation and the economy.

Standards Australia is a participating member on ISO/PC 288 through National Mirror Committee, IT-019, for more information or to get involved, please contact Stakeholder Engagement Manager Rick Macourt, at rick.macourt@standards.org.au

Source: <https://www.iso.org/news/ref2284.html>

1. The World Smart City Form 2017 Report Published

The World Smart City Forum was a collaborative initiative which was jointly organised and hosted by the IEC, ISO and the ITU. The Event was hosted in Barcelona in November 2017.

The event was held alongside the World Smart City expo for its second occurrence, after the success of the inaugural Forum in Singapore, 2016. Mr Chris Body, of IT-041, was able to attend the international event on behalf of Standards Australia. Information about the World Smart City Forum including speakers, agenda items and sideline activities is available through the website: <https://www.worldsmartcity.org/>

A summary of the discussions, outcomes and polling and feedback was recently published in the [World Smart City Forum Report, available online](#). The IEC has identified Smart Cities as one of their priority work areas and have references to committees, activities and publications they have produced on Smart Cities available online: <http://www.iec.ch/smartcities/>. If you are interested in becoming involved in standards for Smart Cities please contact Policy Manager Jed Horner, at jed.horner@standards.org.au.

2. Building blocks for cyber security

Blockchain opens up new possibilities for data protection

As we move towards more connected environments, cyber security threats are increasing. One technology that could help with data protection is blockchain, which is also starting to be used in some renewable energy projects.

In the IEC White Paper Edge intelligence, blockchain technology is defined as “a well-ordered distributed database that maintains a list of all transactions and which grows continuously over time”. Each of these recorded transactions is called a “block”.

Blockchain was invented by Satoshi Nakamoto in 2008 and was originally developed as the accounting method for the virtual currency Bitcoin. Blockchain uses cryptography to allow anyone granted access to a distributed database to digitize and insert data, as well as its metadata, in a secure way. Unlike traditional centralized databases, which are situated within a central cloud, the blockchain is not located and maintained on a single server that belongs to a central authority (a bank, for instance). It is spread across multiple points, making it much harder for hackers to gain access to it.

The technology was primarily devised to verify transactions but it is possible to code, digitize and insert practically any document in such a database. Once a block of data is recorded, it's extremely difficult to change or remove. The authenticity of the record can be verified by the entire community using the blockchain, instead of by a single centralized authority. Each time a block of data is completed, a new one is generated. The blocks are connected to each other, like links in a chain, in a proper linear chronological order. If an attacker gets hold of a component of data and attempts to tamper with a block, the system will try to locate the one that differs from the rest. If it is located, it is simply excluded from the chain and recognized as false.

Data protection and the IoT

The distributed storage of blockchain technology and its unique security and encryption features make it an ideal testing ground for Internet of Things (IoT) applications. The IoT refers to the increasing number of devices which connect to a network to provide information they gather from the environment through sensors and actuators.

These devices can be carried, worn or kept at home, they can be embedded in factory equipment, or form part of the fabric of the city people live in. Each one of them is able to convert valuable information from the real world into digital data that is stored on a centrally shared cloud, managed by a third party, usually the manufacturer of the device.

Increasing concern has been raised over the data protection issues related to this method of digital storage. The openness that gives the cloud its strength can also make it vulnerable. If the foundational or host hardware and operating system are compromised, every workload hosted there can be exploited by hackers.

This has led some companies to experiment with blockchain storage for IoT. Examples include a trial led by a Korean consumer electronics manufacturer and a US IT giant. The Autonomous Decentralized Peer-to-Peer Telemetry (ADEPT) trial integrated blockchain software into a washing machine that could operate autonomously.

Based on the Ethereum cryptocurrency blockchain, the washing machine – amongst other things - could order and pay for its own laundry detergent and if it broke down, could contact and pay a tradesman. This was enabled via smart contracts between the owner and the contract service provider. A smart contract is a computer protocol intended to digitally facilitate and verify the negotiation of a transaction. It allows the performance of credible transactions without third party verification.

