ITU Smart Sustainable Cities and Communities Initiatives: Towards a Smart Global Vision

Bilbao, Spain
04-07 June IoT Week 2018
#IoT4SCC

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SG20 Vice chairman

Cities are facing a rapid urbanization…

60,000
people added to the Chinese and Indian urban population every day[1]

66%
of New York City's rooftops are suitable for solar panels, which could generate half of the city's peak demand for electricity[2]

50%
of global GDP is generated by the 300 largest metropolitan areas[3]

$8 trillion
is the amount we predict will need to be spent on infrastructure in New York, Beijing, Shanghai, London over the next 10 years[1]

$16bn
is the expected cost to develop the desert city of Masdar in the UAE[4]

The number of people living in urban slums since 1990 has increased by
33%[5]

Income inequality in the 50 biggest cities in the US is 20% higher than the US average[6]
$ $ **20%**

1.5 million
people are added to the global urban population every week[7]

By 2025, there could be nearly 40 cities with a population of over 10 million[8]
40 **10m**

Why you should join ITU?

United Nations specialized Agency for ICTs

Share your knowledge with **193** Member States, **700** Private Sectors and over **90** Academia

- Address broad market needs
- Leverage expert knowledge
- Open new markets and applications
- Drive global innovation and advancement
- Reduce cost
- Embody diverse perspectives
- Serve as building blocks for innovation
- Encourage market competition
- Streamline development and implementation
- Drive interoperability and scalability

ITU-T Activities on IoT & Smart Sustainable Cities

Development and implementation of standards

ITU-T Study Group 20

Research & pre-standardization work

Focus Group on **Data Processing Management (FG-DPM)**

U4SSC

Open platform for knowledge sharing & Forward looking research

United for Smart Sustainable Cities (U4SSC)

Resolution 98
Enhancing the standardization of IoT and Smart Cities and Communities for global development

IoT4SDGs: *Considers the importance of IoT to contribute to achieving the 2030 Agenda for Sustainable Development.*

ITU-T Study Group 20: Internet of things (IoT) and smart cities and communities (SC&C)

Responsible for studies relating to IoT and its applications, and smart cities and communities (SC&C).

It includes studies relating to Big data aspects of IoT and SC&C, e-services and smart services for SC&C

Lead study group on

- Internet of things (IoT) and its applications
- Smart Cities and Communities (SC&C), including its e-services and smart services
- IoT identification

Last meeting: 06-16 May 2018 Cairo

2 Working Parties

7 Questions

4 Regional Groups

Over **100** International experts

Key issues addressed include:

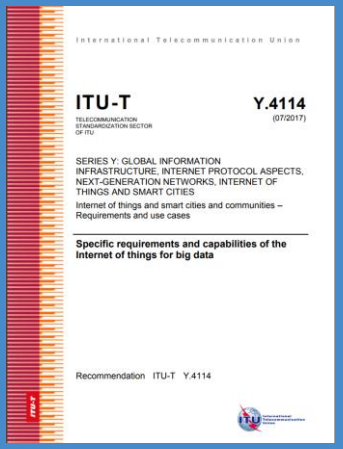
- Research and emerging technologies, terminology, and definitions
- Evaluation and assessment of Smart Sustainable Cities and Communities
- Requirements, capabilities, and use cases across verticals
- Architectures, management, protocols, and Quality of Service
- e/Smart services, applications and supporting platforms
- Security, privacy, trust and identification
- End to end connectivity, networks, interoperability, infrastructures and Big Data aspects related to IoT and SC&C

Some Relevant Ongoing Work Items :

- Framework of Open Data in Smart Cities
- Functional architecture of service discovery for interworking between heterogeneous IoT platforms
- Open data application programming interface (API) for IoT data in smart cities and communities
- Framework of IoT-devices authentication in smart city
- Requirements and reference architecture of smart street light service

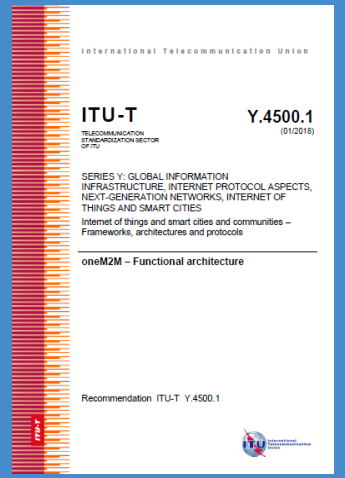
Most recent approved ITU-T Recommendations

Recommendation ITU-T Y.4114 "Specific requirements and capabilities of the IoT for Big Data".



