

# ITU Forums

## The Role of Standards in Accelerating Digital Transformation for Cities and Communities

*Outcome Document*

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## Standards to accelerate digital transformation in cities and communities

With the COVID-19 pandemic having impacted cities and communities all over the world, continuation of their digital development is even more important to enable them to weather any similar emergencies. Many cities also find themselves facing a different paradigm than before the pandemic, which has impacted their goals and priorities for the foreseeable future.

Indeed, the pandemic's unprecedented nature has spurred the need for digital

transformation in many areas, from the online or remote continuity of essential public services like healthcare - to the rapid, high-volume and uninterrupted manufacturing of quality and safe personal protective equipment (PPE), among other examples.

In times of continuing uncertainty and shifting needs due to the ongoing pandemic, especially, it is imperative for city leaders to root their decision making in global best practices and evidence within all areas of city life, from governance and city services provision; to public transport optimization; to establishment of online-based schooling and more.



International standards and guidelines are necessary to ensure that key digital transformation initiatives in cities successfully achieve their intended outcomes. Standards and guidelines can provide vital direction, methodologies, best practices, and technical and policy recommendations to cities and communities that can help in their digital development and transformation.

Cities can use standards and guidelines to:

- set or reconfigure their smart city priorities;
- navigate sustainability, resilience, and technological challenges;
- identify innovative solutions to the new set of challenges that they face, and

- target their digital transformation potential into becoming more proactive, prepared, adaptive, resilient, and inclusive.

The International Telecommunication Union (ITU) organized a webinar on the role of standards in “Accelerating digital transformation for cities and communities” on 23 April 2021.

The webinar was open to all and brought together close to 130 participants such as policy makers, industry experts, representatives from standardization organizations, international organizations, the academia and other key stakeholders.



## Opening remarks

*Presenter*

**Chaesub Lee** | Director |  
Telecommunication Standardization  
Bureau, ITU

For several years, ITU has played a significant role in guiding the development of smart cities, and the trajectory of the information and communication technologies (ICTs) and digital technologies that are making the cities and communities of tomorrow possible.

Now with the COVID-19 pandemic having impacted cities and communities alike in terms of their socio-economic balance, ITU considers it all the more important to encourage and support continuation of their smart development with a human centric approach.

International standards and guidelines can be vital in helping to restart and accelerate these efforts by providing expert guidance rooted in best practice along with technical and policy recommendations that cities can use to reset or reconfigure their priorities, identify innovative solutions to the new set of challenges that they face, and ultimately



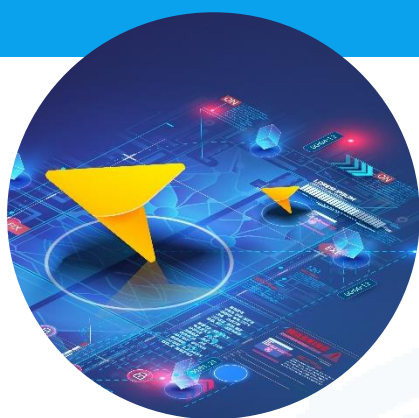
target their digital transformation potential into becoming more proactive, prepared, adaptive, resilient, and inclusive.

Putting cities and communities back on their smart development pathways and accelerating their progress will be necessary to maintain progress in achieving the United Nations 2030 Agenda and the seventeen Sustainable Development Goals, in addition to the ITU Connect 2030 Agenda and its targets for digital transformation.

With municipal budgets already taxed due to the ongoing pandemic, it is imperative for cities to maximize the return on their investment into digital solutions in all areas

of city life, from governance and city services provision; to public transport optimization and traffic management; to delivery of healthcare and emergency services; to establishment of online-based schooling and more.

Implementation of smart city and digital technology standards, such as those developed within ITU-T Study Group 20 "Internet of Things and Smart Cities and Communities", will go a long way in helping cities ensure that any efforts and investments that they have already made towards harnessing digital technologies to implement the Sustainable Development Goals - and any that they will make in the



new post pandemic reality - are on track to maximize positive outcomes and returns for their citizens and businesses.

