



AUGUST 2020

Smart Cities Standards Roadmap

STANDARDS
Australia



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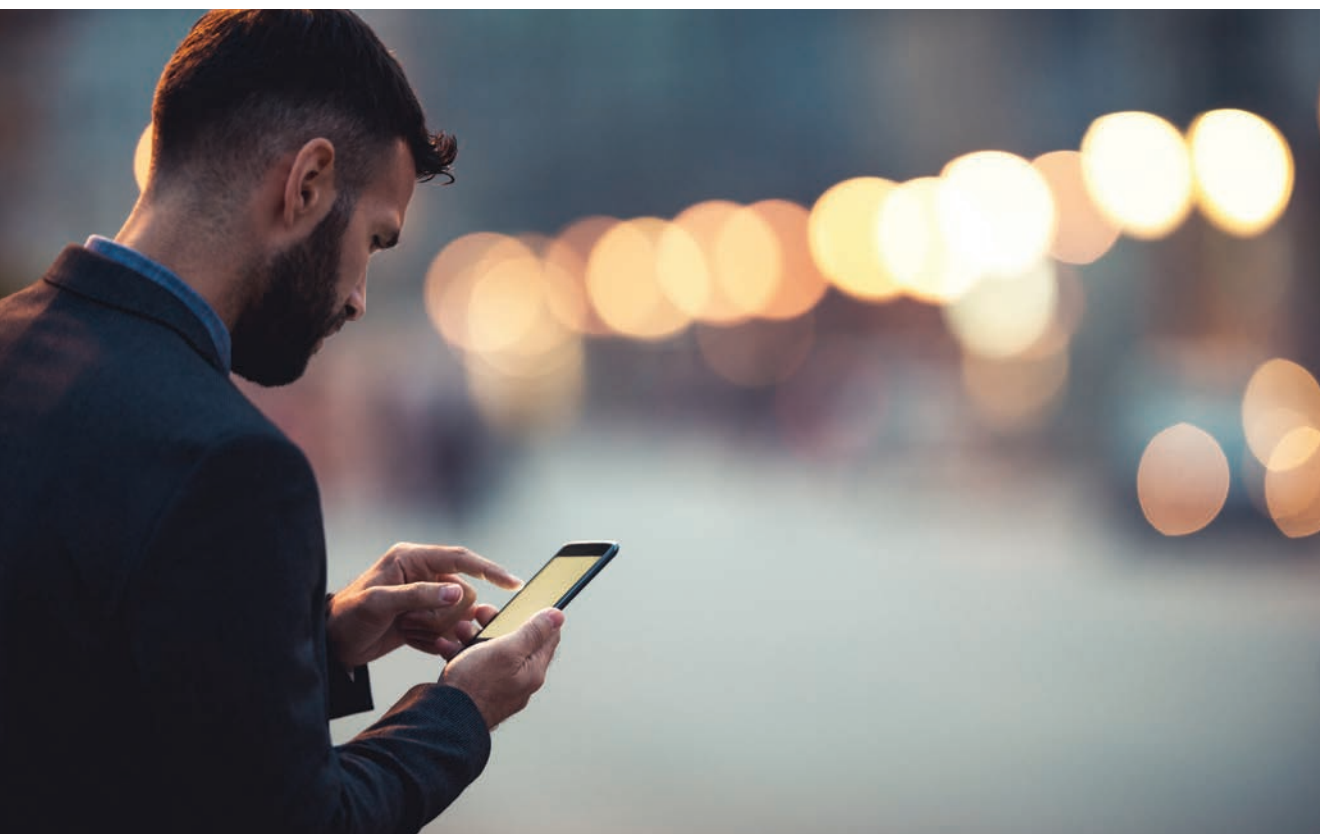
Executive Summary

The Smart Cities Standards Roadmap (Roadmap) was prepared in consultation with Standards Australia's Smart Cities Reference Group (Reference Group). It is designed to highlight critical issues that will support the growth of Smart Cities and progress the recommendations of the report [Building Up and Moving Out](#) and other related priorities for Australia.

The Roadmap provides a summary of recommendations and insights by aggregating the views of Australian stakeholders who participated in the Reference Group discussions. It provides a collective Australian viewpoint on the matters of priority and actions that can be undertaken by Australia to develop Smart Cities standards, and foresight for Australia's leadership in the development of international and national Smart Cities standards.