This Recommendation complements the developments on common requirements of the IoT [ITU-T Y.2066] and functional framework of the IoT [ITU-T Y.2068] in terms of the specific requirements and capabilities that the IoT is expected to support in order to address the challenges related to Big Data.

Recommendation ITU-T Y.4500.1 "oneM2M – Functional architecture"



This Recommendation describes the end-to-end oneM2M functional architecture, including the description of the functional entities and associated reference points. oneM2M functional architecture focuses on the service layer aspects and takes underlying network-independent view of the end-to-end services. The underlying network is used for the transport of data and potentially for other services.

Recommendation ITU-T Y.4201 "High-level requirements and reference framework of smart city platforms".

Recommendation ITU-T Y.4201 presents the high-level requirements and reference framework of smart city platforms (SCPs). The SCP is a fundamental platform supporting all the services and applications of a smart city, with the objective to improve quality of life, provide urban operation and services for the benefit of citizens while ensuring city sustainability.

Focus Group on Data Processing and Management to support IoT and Smart Cities & Communities (FG-DPM)

5 Working Groups

- WG1 - Use Cases, Requirements and Applications/ Services
- WG2 - DPM Framework, Architectures and Core Components
- WG3 - Data sharing, Interoperability and Blockchain
- WG4 - Security, Privacy and Trust including Governance
- WG5 - Data Economy, commercialization and monetization

Fourth meeting:
Cairo, Egypt, 1-3 May 2018

Key priorities:

To propose mechanisms , frameworks and guidelines for supporting the security, privacy and interoperability of datasets and data-management systems within the IoT and smart city domain.

JCA – IoT and SC&C

- To co-ordinate the activity on IoT & SCC across ITU-T Study Groups and to coordinate with ITU-R and ITU-D.
- To provide a visible contact point IoT and SC&C activities in ITU-T, to seek co-operation from external bodies working in the field of IoT & SCC and enable effective two-way communication with these bodies.
- Maintenance of a list of cross-SDO IoT & SCC standardization items and associated roadmap.
- Last meeting took place in Cairo, Egypt, 10 May 2018.
- Next meeting will be held in with SG20 meeting

Co-Conveners:

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

Secretariat:
Contact: tsbjcaiot@itu.int

D.2r16 - IoT and SC&C standards roadmap (free download) – **Send us your inputs!**

United for Smart Sustainable Cities – (U4SSC)

11 SUSTAINABLE CITIES AND COMMUNITIES

U4SSC is a global platform for smart city stakeholders which advocates for public policy to encourage the use of ICTs to facilitate the transition to smart sustainable cities.

JOIN us for the work on :

- Guidelines on tools and mechanisms to finance SSC projects
- Guidelines on strategies for circular cities
- City science application framework
- Blockchain 4 cities
- Guiding principles for artificial intelligence in cities

Convention on Biological Diversity
ECLAC
FAO
ITU
UNDP
Empowered lives. Resilient nations.
United Nations Economic Commission for Africa
UNECE
Montevideo Office
UN environment
UNEP FINANCE INITIATIVE
UN HABITAT FOR A BETTER URBAN FUTURE
UNIDO
UN WOMEN
World Meteorological Organisation
WORLD TRADE ORGANIZATION

ITU

United for Smart Sustainable Cities – (U4SSC)

4 New publications!

Collection Methodology for Key Performance Indicators for Smart Sustainable Cities

Enhancing innovation and Participation in Smart Sustainable Cities

Connecting cities and communities with the Sustainable Development Goals

Implementing SDG11 by connecting sustainability policies and urban-planning practices through ICTs

Available for FREE at:

http://itu.int/go/U4SSC

11 SUSTAINABLE CITIES AND COMMUNITIES

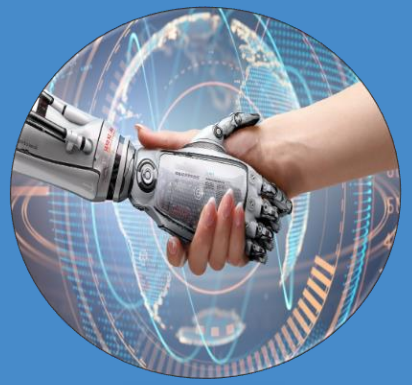
Implementing KPIs for Smart Sustainable Cities Worldwide

The U4SSC welcome all cities that would like to start their SSC journey!