ITU also works closely with other Standard Development Organizations in order to strengthen its standardization efforts and to work towards harmonization.

That is also why this forum was so important.

We discussed not only the role of standards in accelerating transformation in cities and communities but also the role of SDOs in the process.

With that in mind, I would like to take this opportunity to call for a great collaboration and cooperation among Standard Development Organizations.

Standards represent a voluntary commitment to adopt a common approach to digital transformation. To achieve this, standards will need to be developed and harmonized with the best interest of all cities in mind.

I would like to thank everyone who took the time to join us, and I hope they found the forum productive and informative.



*Presenter*

**Nasser Saleh Al Marzouqi |**

Chairman | ITU-T Study Group 20:  
Internet of Things, Smart Cities and  
Communities

We are living in a digital age where broadband connection and digital connectivity are crucial for cities and communities to meet different sustainability challenges. The global pandemic has further accelerated the digital transformation when businesses, organizations and families alike are all relying on the Internet and digital solutions to stay connected with one another and to achieve a strong recovery.

Standards provide the foundation for

unlocking the full potential of digital transformation. They offer city and community stakeholders the technical guidance for enabling integration and interoperability in their digital systems and infrastructure.

As more members of the global community look to facilitate a successful digital transformation, we also need to bring to their attention the important role standards can play in the process.

Our goal today is to explore the role of international standards in developing, driving and accelerating digital transformation in cities and communities.



ITU-T Study Group 20 works to develop international standards that address the standardization requirements of IoTs in smart cities and communities.

SG20 standards enable the coordinated development of IoT technologies, including machine-to-machine communications, ubiquitous sensor networks, end-to-end architectures for IoT, and mechanisms for the interoperability of IoT applications as well as datasets employed by various vertically oriented industry sectors.

Study Group 20 is also forging an excellent partnership with IEC and ISO within the framework of the joint smart city task force.

I was very excited to see that we would be joined by speakers from both ISO and IEC as well as other important organizations such as IEEE, TM Forum and OASC who shared their unique perspective and experience on using standards to accelerate digital transformation with us.

I would also like to take this opportunity to introduce to you briefly to the United for Smart Sustainable Cities initiative, or U4SSC that I have the pleasure to chair. The UN General Secretary recently highlighted in his Roadmap for Digital Cooperation that “digital technology has enormous potential for positive changes but can also reinforce and magnify existing fault lines”.





United for Smart Sustainable Cities aims to amplify the positive impacts that digital technologies can bring while minimizing the negative impacts through facilitating meaningful collaboration and partnership with city stakeholders.

U4SSC is a UN initiative coordinated by ITU, UNECE and UN-Habitat and supported by other 13 United Nations agencies and programmes to achieve Sustainable Development Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable".

Cristina Buetti provided more detailed information on U4SSC during this Forum.

As the Chairman of U4SSC, allow me to extend an open invitation to all of you to join us in U4SSC and be part of our journey to bring sustainability and inclusive digitalization to all.

We had an excellent programme for the forum, and I thank again all of our speakers, moderators and participants for their participation. We highly appreciate their support.



## **Session 1: How standards can support digital transformation in cities & communities?**

*Moderator*

**Javier García Díaz |**  
Director General | UNE

International standards are vital to accelerating cities' progress in digital transformation. These standards are developed on consensus and best practices from around the world, they can provide important guidance and policy recommendations for cities to use in order to set their priorities, navigate global challenges and implement innovative solutions.

This session explored the role of international standards and the importance of coordination among global standardization organizations in providing the necessary guidance to accelerate cities' digital transformation.



*Presenter*

**Hyoung Jun Kim** | Vice Chairman |  
ITU-T Study Group 20: Internet of  
Things, Smart Cities and Communities  
(Co-convener of The JCA-IoT and  
SC&C)

**“ITU-T activities to support digital  
transformation in cities & communities”**

Given that close to 70 per cent of the rising world’s population will live in cities by 2050, the digital transformation of cities and communities has become a key focus of ITU’s activities, especially in light of the disruption to cities caused by the global COVID-19 pandemic.