During the Roadmap development, a decision was made to commence the implementation of these recommendations, concurrent with finalising the Roadmap. This was to ensure that access to foundational standards was available to support local government and Smart Cities stakeholders develop their Smart Cities vision and initiatives. Through 2019 and 2020, the Reference Group endorsed the adoption and publication of a total of seven Smart Cities foundational standards (namely the ISO/IEC 37100 series), including:

- ISO/IEC 37106 – a Smart City operating model
- ISO/IEC 37100 – a vocabulary of terms and definitions referenced in Smart Cities standard documents
- ISO/IEC 37120, 37122, 37123 – a set of indicators to measure a city's performance in meeting their goals
- ISO/IEC 37101, 37104 – a management system and practical guidance



The Reference Group also recognised the challenges associated with a complex and growing international Smart Cities standards work program, so with this in mind, the Reference Group reviewed and agreed to refine the future Smart Cities committee structure. The result of this review was incorporated into the recommendations, these were:

- the establishment of the Smart Cities Advisory Group (SCAG)
- the dissolution of the Smart Cities Standards Reference Group (Reference Group), and
- the creation of two new dedicated Australian technical committees to mirror the work program of international committees (ISO/TC 268 and IEC Syc Smart Cities).

The new committee structure will enable Smart Cities stakeholders to continue to play a role in Smart Cities standards development. The Reference Group also saw value in separating the strategic function of the committee (through the SCAG) and the technical function, through the creation of two new dedicated Australian technical committees. By creating these new committees, stakeholders will be able to contribute to standards discussions aligned with their respective areas of expertise.

The Roadmap demonstrates that Australian stakeholders recognised that as a country, we have had limited input to the global Smart Cities standards discussion. The challenge is to ensure we collectively reach the same level of maturity and understanding of how standards can play a role in supporting our Smart Cities vision. Internationally, our contributions are valued, and there are opportunities for Australia to help shape new and developing areas of Smart Cities related standards.

Finally, Standards Australia would like to acknowledge the members of the Smart Cities Standards Reference Group, chaired by the NSW Chief Data Scientist, Dr Ian Oppermann, for their contribution and expertise in the development of the Roadmap.

For further information

Ms Vi Le

Stakeholder Engagement Manager
vi.le@standards.org.au

Summary of Recommendations

The eleven recommendations outlined in this Roadmap are based on five key goals being to:

- Support the implementation of existing Smart Cities framework and policies
- Improve knowledge sharing and collaboration within Australia
- Ensure Australia can influence Smart Cities global and national standards development
- Improve data accessibility and interoperability across Australia
- Support Australian communities' development of Smart Cities strategies and initiatives

Each of the recommendations and their corresponding overarching goal is outlined below:

Goal: Support the implementation of existing Smart Cities framework and policies

- 01 The Australian Government in collaboration with industry, promote the principles of *'citizen-centric, privacy-by-design and trust by-design'* by developing an Australian Smart Cities Assurance Framework, that builds on existing Smart Cities framework and policies, to inform real-time Smart Cities implementation. This includes security related standards as part of the foundation for building Smart Cities to minimise any direct economic and operational costs. This Framework should leverage those ISO and IEC Standards adopted as Australian Standards.

Goal: Improve knowledge sharing and collaboration within Australia

- 02 Establish a national Smart Cities Advisory Group (SCAG) to provide strategic advice and coordination across Australian mirror committees for Smart Cities, to build synergies and minimise overlap on existing ongoing work, and to prioritise Smart Cities standards initiatives including overseeing the implementation of these initiatives.
- 03 With input from the Australian Government, establish a national 5G standards development sub-committee within the main committee of JTC 1/Strategic Advisory Committee (SAC), to contribute to the development of 5G related standards and support 5G infrastructure deployment for Smart Cities.

Goal: Ensure Australia can influence Smart Cities global and national standards development

- 04 Establish two dedicated Australian mirror committees to support Australia's participation in international standards for Sustainable Cities and Communities (ISO/TC 268), and Systems Smart Cities (IEC Sys Smart Cities).
- 05 Australian stakeholders nominate experts to participate in the JTC 1/ Working Group 11 for Smart Cities (Information Technology) to develop standards related to the use of ICT within Smart Cities.
- 06 Australian stakeholders nominate experts to participate in the JTC 1/ Advisory Group 11 Digital Twin, to develop standards related to Digital Twin technology and application within Smart Cities.
- 07 Australian stakeholders nominate experts to participate in technical committees with responsibility for data governance, data categories and data flow including Australian mirror committees IT Service Management and Governance (IT-030) and Cloud Computing (IT-038).

Goal: Improve data accessibility and interoperability across Australia

- 08 Australian stakeholders, with input from government, develop an international participation case for membership to the international committee for data management and interchange committee (ISO/IEC JTC 1/ SC 32), to promote the harmonisation of data management within information systems environments internationally.
- 09 The Australian Government consider supporting the development of data use and sharing initiatives (through ISO/IEC JTC 1/SC 32), to improve data interoperability in government services, to optimise decision-making and improve citizen interactions. This may include a shared test environment for organisations to validate their systems and to identify interoperability issues.
- 10 Australian stakeholders develop a proposal for identification and technical review of global data standards to inform high level specification of open/public structured and unstructured data to optimise Smart Cities and infrastructure data (such as standardise encoding formats, management and accessibility of data). This includes consideration of privacy and ethical use of shared data, different platforms and ways to integrate different inter-platform functionalities and data from vendors, such as platform communications using application programming interfaces (API) or Publisher Subscriber models.

