



ITU-T standards

4

smarter and more sustainable cities

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

Lead expert group to develop standards & guidelines on:

- Internet of things (IoT) and its applications
- Smart cities and communities, including its e-services and smart services
- Internet of things identification

- 2 Working Parties (7 Questions)
- 4 Regional Groups:
 - SG20RG-LATAM
 - SG20RG-AFR
 - SG20RG-ARB
 - SG20RG-EECAT

Main Statistics and outcomes:

- **More than 120 experts** participate actively in the work and attend each meeting (including the active participation of Academia members and SMEs)
- **From 2017-2019:**
 - 63 Recommendations Decided/Determined/Approved
 - 7 Supplements agreed
 - 6 other informative texts agreed
 - Over 40 events organized related to IoT and Smart Cities and Communities

2019 Catalyst Awards
finalist

Recommendations ITU-T Y.4200
“Requirements for the interoperability of smart city platforms” and Y.4201 “High-level requirements and reference framework of smart city platforms”

Next meeting: 6-16 July 2020, Geneva, Switzerland



ITU-T SG20: Ongoing standardization work

Internet of things (IoT)

- **Drones** for IoT
- IoT requirements for **edge computing**
- **Artificial Intelligence** and IoT
- **Accessibility** for IoT
- **Blockchain** and IoT
- IoT for **developing countries**
- **Intelligent Transport Systems (ITS)** based on IoT
- **Privacy and trust** of IoT systems
- **Interoperability**
- **Edge computing**
- **IoT-devices authentication**
- **Digital twins** for IoT

Smart cities and communities

- **Open Data** in Smart Cities
- **Use cases, requirements and architectures** for Smart cities and communities
- **Smart Services in rural communities**
- **Disaster notification** of the population in smart cities and communities
- *Smart City Infrastructure*

Data management & processing

- Data structure and data transfer protocol for **automotive emergency response system**
- Function description and metadata of Spatio-temporal Information Service for SSC
- *Integrity*

Joint Coordination Activity: IoT and SC&C



- To coordinate the activity on IoT & SCC within ITU.
- To provide a visible contact point IoT and SC&C activities in ITU-T and to seek cooperation from Foras and other SDOs.

IoT and SC&C standards online roadmap

Co-Conveners:

- Hyoung Jun Kim (ETRI, Korea)
- Fabio Bigi (Italy)

Secretariat:

Contact: tsbjcaiot@itu.int



Collaboration with other SDOs



- 17 new Recommendations approved
- 1 ongoing work item
- 6 Technical Reports agreed



- Organization of World Smart City Forums
- Working team on Smart City Terminology

Joint IEC-ISO-ITU Smart Cities Task Force

- To build synergies on ongoing work in ITU-T, IEC and ISO related to smart cities and communities;
- To maximize efforts in order to identify new areas of cooperation related to smart cities and communities;
- To develop a holistic view on smart cities and communities taking into consideration the scope, areas of work and expertise of ITU-T, IEC and ISO to support smart cities and communities development.



ITU-T SG20 last meeting main results

Geneva, Switzerland, 25 November-6 December 2019

Statistics:

159	Participants
12	Draft Recommendations consented
2	Recommendations approved
3	Supplement agreed
20	New work items



ITU-T SG20 Main outcomes

Geneva, Switzerland, 25 November-6 December 2019

12 draft Recommendations consented

ITU-T Rec. Number	Draft new/ revised Rec. No.	Title	Q
Y.4461	Y.SC-OpenData	Framework of open data in smart cities	1/20
Y.4208	Y.IoT-EC-reqts	IoT requirements for support of edge computing	2/20
Y.4209	Y.smartport	Requirements for interoperation of the Smart Port with the Smart City	2/20
Y.4462	Y.IoT-ics	Requirements and functional architecture of open IoT identity correlation service	3/20
Y.4467	Y.AERS-msd	Minimum set of data structure for automotive emergency response system	3/20
Y.4468	Y.AERS-mtp	Minimum set of data transfer protocol for automotive emergency response system	3/20
Y.4463	Y.del-fw	Framework of delegation service for IoT devices	4/20
Y.4464	Y.IoT-BoT-fw	Framework of blockchain of things as decentralized service platform	4/20
Y.4465	Y.IoT-VLC	Framework of IoT Services based on Visible Light Communications	4/20
Y.4466	Y.ISG-fr	Framework of smart greenhouse service	4/20
Y.4807	Y.IoT-Agility	Agility by design for Telecommunications/ICT Systems Security used in the Internet of Things	6/20
Y.4903Rev		Key performance indicators for smart sustainable cities to assess the achievement of sustainable development goals	7/20



ITU-T SG20 Main outcomes

Geneva, Switzerland, 25 November-6 December 2019

2 Recommendations approved

ITU-T Rec. Number	Work item or provisional name	Title	Q
ITU T Y.4556	Y.SC-Residential	Requirements and functional architecture of smart residential community	4/20
ITU-T Y.4904	Y.SSC-MM	Smart sustainable cities maturity model	7/20

ITU-T SG20 Main outcomes

Geneva, Switzerland, 25 November-6 December 2019

20 new work items

Question	Working title	Title
1/20	Y.DPM-framework	Data processing and management framework for IoT and smart Cities and communities
1/20	Y.Sup.Web-DM	Web based data model for IoT and smart city
1/20	Y.DPM-interop	Requirements and functional model to support data interoperability in IoT environments
1/20	Y.DMP-qm	Requirements and functional model to support data quality management in IoT
1/20	Y.Sup.issr	Internet of Things and smart cities and communities standards roadmap
2/20	Y.scdt-reqts	Requirements and capabilities of a digital twin system for smart cities
2/20	Y.SUM	Requirements and Capability Framework of Smart Utility Metering (SUM)
4/20	Y.eHealth-Semantic	Architecture of web of objects based semantic mediation model in eHealth service
4/20	Y.DPM-BC-DM	Blockchain-based Data Management for supporting IoT and SC&C
4/20	Y.Sup-DPM-OBC	Overview of blockchain for supporting IoT and SC&C in DPM aspects
4/20	Y.DPM-BC-ES	Blockchain-based data exchange and sharing for supporting IoT and SC&C
4/20	Y.DPM-ST-API	SensorThings API - Sensing
4/20	Y.water-SFP	Framework of Monitoring of Water System for Smart Fire Protection
4/20	Y.IoT-VLC-Arch	Functional Architecture for IoT Services based on Visible Light Communications
5/20	Y.smart-oceans	Overview of smart oceans and seas, and requirements for their ICT implementation
6/20	Y.Data.Sec.IoT-Dev	Requirements of data security for the heterogeneous IoT devices
6/20	Y.Sup.Pot_API4IOT	Features of application programming interface (API) for IoT data in smart cities and communities
6/20	Y.IoT-CSIADe-fw	Reference framework of converged service for identification and authentication for IoT devices in decentralized environment
6/20	YSTR.Feas-DID-IoT	Feasibility of Decentralised Identifiers (DIDs) in IoT
7/20	Y.Sup-SSC-UCE	Use Cases on implemented or evaluated SSC solutions based on ITU-T Y.4900 Recommendation Series



United 4 Smart Sustainable Cities (U4SSC)



U4SSC is a **United Nations Initiative** to achieve Sustainable Development Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable."

Last meeting: 3 October 2019, Valencia, Spain

Supported by:



Convention on Biological Diversity



Empowered lives. Resilient nations.