54 Core Indicators + 37 advanced Indicators

Publications on IoT and Smart Sustainable Cities

Flipbook on Unleashing the potential of the Internet of Things



This flipbook presents a compendium of the first set of ITU international standards for IoT, providing a resource of great value to standards experts interested in contributing to the work of ITU-T Study Group 20.

Available on ITU website for free!

Flipbook on Shaping smarter and more sustainable cities: Striving for Sustainable Development Goals

This compendium of Technical Reports and Specifications details policy and technical considerations relevant to the development of SSC, providing policymakers and engineers with valuable reference material to guide their pursuit of happier, safer life in our cities.

Thank you

ITU-T, IoT and smart cities & communities

http://itu.int/go/tsg20

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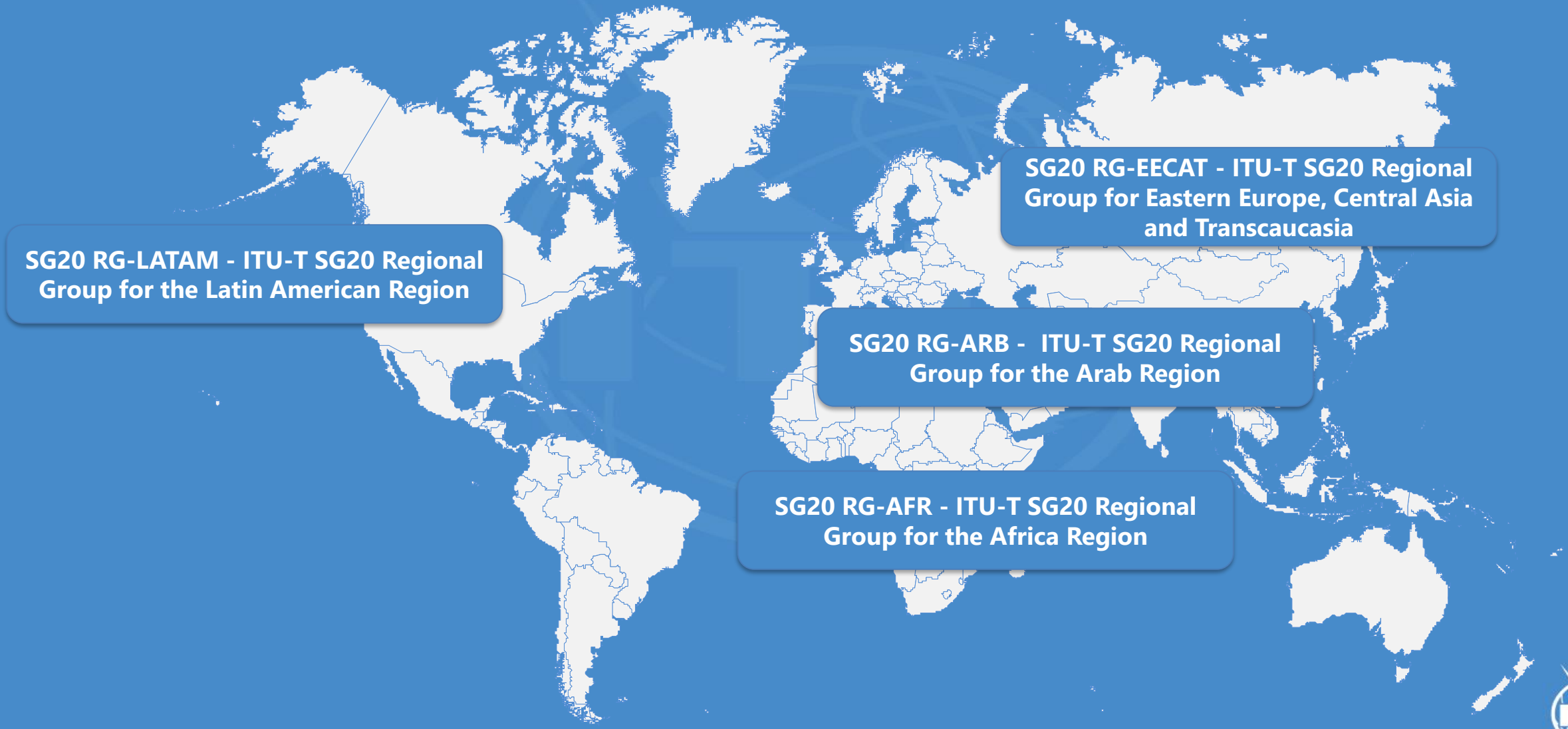
Additional slides