Goal: Support Australian communities' development of Smart Cities strategies and initiatives

11

Australian stakeholders, consider the adoption of Smart Cities governance standards (namely the ISO/IEC 37100 series), including:

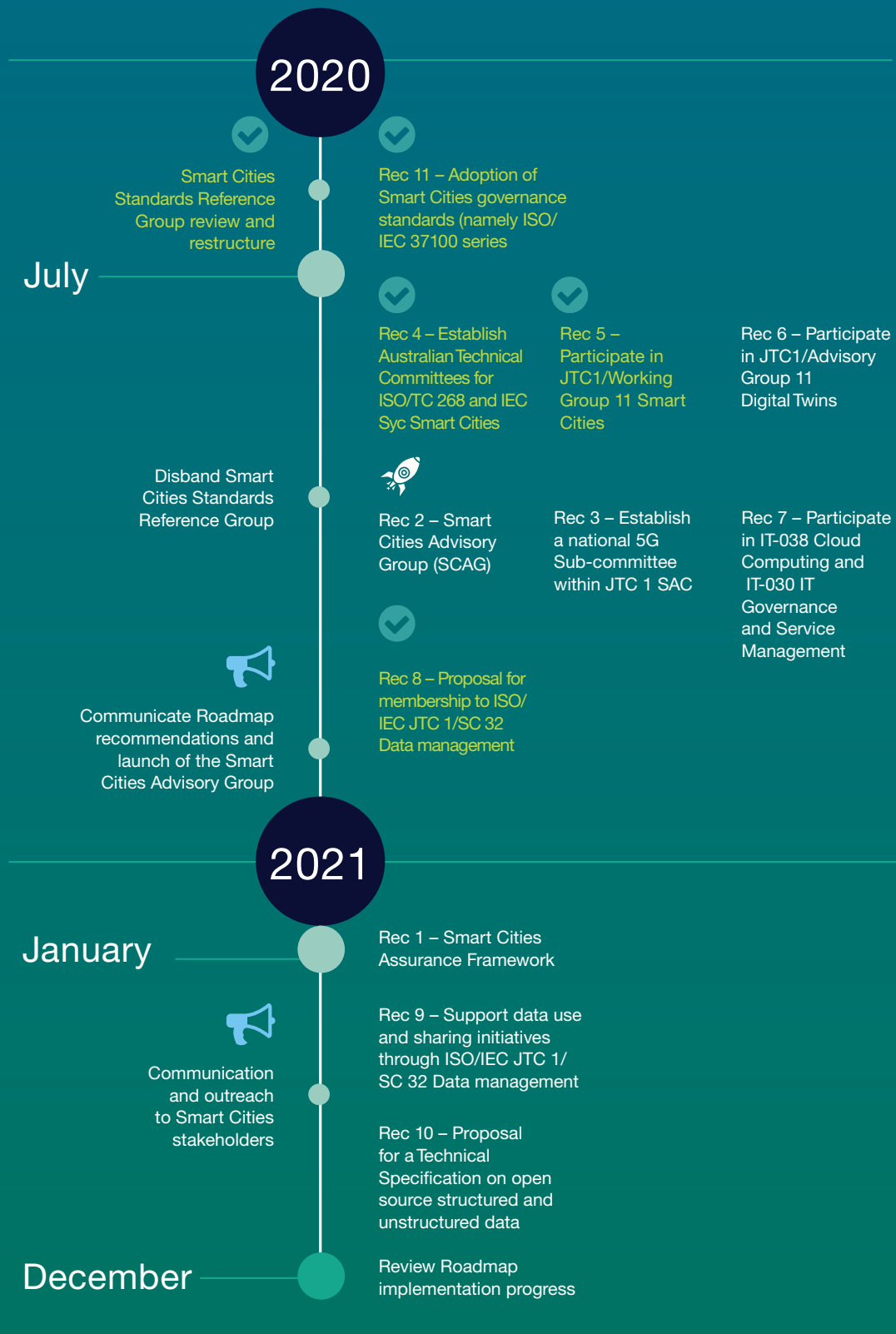
- a. ISO/IEC 37106 – a Smart City operating model standard which provides guidance for cities and communities to develop their Smart Cities vision, strategy and policy agenda.
- b. ISO/IEC 37100 – a vocabulary of terms and definitions referenced in Smart Cities standard documents.
- c. ISO/IEC 37120, 37122, 37123 – a set of indicators to measure a city's performance in meeting their goals.
- d. ISO/IEC 37101, 37104 – a management system and practical guidance to assess and improve a city's performance in delivering outcomes.

This suite of standards provide a systematic approach to implement Smart Cities initiatives, including assessing the effectiveness of a city's strategy and plan.