United Nations Educational, Scientific and Cultural Organization



United Nations Environment Programme



Coordinated by:



Fourth meeting of the United for Smart Sustainable Cities (U4SSC) Initiative (1)

3 October 2019, Valencia, Spain



- Held during the 9th Green Standards Week (1-4 October 2019)
- The meeting was attended by over **300 experts**.
- U4SSC Award Ceremony: *Aalesund, Dubai, Moscow, Riyadh and Valencia*



2019
October



Fourth meeting of the United for Smart Sustainable Cities (U4SSC) Initiative (2)

3 October 2019, Valencia, Spain

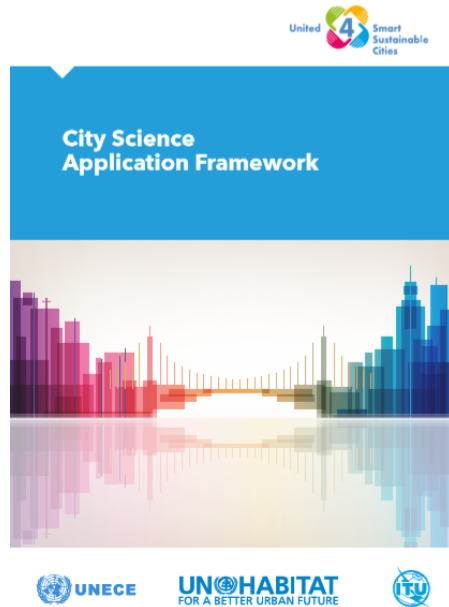


Main outcomes:

- Approval of revised Terms of References.
- Launch of the following publication:
 - New Report on "*City Science Application Framework*" including **8 case studies**.



2019
October



The report includes the following **8 cases studies** on city science application:

- [Air quality management in Southern California, USA](#)
- [Smart Dubai Happiness Meter in Dubai, United Arab Emirates](#)
- [Crime prediction for more agile policing in cities - Rio de Janeiro, Brazil](#)
- [Data driven energy savings in the Hyperdome shopping centre in Queensland, Australia](#)
- [Fine dust filtration in Stuttgart, Germany](#)
- [Smart Dubai - Rashid - City Concierge](#)
- [Identifying the cascading effects on vital objects during flooding](#)
- [Unlocking the potential of trust-based AI for city science and smart cities](#)



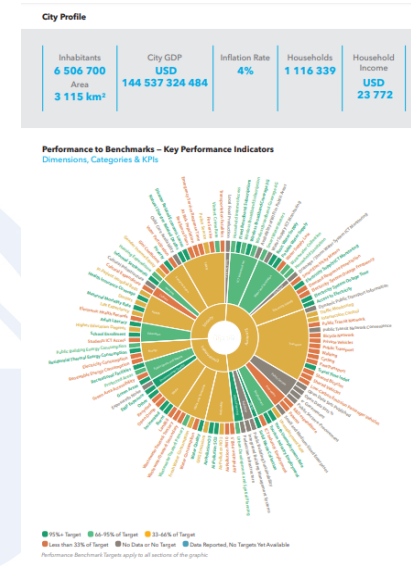
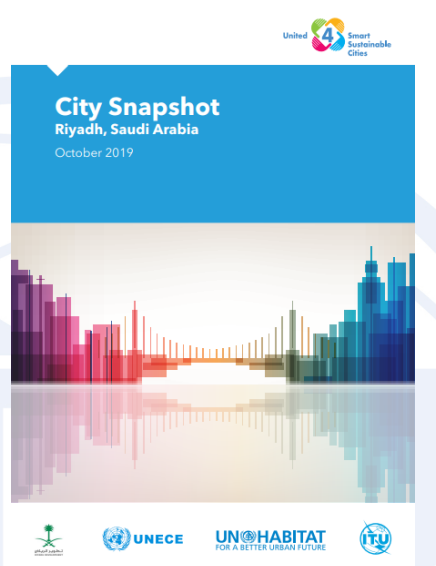
Fourth meeting of the United for Smart Sustainable Cities (U4SSC) Initiative (3)