Renewable energy projects

A growing number of companies in the energy industry view blockchain as a technology that could simplify the system of renewable energy trading dramatically. Some smart grid and microgrid projects are starting to use it. A recent example in New York saw a finance company join forces with a German electrical company and an energy start-up to launch the Brooklyn microgrid project. The grid consists of five homes on one side of the street with photovoltaic (PV) panels and five homes on the other without. These homes were connected to a microgrid and neighbours with excess renewable energy were able to trade electricity with those homes without solar panels via the blockchain.

An example in the UK, which is currently edging its way towards commercialization, is a blockchain energy trading platform project backed by several household energy suppliers, the National Grid and a German electrical conglomerate. The trading platform is built on the Ethereum blockchain and uses simulated data from 53 million metering points and 60 energy suppliers. One of the main objectives of the project is to allow consumers to switch more easily between energy suppliers. Joanna Hubbard, chief operating officer (COO) of the start-up company managing the project, believes that blockchain will lay the foundations for households to participate in peer-to-peer energy and flexibility trading. "Blockchain technology will allow the transition to a decentralized model capable of local optimization and significant cost and carbon efficiencies", she says.

Clouds on the horizon

Although many companies understand the huge benefits blockchain can offer, it is by no means a cyber security silver bullet. While blockchain is protected by business grade cryptography, where large sums of money or important assets are involved, hackers will follow. The IEC White Paper Edge Intelligence covers some of these risks. It points out that, because blockchain is a complex technology, it's difficult to understand where potential attacks may come from or what countermeasures to take.

Another concern focuses on the decentralized nature of blockchains. Keys are used instead of passwords and issued to devices. Users must manage their own private keys, and if one is lost, anything related to that private key is also lost. If a private key is stolen, the attacker will have full access to all digital assets controlled by that private key. The security of private keys is so important that many users rely on secure hardware to store them.

While the potential of blockchain is promising, it remains more essential than ever for companies to adopt the cyber security Standards published by the IEC and ISO Joint Technical Committee (JTC) 1, to protect their critical infrastructures from outside attacks. These include the ISO/IEC 27000 series of Standards on information security management systems, published by ISO/IEC JTC 1 Subcommittee (SC) 27: IT security techniques. The challenge is to counter ever more sophisticated groups of hackers. Increasingly that must be done at an international level. New technology solutions will not suffice: they need the backing of International Standards to help achieve effective cooperation in cross-border and cross-community environments

Standards Australia leads the international standards development work on Blockchain through their chairing and secretariat positions of the ISO TC 307 *Blockchain and distributed ledger technology*. To find out more or become involved please contact Policy Manager Jed Horner, at jed.horner@standards.org.au.

Source: <https://iecetech.org/issue/2018-03/Building-blocks-for-cyber-security>

3. First International Standards committee for entire AI ecosystem

Industry recognizes standardization will be essential to broad adoption of AI

Information technology has become an integral part of our lives whether it be in the consumer, industrial or commercial aspects. It is hard to imagine life, work or entertainment without it. Artificial intelligence (AI) presents the next digital frontier of the IT evolution.

It is capturing the world's attention and involves many stakeholders including research, academia, industry, practitioners, policy makers and ethics advocates. AI is expected to be one of the most crucial enabling technologies in our lifetime.

AI – the silent voice at the management table

AI is transforming industries, through the evolution of IT usage. Initially viewed as a tool to increase efficiency within organizations, for example, the use of computers to develop memos, the next inflection point saw IT becoming essential to measuring an organization's performance against key performance indicators (KPIs) established by the management team.

The advent of the industrial internet of things (IIoT) saw IT go deeper into the management chain, all the way to decision makers and across more traditional industries that may not have been as reliant on IT in the past.

Today, AI is transforming the role of IT from one of measurement for the management team (performance relative to established KPIs), to one of providing insights to establish future goals and KPIs. Put simply, AI is taking a seat at the management table, adding its voice to where the organization should go via insights.

AI is already used in many applications, including healthcare for customizing patient treatments, the financial sector for fraud detection, autonomous vehicles for determining optimal speed, following and breaking distances and collaborative robots, designed to work safely alongside humans, lifting heavy loads, staging materials for human assembly, or completing repetitive motions.

Inaugural meeting establishes a structure for the programme of work

Against this backdrop, in 2017, IEC and ISO became the first international standards development organizations (SDOs) to set up a joint committee (ISO/IEC JTC 1/SC 42) which will carry out standardization activities for artificial intelligence.

e-tech caught up with Wael William Diab, Chair of SC 42, following its inaugural meeting in Beijing this April. Diab is a business and technology strategist with more than 875 patents to his name in the field of information and communication technologies (ICT). He is currently a Senior Director at Huawei.