Indicative implementation timeline

The timeline incorporates the dissolution of the Smart Cities Standards Reference Group (Reference Group), upon the establishment of the Smart Cities Advisory Group (SCAG) and two new dedicated Australian committees to mirror the work program of ISO/TC 268 (Australian committee IT-268) and IEC Syc Smart Cities (Australian committee IT-269).



Definition of a Smart City

For the purpose of this Roadmap, a ‘city’ includes suburbs, towns and regional communities. Internationally, there are many definitions of what constitutes a ‘Smart City’. In its simplest form, it is generally defined in terms of *a city’s goals enabled by data and technology*. These goals should ultimately be about improving the lives of citizens. In the context of Australian cities, they may include sustainability, resilience, liveability, productivity and workability. The emphasis and specifics may vary from city to city.

From a city’s perspective, advances in data and technology have unlocked new, more cost-effective and productive ways for ‘cities’ to undertake existing tasks. But the Smart City impact goes far beyond just ‘doing things better.’ Data and technology have enabled very innovative solutions to existing and emerging problems, and importantly, provided opportunities to innovate highly novel products and services.

Also, from a city’s perspective, community expectations have changed from managing ‘roads, rates, and rubbish’ to tackling more significant issues such as sustainability, climate change, and resilience. Such goals require a holistic approach that spans a broad range of domains and sectors across multiple jurisdictions and multiple tiers of government. Such domains include energy, waste, water, transport, and telecommunications. At a project level, Smart Cities projects include the digital transformation of paper-based processes and a range of ‘smarts’ that include: Smart bins, Smart waste, Smart mobility and so called digital twins.

The Smart City impact also covers the complete life cycle of city assets, processes and operations from ideation to design, build and maintenance.

The key enablers of data and technology do not exist in isolation. They are supported by a range of other enablers, such as data platforms, as well as policy and privacy regulations.

In short, the scope and definition of ‘Smart City’ is very broad and impacts every aspect of a city’s operations and city life. A key challenge for this committee was to focus standards efforts on areas that bring maximum benefit to Australia within the limitations of voluntary committee time, skills, and effort.



Background

The Inquiry into the Australian Government's role in the development of cities (Infrastructure, Transport and Cities Committee) articulated a forward action plan for Australian cities and regions for the next fifty years. In 2018, the House of Representatives Standing Committee on Infrastructure, Transport and Cities published their [Building Up and Moving Out](#) report, including **Recommendation 18**:

The Committee recommends that Standards Australia develop a 'standards roadmap' for Australia, including:

- identifying the standards required in each sector to unlock the benefits of connected Australian cities; and
- developing standards in strategic priority areas, including standards to safeguard the interoperability of IoT and other Smart Cities technologies.

Initial public outreach conducted by Standards Australia on the Smart Cities agenda revealed a lack of standardisation across sectors, the need for clear metrics on performance, and opportunities for Australian stakeholders to be contributors as well as consumers of standards at national and international levels.

In response, Standards Australia established a Smart Cities Standards Reference Group (Reference Group) to help support the Australian Government's agenda of sustainable, resilient communities and to develop a national suite of Smart Cities standards. Since 2019, Australia has been an active participant on ISO (International Organization for Standardization) and IEC (International Electrotechnology Commission) Smart Cities standards committees helping to shape the development of our cities and communities.



Smart Cities Reference Group launch and first meeting in May 2019, to initiate the development of the Smart Cities Roadmap

Developing the Roadmap

The development of the Roadmap involved a series of meetings held in 2019 and 2020 with the Smart Cities Standards Reference Group (Reference Group) to identify and prioritise relevant international standards that may be required to support the broad use and application of Smart Cities standards. Standards Australia provided the Reference Group with a taxonomy of current and emerging Smart Cities standards to help:



Optimise the group's interests, expertise and resources in assessing any Australian specific concerns that require amendments or the ratification of International ISO business focused or IEC technical standards so that Australia can become a leading and credible international participant as soon as possible;



Identify any gaps in Smart Cities ISO and IEC standards where the group can justify it has the expertise and resources to devote, to create a new standard that primarily offers particular benefits to Australia and more broadly, globally; and



Generate greater public awareness of Smart Cities opportunity costs highlighting the benefits a coordinated standards-based approach can deliver to communities, cities, governments and the nation.

During the course of the Roadmap development, the Reference Group identified several challenges, which are outlined further under the 'Key Issues and Challenges' section of this paper. This includes the broad and growing scope of the international work program and the existing technical expertise of the Reference Group.

A review of the existing structure of the Reference Group was undertaken in early May 2020, to consider opportunities to refine the structure of the Reference Group to manage the increasing international Smart Cities work program. The outcome of the review was the creation of new technical committees to improve Australia's technical capacity to vote on ISO ballots by focusing the skills and expertise of committee members into their respective knowledge areas. It also provided opportunities to increase the engagement of stakeholders in new and emerging areas of Smart Cities standards.