Digital technologies such as AI, IoT, 5G and many more offer an opportunity to digitally transform infrastructures and help instill long-term agility and sustainability in cities. But their success depends on the effective implementation of global standards.

Within ITU’s standardization sector, ITU-T Study Group 20 is responsible for studies related to IoT and its applications, and smart cities and communities. This includes studies related to big data aspects, e-services and smart services. ITU-T Study Group 20 offers a variety of international standards to enable the digital transformation of cities and communities worldwide.



The standards focus on highly relevant latest topics, such as smart city platforms and their interoperability, blockchain-based data management for IoT and in smart cities, smart city security and privacy, smart city maturity model, and so on.

The digital transformation of smart city verticals and areas is also a growing focus of ITU-T Study Group 20. Examples of these verticals include digital accessibility, emergency response and management, digital agriculture, smart health, smart manufacturing, smart water management, smart energy, and so on.

ITU-T SG20 is also responsible for the Joint Coordination Activity on IoT and Smart Cities and Communities. The scope of the JCA-IoT and SC&C is to coordinate the work of ITU-T Study Group 20 and provide a visible contact point for IoT and its applications, including smart cities and communities activities. It coordinates with external bodies working in the field of IoT and SC&C. The JCA-IoT and SC&C roadmap contains a collection of standards and ITU-T Recommendations related to IoT, smart cities and communities SC&C, network aspects of identification systems, including RFID (NID) and ubiquitous sensor networks (USNs).



*Presenter*

**Bernard Gindroz** | Chair, ISO/TC 268 |  
Sustainable cities and communities,  
International Organization for  
Standardization (ISO)

**“ISO TC 268 “Sustainable Cities and  
Communities” - Standards in support of  
digital transformation”**

The challenges faced by cities around the world are very complex and multi sectorial with impacts on their economy, environment and before all on their citizens. It is thus important to support and guide cities in setting their priorities, in defining appropriate roadmaps adapted to their context, and then in implementing robust measures.

Standards are efficient “tools” in support of decision making, implementation of solutions, and management, thanks to their elaboration process based on consensus and consideration of best practices from around the world.



ISO TC 268 collects expression of needs from cities and communities, to help them in their journey towards sustainable development. Their own needs are driving our TC 268 activities and new work items.

To start the process, ISO TC 268 recommends cities and communities to define their strategy with a long-term vision and targets, where sets of performance indicators help to define objectives and to trace progress during the implementation phases. This initial step, supported by ISO 371xx series of standards, provides a quality management

approach that clearly sets out the basic requirements that help cities determine their sustainable development needs and strategies.

This fundamental initial step serves as a basis for setting action plans and implementing adequate measures, while digital transformation in cities & communities offers a wide and extended range of opportunities with related standards to pave the way to success, to sustainability, safety and security, and thus to enhanced quality of life for all citizens.



*Presenter*

**Michael Mulquin |**

Chair, Smart Cities Systems Committee |  
International Electrotechnical Commission

**“Can we apply a Minimum Viable Product approach to Smart City standards?”**

The aim of standards is to provide an authoritative and unambiguous set of guidance that will be constant over a number of years. Only in this way can suppliers have the confidence to develop, buyers the confidence to purchase, and users the confidence to invest time and energy to implement, new products and services.

The challenge in Digital Transformation is that this is a fast-moving environment, and it is difficult to be sure about the requirements of users sufficiently clearly to enable us to provide detailed standards that will remain current for a number of years.

We already often road test our standards for Smart and Sustainable Cities with pilots. However, these tend to be at a fairly advanced stage of standard development. Is there anything we can learn from the Minimum Viable Product approach in Industry, where versions with just enough features to be usable are offered to early customers who can then provide feedback for future product development?