The scope of AI is very broad. How will SC 42 approach these diverse aspects and areas of work? “One of the unique things about what IEC and ISO are doing through SC 42 is that we are looking at the entire ecosystem and not just one technical aspect. Combined with the breadth of application areas covered in IEC and ISO technical committees (TCs), this will provide a comprehensive approach to AI standardization with IT and domain experts.”

Diab explained the importance of taking a horizontal systems approach by working with as many people as possible, across IEC and ISO TCs, citing some examples of other JTC 1 SCs – internet of things, IT security and IT governance – the IEC Systems Committee for Smart Cities, and with external organizations. The key will be to get better leverage of liaisons and how to coordinate the work, so as to build on what already exists rather than duplicating it.

“This list will grow because the application domains are quite expansive, from digital assistants in smartphones to less obvious areas like online shopping market intelligence for determining a new market for a product, or healthcare, or the example of deciding whether someone will get a loan. All of these examples use learning algorithms.”

Another key area Diab highlighted was manufacturing and robots that help in the plant. Robots and humans that work side by side on an automanufacturing line and all the way through to deep analytics, means having AI is almost like having an additional voice in an organization.

Within the context, IEC TC 65 which covers Industrial-process measurement, control and automation, will be another potential group to liaise with for AI and industrial automation.

SC 42 is also planning to collaborate with other external organizations working on AI. At the inaugural meeting, the committee approved a Category A liaison with IEEE with additional future liaisons anticipated.

What key areas will be focused on initially?

SC 42 is mandated to serve as the focus and proponent for JTC 1 standardization programme on AI and provide guidance to JTC 1, IEC, and ISO committees developing AI applications. During the meeting, it set up a structure to allow the ecosystem approach that will include:

Foundational standards (Working Group 1)

Given the diversity of AI stakeholders, it is essential to have foundational standards that provide for a framework and common vocabulary. This enables stakeholders of different backgrounds and perspectives to speak the same language and sets the stage for how they and the technology providers and users will interact together. A priority will be the development of the International Standards for AI concepts and terminology ISO/IEC AWI 22989, and Framework for artificial intelligence systems using machine learning ISO/IEC AWI 23053.

Computational approaches and characteristics of AI systems (Study Group 1)

At the heart of AI are the computational approaches and algorithmic techniques that empower the insights provided by AI engines. IT advances, specifically computational power, distributed computing methods and software capability techniques among others, allow for what was science fiction to become science fact. Standardization and best practices in this area are essential if innovation is to occur over open standards. SG 1 will:

- Consider different technologies (ML algorithms, reasoning etc.) used by the AI systems including their properties and characteristics.
- Look at existing specialized AI systems (NLP or computer vision) to understand and identify their underlying computational approaches, architectures, and characteristics.
- Investigate industry practices, processes and methods for the application of AI systems.
- Develop new work item proposals as appropriate and recommend placement.

Trustworthiness (Study Group 2)

Connected products and services, whether a vehicle, smartphone, medical device or building security system must be safe and secure or no one will want to use them. The same goes for critical infrastructure like power plants or manufacturing sites. Trustworthiness and related areas from a system perspective, such as robustness, resiliency, reliability, accuracy, safety, security, and privacy must be considered from the get-go. Leading industry experts believe that ensuring trustworthiness from the outset is one of the essential aspects to wide-spread adoption of this technology. SG 2 will:

- Investigate approaches to establish trust in AI systems through transparency, verifiability, explainability and controllability.
- Look at engineering pitfalls and assess typical associated threats and risks to AI systems with their mitigation techniques and methods.
- Consider approaches to achieve AI systems' robustness, resiliency, reliability, accuracy, safety, security and privacy.
- Take account of types of sources of bias in AI systems with a goal of minimization, such as statistical bias in AI systems and AI aided decision making.
- Develop new work item proposals as appropriate and recommend placement.