The Reference Group agreed that at the conclusion of committee's review which included the establishment of new Smart Cities committees and the completion of the Roadmap, the Reference Group would be disbanded and its responsibilities divested to the SCAG and respective Australian mirror committees.

The Global Smart Cities Standards Landscape

Across the International Organization for Standardisation (ISO) and International Electrotechnical Commission (IEC) standards bodies, there are three main international committees that develop Smart Cities related standards. They are:

ISO/TC 268 Sustainable Cities and Communities

The committee responsible for the ISO 37100 series of standards which helps cities define their goals and objectives, and to put in place strategies to achieve them. Within the committee's structure, there is a sub-committee for Smart Community Infrastructures ([ISO/TC 268/ SC 1](#)), assigned to consider standards for smart transportation, data exchange and sharing for smart community infrastructures, and integration and interaction framework for smart community infrastructures.

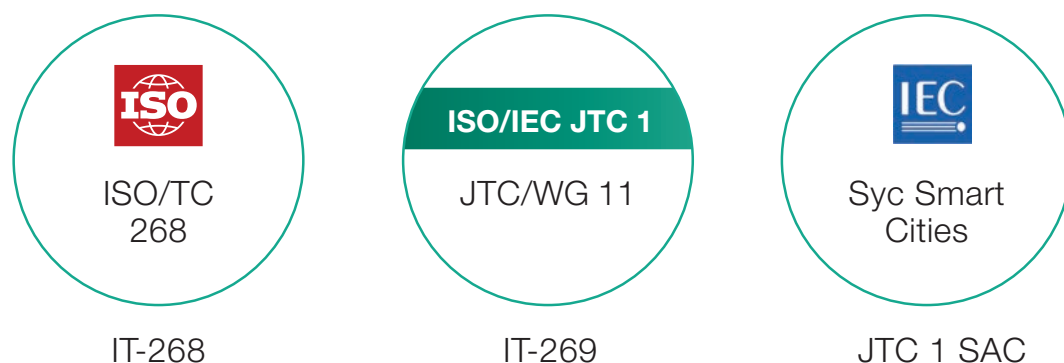
IEC Syc Smart Cities

The committee responsible for the coordination and collaboration with other technical committees in ISO, IEC and Standards Development Organisations in relation to City systems standards. The committee undertakes systems analysis to understand the needs for standards and assess new work item proposals (NWIPs) related to the electrotechnical aspects of Smart Cities.

JTC 1/Working Group 11 (Smart Cities)

The committee responsible for standards related to the information technology aspects of Smart Cities by developing foundational standards for the use of ICT in Smart Cities - including the Smart City ICT Reference Framework and an Upper Level Ontology for Smart Cities - for guiding Smart Cities efforts throughout the Joint Technical Committee 1 ([ISO/IEC JTC 1](#)) upon which other standards can be developed.

International Smart Cities Technical Committees



Key Issues and Challenges

Broad scope

The Smart Cities Standards Reference Group, through a series of meetings and workshops held in 2019 and 2020, discussed and identified a number of key challenges within the Smart Cities work program. The broad and complex scope of Smart Cities and a lack of international standards development coordination among Smart Cities stakeholders, meant committee members were required to assess standards that, at times, overlapped with other standards or extended beyond the immediate expertise of the committee.

Different ideologies within the international community

While the Australian committee agrees that delivering community driven value is primary to the Smart City agenda there are several international standards that adopt highly technical language that subordinates this view for ideological reasons. The new committees can play an important role in making these standards useful to Australians, and potentially more reflective of Australian views.

Committee resource and expertise

A committee is made up of contributors with limitations on time, skill sets and resources. However, this is not necessarily an impediment because there are opportunities to structure the standards work into distinct groupings including governance and technical standards, and the utilisation of working groups to bring in technical expertise as needed.

Fragmentation and different levels of Smart Cities adoption

While Australia has participated in Smart Cities standards development over the last few years, our presence and collective contribution has been limited within the international Smart Cities standards community. Australia has also been a late adopter of Smart Cities standards. This was evident in the number of international Smart Cities standards that have been published since 2016 but not widely adopted in Australia. The Reference Group also acknowledged there is a general lack of awareness in the community with the role of standards in supporting Smart Cities initiatives. Additionally, the federated model in Australia has led to sometimes limited coordination between the three layers of government, despite levels of co-investment. The Reference Group agreed that each level of government should be represented to ensure a cohesive approach to the development of Smart Cities standards.

Detailed recommendations

Over the course of regular meetings, the Reference Group discussed a number of strategies and opportunities for Australia to increase its level of international participation and contribution to Smart Cities standards development. The following is a summary of discussions that led to the list of recommendations developed by the Reference Group.

Goal: Support the implementation of existing Smart Cities framework and policies

General consensus within the Smart Cities community is that there is limited awareness and use of the available standards that support Australia's Smart Cities agenda. To this end, the Reference Group agreed that it is necessary to provide government bodies and industry visibility of how standards play a role, and how the development of an Australian Smart Cities Assurance Framework (which maps existing standards against areas of need) will increase the awareness and adoption of relevant standards within the general community.