*Presenter*

**Heng Qian** | Convener |  
ISO/IEC JTC1/WG11 Smart Cities

### **“The uniqueness of smart city ICT”**

Technology integration helps cities to improve efficiency, enhance their economic potential, reduce costs, open the door to new business and services, and improve the living conditions of its citizens. Compatibility of ICT technologies is needed for cities and communities

A key condition for creating value through integration is the compatibility of technologies; which is best achieved through common and consensus-based standards that ensure interoperability.

There are many existing ICT standards that could be used in support digital transformation in cities and communities. These include standards from ISO/IEC JTC1 for:

- Data capture & identification
- Data management
- Privacy, Security
- ICT networks and cloud
- Software engineering, including application technologies, cultural & linguistic adaptability, programming languages
- IT service management
- Technology for Internet of Things, including sensors
- Artificial intelligence
- Unique Smart City ICT
- Software Platform for Open City Data





An important component of a smart city is the open availability of data for citizens and corporations to use.

Cities throughout the world provide open data, but the services provided by their open data platforms varies from city to city. Standards for an open, scalable, and adaptive platform can meet the requirements of different cities and communities.

Semantic interoperability is the ability of computer systems to exchange data with unambiguous, shared meaning. Standards for semantic interoperability enable machine

reasoning, knowledge discovery, and data federation between information systems.

As more and more smart applications are introduced into city operations, the need for integration of their operation becomes increasingly important. The Urban OS supported by standards is fast becoming the primary means by which citizens and corporations interact with the city.

Smart cities need evaluation methods and indicators with which city stakeholders can understand the smart city performance from the ICT perspective.



## **Session 2: COVID-19 is accelerating city digital transformation: the role of industry and UN initiatives**

*Moderator*

**Bilel Jamoussi** | Chief of Study Groups |  
TSB, ITU

The shock of the pandemic has driven change and transformation across city leaders, unlocking technological change via cultural change, and it was an incredible accelerant. Enabling a city-wide digital transformation requires understanding the needs of all stakeholders, spanning consumers, corporates, SMEs, and policymakers.

By understanding these needs, digital transformation can be realized with the adoption of pertinent new technologies and behaviors that are worthwhile for all involved. This session will provide a platform to present some of the key industry initiatives that are helping to advance the digital transformation of cities and communities.



*Presenter*

**Davor Meersman | CEO |**  
Open & Agile Smart Cities (OASC)

**“Minimal interoperability: Making Change Possible”**

Cities and communities are looking towards open, interoperable and operational digital services to solve challenges and achieve their strategic goals. The pandemic has likewise challenged cities to work harder to find ways to mitigate its impact on city centres and local businesses.

In parallel, many cities are developing ambitious plans to become climate-neutral and more sustainable for the benefit of society. Digital solutions and data management can support cities and communities on their way there.

To reach a stage where cities can replicate digital solutions whenever possible and innovate only when really needed, minimal and open technical enablers are needed. This is where international standards come into play.



In support of cities and communities and their goals, OASC recommends Minimal Interoperability Mechanisms (MIMs) as a way to replicate and scale operational solutions more easily. MIMs are based on open, international standards. The MIMs approach is already being referenced in local, regional and national guidelines and strategies - from Belgium to Sweden and Denmark, all the way to Japan. Moreover, supranational institutions such as the European Commission and linked initiatives such as the Oulu Declaration ([www.living-in.eu](http://www.living-in.eu)) have recognised the value of the minimal interoperability approach.

While MIMs stand at the centre of technical interoperability of data and digital solutions, cities also need a universally accessible space to explore and discover what their peers around the world have already successfully implemented. The CITYxCITY Catalogue recently provided by OASC, and its connected sister, the Tech4Good marketplace launched by the European Commission's 100 Intelligent Cities Challenges, aim to serve exactly this purpose. These platforms will amplify impact for solution providers while at the same time, de-risk investment for cities.



*Presenter*

**Joann O'Brien** | Vice President |  
Digital Ecosystems, TM Forum

### **“Beyond Connectivity Advisory Board”**

The architecture of a smart city is dynamic and complex. Helping industry, cities and other stakeholders deal with the complexity is part of TM Forum’s work. To this end, TM Forum supports collaboration on standards to make Digital Business Transformation quicker, more affordable and more effective.