Use cases and applications (Study Group 3)

Use cases are the currency by which SDOs collaborate with each other. As both the focal point of AI's role as an enabling horizontal technology and in its role as an AI systems integration entity committee tasked with providing guidance to IEC, ISO and JTC 1 committees looking at application areas, it is essential for SC 42 to collaborate with other committees and bring in their use cases.

For example, experts in AI algorithms, who may never have set foot in a factory, will be able to liaise with domain experts in the TCs who come from industry and are able to make the use cases more meaningful, so that the subtleties can be understood – such as the difference between machine learning and neural learning, or how algorithms are trained. This means flagging up that it is not just the algorithms that need correcting, but also the datasets for training. In this way, use cases provided by other committees looking at different vertical application areas can allow SC 42 to consider these technical requirements as it drafts its standards, technical reports and best practices. SG 3 will:

- Identify different AI application domains (social networks and embedded systems) and the different context of their use (fintech, healthcare, smart home, and autonomous cars).
- Collect representative use cases.
- Describe applications and use cases using the terminology and concepts defined in ISO/IEC AWI 22989 and ISO/IEC AWI 23053 and extend the terms as necessary.
- Develop new work item proposals as appropriate and recommend placement.

Big data

JTC 1 will transfer the work programme for big data (JTC 1/WG 9) to SC 42. Initiated a few years ago, it has two foundational projects for overview and vocabulary and a big data reference architecture (BDRA).

These projects have received tremendous interest from the industry. From a data science perspective, expert participation, use cases and applications, future anticipated work on analytics, and the role of systems integration (working with other ISO, IEC and JTC 1 committees on application areas), the big data work programme lines up well with the initial work programme for SC 42. From an industry practice point of view, it's hard to imagine applications where one technology is present without the other.

"It stands to reason that AI will be one of the most crucial enabling technologies in our lifetime. JTC 1/SC 42 is looking at the entire AI ecosystem from an IT perspective. Combined with the breadth and depth of application areas covered by IEC and ISO, the resulting standardization efforts will not only be fundamental to practitioners but essential to all stakeholders interested in the deployment of AI in the respective verticals", Diab concludes.

Standards Australia is currently an observer member of JTC 1/SC 42 *Artificial Intelligence* and send Australian delegates to attend this inaugural committee meeting. If you are interested in participating in this work or increasing Australia's level of active participation, please contact Stakeholder Engagement Manager Rick Macourt, at rick.macourt@standards.org.au

Source: <https://iecetech.org/issue/2018-03/First-International-Standards-committee-for-entire-AI-ecosystem>

4. From a doodle in the sand to the barcode

A beachside brainwave proved to be the inspiration behind a revolution in manufacturing and retailing

Technology has made it easier and quicker to perform many daily activities. Not only do we rely on it, it has brought massive changes to our lives.

Smart devices and connectivity are prime examples. We rarely leave home without our smartphones. We use them to make payments and purchases, read news, work on emails, communicate with friends, manage smart home systems, monitor health and fitness and for a host of other activities. As modern consumers, we have come to expect to be connected wherever we are, so that we can choose exactly when we want to do all these things.

An ingenious innovation for sorting the world

Another invention that has completely changed life can be found on most products today. The barcode is a discreet label which facilitates shopping and enhances the global trade of goods. Without it, many of the online systems and services we use for purchasing products or finding information would not exist. Joseph Woodland was an American inventor and mechanical engineer. He came up with an efficient way of capturing product information at the checkout, with the goal of speeding up the checkout process at the point of purchase. In 1948, the idea came to him unexpectedly from a drawing he did in the sand, adapting the dots of Morse code into lines. So the modern barcode was born on a beach in Florida. Woodland and his associate Bernard Silver received a US patent for "Classifying Apparatus and Method" in 1952, but at the time, the technology was too expensive to develop the idea for supermarkets.

Over the years, the striped-scan system would be refined. It was first used with a trackside scanner in the 1950s to identify the ownership and number of railway cars, but only reached the retail sector in June 1974, when a packet of chewing gum bearing the universal product code (UPC) barcode was scanned at a till in Ohio.

Identifying and tracking things

In addition to automating supermarket checkout systems, other tasks performed by various types of barcodes have become known generically as automatic identification and data capture (AIDC). Serving numerous applications – product/item identification, point-of-purchase/use, track and trace and product distribution for healthcare, manufacturing, retail sales, service industry, supply chain and transportation – AIDC technologies are vital for global trade and among the basic enablers of e-commerce. By providing timely and cost-effective data, they improve processes that cover product life cycles, such as ordering, back office operations, manufacture, distribution, sale, use, repair, warranty and return of products.