Recommendation 1: The Australian Government in collaboration with industry, promote the principles of 'citizen-centric, privacy-by-design and trust by-design' by developing an Australian Smart Cities Assurance Framework, that builds on existing Smart Cities framework and policies, to inform real-time Smart Cities implementation. This includes security related standards as part of the foundation for building Smart Cities to minimise any direct economic and operational costs. This Framework should leverage those ISO and IEC Standards adopted as Australian Standards

Goal: Improve knowledge sharing and collaboration within Australia

There are many stakeholders and interest groups working within the Smart Cities portfolio. However, there is limited coordination within Australia to leverage knowledge and expertise. While the Reference Group was established to provide strategic guidance on Smart Cities standards, the broad and growing international Smart Cities work program meant the task of providing strategic and technical input to new standards became a challenge to the current members of the Reference Group. To support Australia's ongoing contribution and to segment members' expertise into appropriate areas, the Reference Group agreed to transfer the function of the Reference Group to a strategic advisory and coordination committee, with the creation of a Smart Cities Advisory Group (SCAG), to provide a mechanism where ideas and views can be shared for the mutual benefit of Australia. The SCAG will provide a forum to gather information and activities across a wide spectrum of Australian stakeholders, to build synergies and minimise overlap on existing ongoing work in ISO, IEC, and JTC 1 mirror committees.

Further, from time to time there will be key initiatives where complexity, new knowledge and widespread community impact, will drive the need for additional sub-committees to be formed to facilitate in-depth review. This was the case with 5G deployment for Smart Cities. The Reference Group recognised that there was a need to consider 5G deployment within the context of Smart Cities and as there were strong interests from stakeholders including the Australian Mobile Telecommunications Association (AMTA), the Reference Group agreed to establish a 5G committee for Smart Cities.



Recommendation 2. Establish a national Smart Cities Advisory Group (SCAG) to provide strategic advice and coordination across Australian mirror committees for Smart Cities, to build synergies and minimise overlap on existing ongoing work, and to prioritise Smart Cities standards initiatives including overseeing the implementation of these initiatives.

Recommendation 3. With input from the Australian Government, establish a national 5G sub-committee within the main committee of JTC 1/Strategic Advisory Committee (SAC), to contribute to the development of 5G related standards and support 5G infrastructure deployment for Smart Cities.

Goal: Ensure Australia can influence Smart Cities global and national standards development

As a member of the ISO and IEC standards setting bodies, Australia has a voice and vote across a range of international standards. However, until recently, Australia has had limited input to the global Smart Cities standards discussions. To improve Australia's participation in international Smart Cities standards development, the Reference Group reviewed the existing structure and agreed to create two dedicated Australian technical committees to mirror the international work program of ISO/TC 268 (Sustainable Cities and Communities) and IEC Syc Smart Cities. Furthermore, there were also other international committees developing Smart Cities related standards that required Australia's input including Smart Cities ICT related standards, through JTC 1/WG 11 (Smart Cities), JTC 1/Advisory Group for Digital Twins and JTC 1/SC 40/WG for Data Governance.



Recommendation 4. Establish two dedicated Australian mirror committees to support Australia's participation in international standards for Sustainable Cities and Communities (ISO/TC 268), and Systems Smart Cities (IEC Syc Smart Cities).

Recommendation 5. Australian stakeholders nominate experts to participate in the JTC 1/Working Group 11 for Smart Cities (Information Technology) to develop standards related to the use of ICT within Smart Cities.

Recommendation 6. Australian stakeholders nominate experts to participate in the JTC 1/Advisory Group 11 Digital Twin, to develop standards related to Digital Twin technology and application within Smart Cities.

Recommendation 7. Australian stakeholders nominate experts to participate in technical committees with responsibility for data governance, data categories and data flow including Australian mirror committees IT-030 (IT Service Management and Governance) and IT-038 (Cloud Computing).

Goal: Improve data accessibility and interoperability across Australia

Data availability, data quality, its management and its protection are all critical to the adoption of smart city initiatives. In situations where these key data are generated to differing standards, or where devices or systems include differing core deliverables, durability measures, or undefined proprietary features, accessibility and interoperability are extremely difficult. Here establishing minimum data standards will ensure practical outcomes of comparability and interoperability. Moreover, establishing foundational data labelling, storage and quality requirements will facilitate the data's availability for future use and analytics. Australia is an active member of the international JTC 1 and the JTC 1/Data Usage Advisory Group, responsible for investigating privacy concerns associated with shared datasets. However, Australia's previous membership with JTC 1/SC 32 Data management and interchange committee has been inactive for several years. Given the growing importance of data sharing and Australia's recent submission for international standards on Data Usage, which has been approved to progress through the JTC 1/SC 32 committee, it has become timely for Australia to renew its membership with JTC 1/SC 32.