Participation in collaboration accelerates research and development and enables working with key business stakeholders. Participation in catalyst projects is also an efficient way to showcase new initiatives.

The benefits of collaborating include:

- Collaborative R&D makes digital transformation faster, more efficient, effective and lower risk.
- Collaboration and co-creation produce quality assets that are fit-for-purpose and ready for use.



*Presenter*

**Joel Myers** | Chair |  
IEEE Initiative for Smart Cities

**“The Global Observatory for Urban  
Intelligence in response to digital  
transformation”**

Whatever terms or definition we use for “Smart Cities”, we know that technology and access to intelligent data is at the core of providing sustainable and resilient cities. Not simply for providing efficiencies for a city’s limited resources, but in stimulating local economies, providing social well-being to citizens, and in order to define the type of city we want for future generations. However, the quantity of data being created globally is astronomical. Hundreds of exabytes in data are generated ever year. Every 2 days we produce more data than all of history prior to 2003. This surge in data generation is led by the omnipresence of ICTs and digital technologies. The drive for smart cities has resulted in the dawn of a wealth of urban data.



To share knowledge on cities, collaborate and develop ad-hoc sustainable models across global regions, we need to develop a common language. Not in terms of a single spoken or written languages, but instead, as a common ontology of terms that best represents the multi-aspects and disciplines of smart cities.

Whether we need to understand recycling of waste, transport, education or the environment, we need to tackle the technical language of each aspect as described by its engineering, urban planning, technology, cultural and environmental impact, governance, economies and so on.

Both IEEE and ITU recognise the paramount importance of helping cities become more resilient and sustainable. The IEEE and ITU collaboration will develop a “Global Observatory for Urban Intelligence” with the help of city stakeholders from government, industry and academia.

The objectives of the Global Observatory for Urban Intelligence are to provide an ongoing understanding of cities and how digital transformation can best serve them in developing the economic, environmental and social dimensions of urban growth, in order to successfully achieve sustainability and resilience.



11 SUSTAINABLE CITIES  
AND COMMUNITIES



*Presenter*

**Cristina Bueti** | Counsellor |  
International Telecommunication Union

**“U4SSC: enabling a smart sustainable  
future post pandemic”**

[United for Smart Sustainable Cities \(U4SSC\)](#) is a UN initiative coordinated by ITU, UNECE and UN-Habitat, and supported by CBD, ECLAC, FAO, UNDP, UNECA, UNESCO, UNEP, UNEP-FI, UNFCCC, UNIDO, UNOP, UNU-EGOV, UN-Women and WMO to achieve Sustainable Development Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable".

U4SSC serves as the global platform to advocate for public policy and to encourage the use of ICTs and digital technologies to help facilitate the transition to smart sustainable cities.





U4SSC has a comprehensive focus when it comes to smart sustainable cities. It considers every aspect of a smart sustainable city within its framework. It is working on various [Thematic Groups](#) which span a variety of timely and relevant smart city topics, including city platforms to improve city governance and financial recovery post-COVID-19.

Furthermore, the approach to enhancing smartness and sustainability developed by U4SSC is meant to be measurable and reportable. To this end, it helps cities implement the [U4SSC KPIs](#) for Smart Sustainable Cities to measure their smartness and sustainability in the three

dimensions of Economy, Environment and Society & Culture, and to provide cities with the means for self-assessments toward achieving the SDGs. Over 100 cities are participating in the U4SSC KPIs project at present, including Esperanza, Santa Fe, Wels, Kristiansand, Trondheim, Volda (and many others from Norway). Their results are presented in a series of [ITU reports](#).

U4SSC has also published many helpful, cutting-edge [deliverables](#) since its inception. The latest is on '[Simple Ways to be Smart](#)'. It identifies smart interventions that do not require excessive material or capacity inputs, but can help cities be sustainable, inclusive, safe, and resilient.



## Closing remarks

*Presenter*

**Cristina Bueti** | Counsellor |  
International Telecommunication Union

This was a most fruitful virtual forum. Our sincere thanks to all who joined us and our warmest appreciation for our speakers, presenters and moderators who made all three sessions so informative and engaging.