3 October 2019, Valencia, Spain



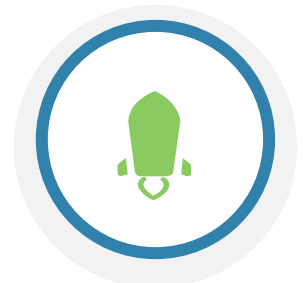
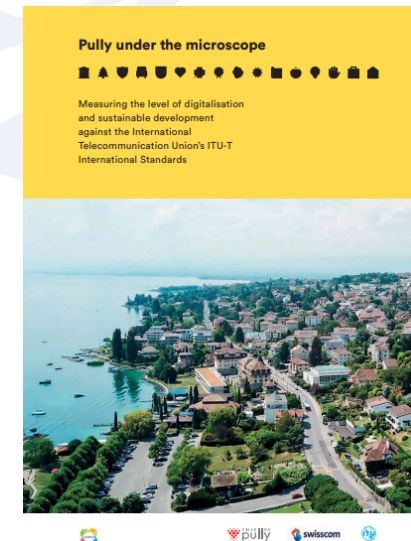
Main outcomes:

- **U4SSC City Snapshots on:**
 - *Aalesund, Norway*
 - *Bizerte, Tunisia*
 - *Pully, Switzerland*
 - *Riyadh, Saudi Arabia*



- **Pully Verification report**

The Verification Report: Pully under the microscope summarises the results of the KPIs for SSC project



2019
October



Fourth meeting of the United for Smart Sustainable Cities (U4SSC) Initiative (4)

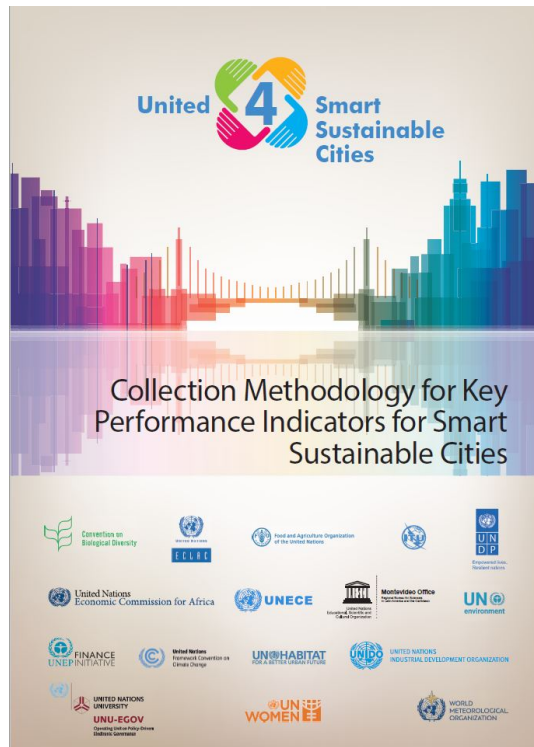
3 October 2019, Valencia, Spain



- Launch of new Thematic Groups on:
 - Simple ways to be smart;
 - Practitioner guide to measure SC&C;
 - Practitioner guide to monitor SC&C;
 - Procurement Guidelines for SSC;
 - City Platforms.
- Launch of a new Thematic Group on U4SSC Smart Sustainable Cities Index
- Launch of the UN City Measurement Framework
- Launch of the U4SSC Implementation Programme (13 Projects)



U4SSC Key performance indicators for Smart Sustainable Cities



To establish the criteria to evaluate ICT's contributions in making cities **smarter** and **more sustainable**, and to provide cities with the means for **self-assessments**.

Over 100 cities worldwide are already implementing these KPIs

We invite you to implement the U4SSC KPIs in your city





Objectives

These indicators provide cities with a consistent and standardized method to:

- collect data
- measure performance and progress

Achieving the Sustainable Development Goals

Becoming a smarter city

Becoming a more sustainable city

Cities will be able to:

- Compare their progress over time
- Compare their performance to other cities
- Through analysis and sharing allow for the dissemination of best practices
- Set standards for progress in meeting the SDGs

Measure your city's progress

KPIs Structure

54 Core Indicators + 37 advanced Indicators

20 Smart + 32 Structural + 39 Sustainable

54 Core Indicators + 37 advanced Indicators

Core indicators:
should be to be reported on by all cities, provide a basic outline of smartness and sustainability