Recommendation 8. Australian stakeholders, with input from government, develop an international participation case for membership to the international committee for data management and interchange committee (ISO/IEC JTC 1/ SC 32), to promote the harmonisation of data management within information systems environments internationally.

Recommendation 9. The Australian Government consider supporting the development of data use and sharing initiatives (through ISO/IEC JTC 1/SC 32), to improve data interoperability in government services, to optimise decision-making and improve citizen interactions. This may include a shared test environment for organisations to validate their systems and to identify interoperability issues.

Recommendation 10. Australian stakeholders develop a proposal for identification and technical review of global data standards to inform high level specification of open/public structured and unstructured data to optimise Smart Cities and infrastructure data (such as standardise encoding formats, management and accessibility of data). This includes consideration of privacy and ethical use of shared data, different platforms and ways to integrate different inter-platform functionalities and data from vendors, such as platform communications using application programming interfaces (API) or Publisher Subscriber models.

Goal: Support Australian communities' development of Smart Cities strategies and initiatives

As a new member of the Smart Cities International Standards committees, the Reference Group agreed that a 'considered' adoption approach for some internationally approved standards is required. This means that standards that had previously been approved by existing ISO member countries, and that were due for a comprehensive review within one year would be agreed with minimal alteration. These are now being reviewed as they are scheduled in line with Australian objectives and goals so that their applicability to Australia project requirements is maximised.

The Reference Group also acknowledged that standards awareness amongst local governments is quite limited. This is reflected in varying levels of Smart Cities solutions implemented across Australia and the product or project driven nature of those solutions. While these projects are valuable, there is a need to move towards a comprehensive holistic view of city-wide data collection, use, recollection and reuse model, if the full potential of a Smart City is to be achieved. Therefore, the Reference Group recommended the further investigation and adoption of several broad-based standards with the view that these standards will assist Australian communities to develop a larger range of Smart Cities strategies and initiatives.



Recommendation 11. Australian stakeholders, consider the adoption of Smart Cities governance standards (namely the ISO/IEC 37100 series), including:

- a. ISO/IEC 37106 – a Smart City operating model standard which provides guidance for cities and communities to develop their Smart Cities vision, strategy and policy agenda.
- b. ISO/IEC 37100 – a vocabulary of terms and definitions referenced in Smart Cities standard documents.
- c. ISO/IEC 37120, 37122, 37123 – a set of indicators to measure a city's performance in meeting their goals.
- d. ISO/IEC 37101, 37104 – a management system and practical guidance to assess and improve a city's performance in delivering outcomes.

These suite of standards provide a systematic approach to implement Smart Cities initiatives, including assessing the effectiveness of a city's strategy and plan.

Standards Development Approach

The Reference Group acknowledged that given Australia was still in the early stages of its Smart Cities journey, the focus for Australia should be on adopting existing standards and influencing the development of new ISO standards over creating new Australian standards. This approach provides Australia with the opportunity to leverage from international experts and enables Australia to improve local knowledge and understanding of Smart Cities standards development.

In prioritising Australia's standards development efforts, the Reference Group needed to consider the following factors:

- **National priorities.** The Australian Government [National Cities Performance Framework](#) sets out key measures to monitor the performance of cities across six priority areas: Jobs and Skills; Infrastructure and Investment; Liveability and Sustainability; Innovation and Digital Opportunities; Governance, Planning and Regulation; and Housing.
- **Global responsibility.** More than half of humanity live in cities, therefore city initiatives have global impact. Areas such as sustainability (in particular clean energy) are therefore global concerns.
- **Universal problems.** These usually require a multi-disciplinary approach. An example is congestion in cities.
- **Areas of confusion or duplication.** Multiple international standardisation activities are resulting in potential overlap in scope and confusion for the market.
- **Key enablers.** Technologies such as 5G are considered key enablers to Smart City initiatives.

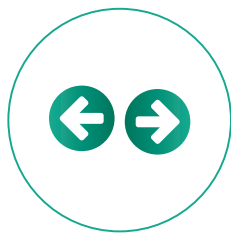


Dr Ian Oppermann at the Smart Cities Standards Forum in March 2019, presenting the need for Australia to participate on ISO and IEC international committees for Smart Cities.



Smart Cities Standards Guiding Principles

In the process of assessing international standards for adoption in Australia, the Reference Group developed a set of guiding principles to provide a consistent approach in determining the overall net benefit for Australia. The Reference Group agreed that Australia's unique attributes requires Smart Cities standards that support the geographical limitations and challenges of:



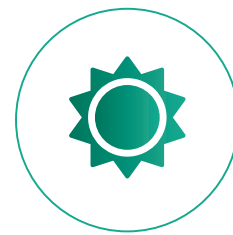
Space and distance between communities



Regions with limited network availability



Climate change and water availability



High levels of solar and regional nature of renewable energy sources

Determining what standards are needed requires an understanding of existing Smart Cities standards. There are currently 231 standards identified as contributing to the United Nations Sustainable Development Goal 11 (Sustainable Cities and Communities) - to make cities and human settlements inclusive, safe, resilient and sustainable.