The discussion during the forum around the role of international standards and of industry initiatives in accelerating digital transformation in the face of the global COVID-19 pandemic was most productive and provided a lot of food for thought.



With the post pandemic world being in certain ways an entirely new reality for all of us, it is certainly appropriate to revisit some of the fundamental ways that we as disseminators of knowledge and best practices and both industry and academia driven expertise support cities and communities along their digital transformation and smart sustainable development pathways toward achieving the UN Sustainable Development Goals.

The one thing that has conclusively remained a constant in the pre and post pandemic realities is the essential role that standards play in ensuring that our cities become even

more intelligent across the board, responsive to citizens' needs, proactive and thoughtful in planning, and resilient to any future disruptors the likes of which we are in the midst of experiencing.

I am proud of the excellent work being done by our collective community of professionals and experts, including that being done at the ITU.

I hope that the many key takeaways from the discussions will be useful in everyone's work and city endeavours. Thank you again for being a part of this timely and vital discussion.



## Key highlights

Standards are instrumental in driving positive changes and accelerating digital transformation in cities and communities. From building trust and confidence in municipal decisions, to helping ensure returns on taxpayer dollar investment, to aligning stakeholders and enshrining best practices in processes, standards help create scalable and replicable results that other cities can aspire to and adopt.

In this way, standards help ensure and improve the quality of life for residents in cities and communities of all varying sizes,

makeup, geographies, and digitalization or smartness levels. Achievement of smart city results that, at their core and in execution, are human centric is a cornerstone of the UN 2030 Agenda for Sustainable Development. So, standards are also vital to ensuring local progress toward achievement of the Sustainable Development Goals through digitalization.

Also vital to ensuring inclusive, thoughtful and effective digital transformation in cities and communities are global initiatives and programmes that help cities implement and utilize standards to achieve best long-term results rooted in data and evidence.



Ultimately, urban challenges are common to many cities. One of the biggest stems from cities becoming more integrated in their technology environments, hence needing more integration of devices.

SDOs identify how cities see challenges that are common and those that are unique to them. In doing so, SDOs provide common solutions to the common problems that cities face through best practice architecture; a common language; and practical use cases and insightful analysis. Increasingly, however, SDOs are recognizing the need to consider geographic, climate, cultural, historic and size-based contexts of cities in their work.

SDOs are also recognizing that as important as it is to develop standards, it is also important to promote their application in cities and ensure that they are indeed used.

To achieve this,, i.e., for cities to implement them and for industry to develop solutions, standards must stand the test of time. So, the balance between speed and longevity as aims is needed when developing standards. Critical evaluation of them is also needed for continual improvement to make standards more widely used. SDOs need to work as a community to provide objectivity, credibility and transparency in their standards work, and to make their output understandable and usable by all.

Relationship building with cities will be key to promoting the adoption of standards, at a time when the Covid-19 pandemic has lowered barriers to and increased acceptance of digital transformation, and to greater cooperation between players for co-innovation and co-creation of change. This will serve to lower the cost of innovation.



## Way forward

Continued collaboration of efforts between Standard Development Organizations will be needed to ensure the most comprehensive, high-quality, and up-to-date selection of standards covering cities. This will help ensure that standards are not developed in the kind of silos that lead to mismatch between city needs and SDOs' outputs.

To achieve an effective selection of standards for cities, SDOs will also need to be strategic in their research and development efforts. They will need to determine whether their proposed standards are appropriate for city needs, especially in the post COVID-19

pandemic reality. They will also need to practically consider the implementation aspects of their standards, and whether or not proposed solutions or best practices are fully applicable, achievable, affordable, scalable, replicable and representative across most cities.

To reflect cities' requirements and needs into the standards selection and development process - and to continue to engage them in the future - SDOs will need to standardize and harmonize their methodology toward standards development. Industry approaches involving feedback loops such as minimum viable product (MVP) will need to be considered to effectively support and accelerate digital transformation in cities.