Established in 1996, the work of IEC and ISO Joint Technical Committee (JTC) 1 Subcommittee (SC) 31, includes data formats, syntax, structures and encoding, as well as technologies for the process of AIDC and associated devices used in industry and mobile applications. The SC publishes International Standards for bar code symbologies and radio frequency identification (RFID).

Technology that keeps on evolving

One dimensional...

The barcode is a machine-readable way of representing data. The traditional one-dimensional (1D) version is a rectangle containing straight lines in varying widths and spacings. Barcodes contain information about the item to which they are attached, such as the manufacturer, owner, identification number and price. These criteria can change depending on the item and reason for use.

When scanned, barcodes link product information to the stock database held by the retailer or manufacturer. Over time, increasingly sophisticated software systems carry out other tasks (tracking and automatically reordering stocks when required) by using this information.

... to two

The two-dimensional (2D) matrix barcode is designed using geometric shapes (dots, hexagons and rectangles). Created in 1994 in Japan for the automotive manufacturing industry to enable components to be scanned at high speed, the quick response (QR) code has become very popular and adopted by many industries.

Radio frequency identification tags

RFID tags are also used to identify and track the items they are attached to by using radio frequencies. Line of sight is not a pre-requisite, unlike standard barcodes which require optical scanners to be held directly in front of the label.

From the warehouse to the hospital – many uses and benefits

In our global world, there is a growing need for tracking and tracing solutions. Barcodes continue to evolve because they are versatile. As well as storing useful product information, they can be attached to almost any surface, are inexpensive to design and print, easy to use, reduce human error risk due to very low scanning error rates, and can be adapted to the scale of business as it grows. Some of the many uses include:

- Retail inventory management systems. These offer wireless, accurate, real-time access to inventory and enable automated reordering of stocks when they run low. Businesses save time and costs, since they require fewer employees who themselves need less training
- Self check-out machines. These allow customers to process and pay for shopping faster
- Advertising/payment QR codes. These enable retailers to boost sales by sending QR code offers to customers, who are able to compare prices and product information while in the

shops. Other innovative smartphone apps allow shoppers to scan, create and save their lists and receipts, and pay by holding their phones over a QR code

- Warehouse management systems. These help manufacturers and retail giants such as Amazon to work faster and more efficiently as a result of accurate, quick, automated product scanning, tracking and picking systems, improved product-to-market times and streamlined costs
- Healthcare tracking solutions. Hospitals and medical centres use barcode labels to track medication, equipment and important patient details such as medical history and drug allergies so as to avoid the occurrence of medical errors. They also stop disease spreading by enabling users to know what equipment has been sterilized and is ready for use
- Admission tickets. These save consumers time spent queuing at airports, museums and concerts. Customers buy tickets online and scan the QR code saved in their smart devices to board flights or gain entrance to events
- Electronic luggage tags. These provide improved baggage handling and tracking. A state of the art airport baggage handling system streamlines processes by combining barcode and RFID technology with artificial intelligence and a robotic arm. Customers use machines to check in their own luggage, while behind the scenes, robotic arms load the luggage from a central area onto ramp carts and containers as needed. This technology is being used at Schiphol International Airport in the Netherlands
- Building access. Employees access the workplace using badging systems and some companies use adhesive barcode labels on cars for those who drive, in order to improve security

Staying on top of the trends

The internet of things (IoT) and related technologies are increasingly important in our world and are changing how we live. More industries are adopting AIDC technologies such as barcodes, QR codes and RFID to improve their operations. RFID is one of the primary sources of IoT data, which means ensuring its security is of the utmost importance. JTC 1/SC 31 follows these trends so that it can address market needs in a timely manner through its standardization activities. Australia is not currently a member of JTC 1/SC 31. If you or your organisation are interested in participating in standards development in this field please contact Stakeholder Engagement Manager, Rick Macourt at rick.macourt@standards.org.au

Source: <https://iecetech.org/Technology-Focus/2018-03/From-a-doodle-in-the-sand-to-the-barcode>