The Reference Group agreed to the following guiding principles to facilitate the prioritisation and adoption of international Smart Cities standards in Australia:

- ✓ The standards adopted in Australia should align with international standards where possible to ensure scale but should also address areas of significant interest.
- ✓ The standards should inspire adoption and growth of smart city initiatives but not limit the creative interpretations that will emerge as cities express their individuality.
- ✓ Sustainability, Technology and Security are fundamental to Smart City standards.
- ✓ A standard must acknowledge a clear outcome for people, planet and/or prosperity in its intent.
- ✓ In referencing the physical environment, a standard must clearly acknowledge that humans are at the centre of these systems and advancing quality of life and prosperity is a key goal.
- ✓ Benefits to the community must include our most vulnerable populations. A standard relating to technology and which considers data must promote opportunities for diversity, equity, and inclusion.
- ✓ Better services for people, and the systems they depend on – this must be a core goal for any standard and include guidance that allows the marketplace to deliver better value to people.
- ✓ Prioritise standards that can help build greater common understanding and appreciation for the topic it addresses, particularly where there is confusion among Australian stakeholders.
- ✓ Standards for impact. Ensure that any standard addresses (or could address) a 'relevant' issue for Australia. Standards for standards sake should be avoided, where possible.

Stakeholder Representation

The Smart Cities Standards Reference Group consists of representatives from government, industry, community and consumer groups and technical experts. The Reference Group was established to provide an Australian voice to inform our vote at ISO-level and to develop the Smart Cities Standards Roadmap. The following entities were represented on the Reference Group:

Nominating Organisation	Role Title
ACT Government	Participating Member
Australian Computer Society Inc	Participating Member
Australian Industry Group	Participating Member
Australian Information Industry Association	Awaiting Assignment
Australian Mobiles Telecommunications Association	Participating Member
Australian Radio Communications Industry Association (ARCIA) Inc.	For Information Only
Australian Smart Communities Association	Participating Member
Canterbury-Bankstown Council	Participating Member
Chartered Institution of Building Services Engineers Australia & NZ	Participating Member
Communications Alliance Limited	Participating Member
Consumers Federation of Australia	Participating Member
Department of Defence (Australian Government)	Participating Member
Department of Infrastructure, Regional Development and Cities	For Information Only
Department of Natural Resources, Mines and Energy, Queensland Government	Participating Member
Engineers Australia	Participating Member
Georges River Council	Participating Member
Global Community Resourcing	Participating Member
IoT Alliance Australia	Participating Member
KPMG	Participating Member
Liaison BD-104-05 GIS-BIM and Infrastructure	For Information Only
Liaison JTC1/WG 11 Smart Cities	Participating Member
Lighting Council Australia	Participating Member
Monash University	Participating Member
Neil Temperley Consultant	Participating Member
NSW Data Analytics Centre	Chairperson
NSW Department of Customer Service	Participating Member
NSW Department of Planning, Industry and Environment	Participating Member
NSW Government, ICT and Digital Government, Spatial Services	Participating Member

Nominating Organisation	Role Title
PCSG Australia	Participating Member
Service Stream	Participating Member
SiteHive	Participating Member
Smart Cities Council Australia New Zealand	Participating Member
Strategic Commercialisation Australia	Participating Member
University Centre of Rural Health	Participating Member
University of New South Wales	For Information Only
Vicinity Centres	Participating Member
Wingecarribee Shire Council	Participating Member
Wollondilly Shire Council	Participating Member
WSP Australia Pty Ltd	Participating Member



Appendix 1 – Prioritisation Scorecard

Given the broad scope and multitude of Smart Cities-related standards it is important to prioritise our efforts.

The purpose of a prioritisation scorecard is: to rank which standards are most relevant to Australia; to help assess and prioritise where we should direct our resources and efforts to influence or improve the development of international standards; and to flag any key concerns. The process will also help us identify the right experts to recruit to support Australia's standards development efforts.

Criteria	
Relevance to Australia	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Reason:
Meets the Smart Cities Guiding Principles (refer to Guiding Principles section)	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Comment:
The degree of overlap or potential conflict with other standards	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Explanation and relevant standard:
Clarity of language, grammar, terminology and consistent context for the intended users	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Comment:
Level of attention to key issues including privacy, cyber security and national security	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Comment:

Completion information	
How willing are you to personally contribute to the further development of this standard?	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Comment:
How would you rank your competency to contribute?	
<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	Comment:
Someone you think we should approach to contribute to this standard.	
Name and Comment (if applicable):	
Major users of the standard	
Comment:	
Other relevant, associated or overlapping standards that may be helpful to consider	
List relevant standards:	