Advanced indicators:
provide a more in depth view of a city and measure progress on more advanced initiatives

Dimension



Dir

Society and Culture

Sub-dimension

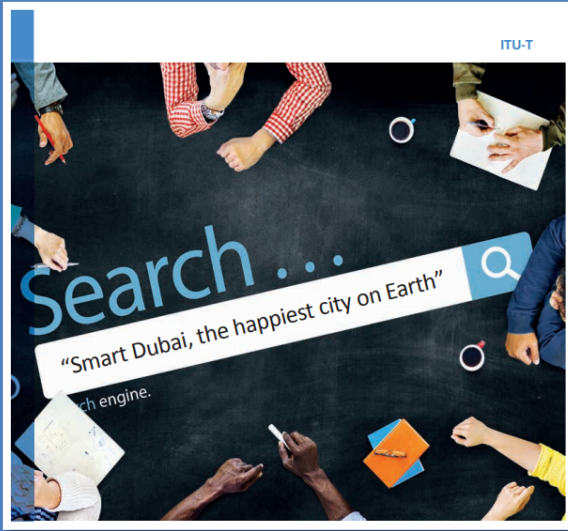
- ICT
- Productivity
- Infrastructure

- Environment
- Energy

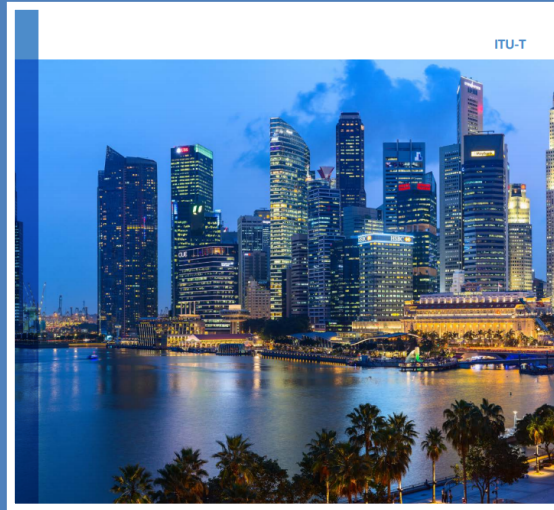
- Education, Health and Culture
- Safety, Housing and Social Inclusion



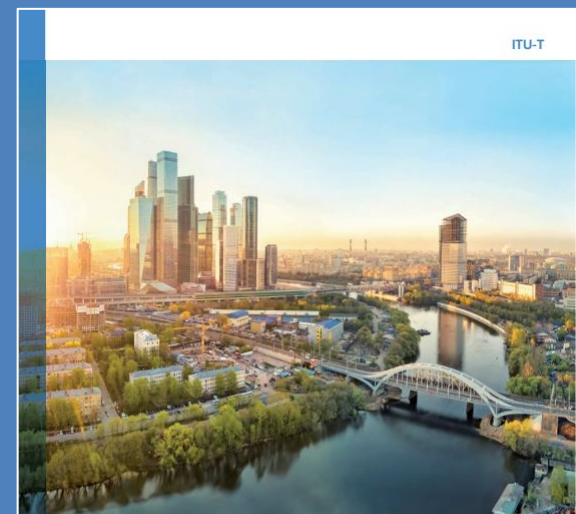
Case Studies on the Implementation of KPIs for SSC



**The Case of
Dubai**



**The Case of
Singapore**



**The Case of
Moscow**

Visit: <http://www.itu.int/go/ITU-T-SSC>



Save the date and join us.....

- [ITU-T SG20: Internet of things \(IoT\) and smart cities and communities \(SC&C\) meeting, 6-16 July 2020, Geneva, Switzerland](#)
- [Joint Coordination Activity on Internet of Things and Smart Cities and Communities \(JCA-IoT and SC&C\)](#), 8 July 2020, Geneva, Switzerland
- Additional information can be found at:
<https://www.itu.int/en/ITU-T/ssc/Pages/default.aspx> or u4ssc@itu.int