# Biographies



**Chaesub Lee | Director |**

Telecommunication Standardization Bureau, ITU

Dr. Chaesub Lee was elected Director of the ITU Telecommunication Standardization Bureau at the ITU Plenipotentiary Conference 2014 in Busan, Republic of Korea, and re-elected to this post for a second four-year term at the ITU Plenipotentiary Conference 2018 in Dubai, United Arab Emirates. Dr Lee has contributed ICT standardization for over 30 years, specializing in areas such as integrated services digital networks (ISDN), global information infrastructure (GII), Internet protocol, next-generation networks (NGN), Internet protocol television (IPTV) and cloud computing.



**Nasser Saleh Al Marzouqi | Chairman |**

ITU-T Study Group 20: IoT, Smart Cities and Communities

Mr. Nasser Al Marzouqi is the Chairman of the ITU-T Study Group 20 “Internet of things and smart cities and communities” which provides the specialized IoT standardization platform necessary for the convergence to rest on a cohesive set of international standards. Mr. Al Marzouqi is currently working for the Telecommunication Regulatory Authority in the United Arab Emirates in the International Affairs Division. He also functions as the UAE representative to the International Telecommunication Union (ITU) and has been closely involved in the major ITU conferences and events.



**Bilel Jamoussi** | Chief of Study Groups Department |  
Telecommunication Standardization Bureau, ITU

Dr. Bilel Jamoussi is Chief of the Study Groups Department of the ITU Standardization Bureau in Geneva Switzerland. Since 2010, he has been leading the bureau's standards making activities into a new era characterized by rapid convergence and the need for increased collaboration with vertical sectors and partnership between developed and developing countries. Prior to 2010, Jamoussi worked for a Telecommunication equipment and solutions provider for 15 years in Canada and then in the United States where he held several leadership positions and was granted 22 US patents in diverse areas including packet, optical, wireless, and quality of service.



**Javier García Díaz** | Director General | Spanish Association for  
Standardization, UNE

Mr. García is also member of the Council Board of the International Organization for Standardization (ISO) and has been Vice-President Technical of the European Committee for Electrotechnical Standardization (CENELEC) and member of the Administrative Boards of the European Committees for Standardization (CEN and CENELEC). He also served in the Standardization Management Board of the International Electrotechnical Commission (IEC) from 2012 to 2017.





**Hyoung Jun Kim | Vice Chairman | ITU-T Study Group 20: IoT, Smart Cities and Communities (and Chair of WP1/20; Co-convener Of JCA-IoT & SC&C under SG20; SVP, Intelligent Convergence Research Lab, ETRI)**

Dr. Hyoung Jun Kim joined the Electronics and Telecommunications Research Institute (ETRI) in 1988, and is currently its Senior Vice President. He has had about 33 years research experiences in various divisions of ETRI including Info-Communications Technology Division, IT Strategy Research Division, Information & Telecommunications Technology Division, Protocol Engineering Centre, and Intelligent Convergence Research Lab. He has been currently serving as Vice-chair of ITU-T SG20 and its Chair of WP1/20 and the co-Convenor of JCA-IoT/SC&C under SG20. In addition, he has been also serving as Chair of ASTAP (Apt STAndarization Programme) in APT (Asia Pacific Telecommunity).



**Cristina Bueti | Counsellor | International Telecommunication Union**

Ms. Cristina Bueti is the ITU Focal Point on Environment and Smart Sustainable Cities. She is also the Counsellor of ITU-T Study Group 20 "Internet of things (IoT) and smart cities and communities (SC&C)" at the International Telecommunication Union (ITU). She also serves as TSB/ITU focal point for Latin America. As part of the International Women's Day 2016, Ms. Bueti was named as one of the twenty Geneva-based inspirational women working to protect the environment. She has authored over 40 reports on telecommunication issues.



**Bernard Gindroz** | Chair, ISO/TC 268: Sustainable cities and communities | International Organization for Standardization (ISO)

Dr. Bernard Gindroz is an independent consultant on Energy, Environment, Climate Change, Smart Cities and Communities and Transport, with a special focus on innovation, policies and standardization. Dr. Gindroz is active in standardization, as Chairman of several bodies, including ISO TC 268 (Sustainable Development of Communities) and CEN/CENELEC/ETSI Sector Forum on Smart and Sustainable Cities and Communities. He is an EU expert in Adaptation to Climate Change, as well as in circular economy, a projects' evaluator of several EU research and innovation programs and initiative leader in the EIP SCC (European Innovative Partnership on Smart Cities and Communities). Dr. Gindroz has also worked for the French Environment and Energy Management Agency (ADEME) in various leadership capacities.



**Heng Qian** | Convener |  
ISO/IEC JTC1/WG11 Smart Cities

Mr. Qian Heng currently chairs the Standard Institute of Emerging Technology and Innovations (SIETI), Qilu University of Technology, China. He is the adviser of China Standardization Experts Committee and has over 10 years of experience in management and 20 years of experience in IT related standards activities, including Internet of Things( IoT ), Artificial Intelligence, Smart City, logistics information system, automatic data capture (bar code and RFID) and EDI. He currently serves as the Convener of ISO/IEC JTC 1/WG11 (Smart City and ISO/IEC JTC1 (Information Technology) Liaison Officer to ITU-T.



**Davor Meersman | CEO | Open & Agile Smart Cities**

Dr. Davor Meersman is CEO of Open & Agile Smart Cities (OASC). He is a global change maker with more than 15 years of international experience in setting up leading infrastructures and organisations on the forefront of technological innovation. He is a member of the United Nations SDG 11 Global Council, member of the European Commission's Steering Committee on Advanced Technologies for Industry, member of the Advisory Board of the ETSI Task Force on Citizen-Centric Standards, Ambassador of ISSIP, and a judge and mentor for Belgium's largest start-up incubator programme Start-It KBC (500+ startups).



**Michael Mulquin | Chair, Smart Cities Systems Committee | International Electrotechnical Commission (IEC)**

Mr. Mulquin has spent 25 years partnering with cities, rural areas, and industry on how technology can help neighbourhoods and cities work better. He has been focusing on the development and implementation of smart and sustainable city standards. He is technical author of two British Standards Institution publications: PD8100 Smart cities overview - Guide, and PD8101 Smart cities - Guide to the role of the planning and development process. He is Chair of the IEC Smart Cities Systems Committee and is an active member of smart city standards work within ISO and JTC1. He is also Co-Chair of the IEC-ISO-ITU Joint Smart Cities Task Group. He is Principal Architect of the TM Forum's Smart City Maturity Model and is continuing to support the TM Forum's work related to smart cities.



**Joel Myers** | Chair | IEEE Initiative for Smart Cities

Myers is an IT engineer, entrepreneur and leading international technologist, specializing in the creation and development of innovation technology solutions in Cultural Heritage, Tourism, and Smart Cities, working internationally with state and local governments, universities and industry. His company, HoozAround Corp. (USA) owns and manages a digital platform called IoP (the "Internet of People") that provides socio-economic recovery for cities, through a micro-currency called Hoozies™. As Chair of IEEE IoT Initiative for Smart Cities, Mr. Myers has been focusing his working group on the redefinition of the digital transformation of urban environments from a truly "People-Centric" focal point.



**Joann O'Brien** | Vice President, Digital Ecosystems |  
TM Forum

Ms. O'Brien currently leads the Beyond Connectivity at TM Forum, helping its members to develop their diversification strategy to grow their business leveraging and going beyond connectivity. She is a transformative technology leader who has led the development of two of the most successful areas of TM Forum, Open APIs and Business Architecture. Ms. O'Brien is TM Forum's representative on Global Industry Organisations (GIO), leading the Digital Health initiative and represents TM Forum on NGIoT, Next Generation IoT and advisory board to the European Union. She also leads TM Forum's representation in the 5GEM, Enabled Manufacturing project, a consortium lead by Ford Motor Car and Vodafone.



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## Further links:

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