ITU-T SG20 Structure

WP1/20	Questions
Q1/20	End to end connectivity, networks, interoperability, infrastructures and Big Data aspects related to IoT and SC&C
Q2/20	Requirements, capabilities, and use cases across verticals
Q3/20	Architectures, management, protocols and Quality of Service
Q4/20	e/Smart services, applications and supporting platforms
WP2/20	
Q5/20	Research and emerging technologies, terminology and definitions
Q6/20	Security, privacy, trust and identification
Q7/20	Evaluation and assessment of Smart Sustainable Cities and Communities

ITU-T SG20 Regional Groups

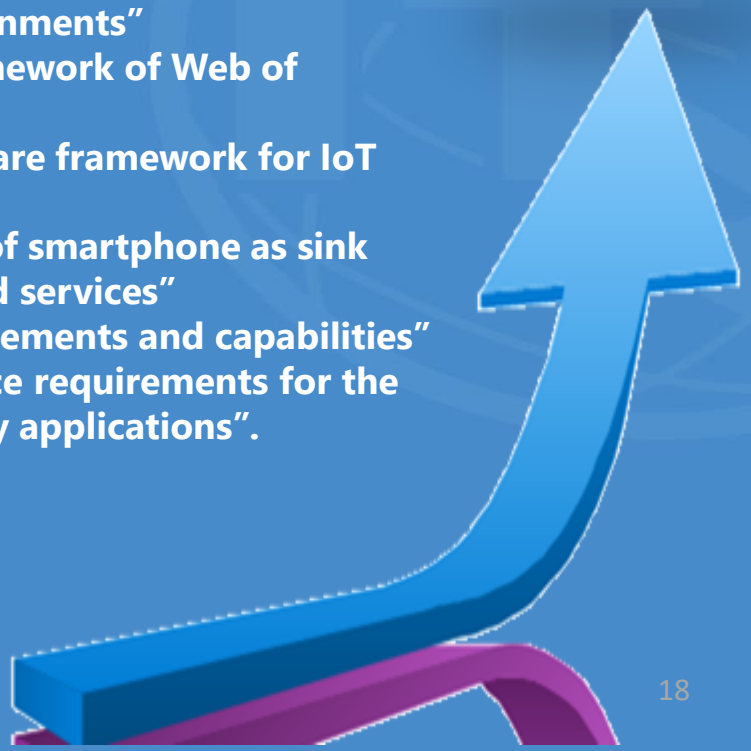


ITU-T SG20 main results

October 2015 – August 2017

9 New Recommendations approved

- ITU-T Y.4113 **"Requirements of the network for the Internet of Things"**
- ITU-T Y.4114 **"Specific requirements and capabilities of the IoT for Big Data"**
- ITU-T Y.4115 **"Reference architecture for IoT device capability exposure"**
- ITU-T Y.4451 **"Framework of constrained device networking in the IoT environments"**
- ITU-T Y.4452 **"Functional framework of Web of Objects"**
- ITU-T Y.4453 **"Adaptive software framework for IoT devices"**
- ITU-T Y.4553 **"Requirements of smartphone as sink node for IoT applications and services"**
- ITU-T Y.4702 "**Common requirements and capabilities"**
- ITU-T Y.4805 **"Identifier service requirements for the interoperability of Smart City applications".**



9 New Supplements agreed

- ITU-T Y.Supp.42 to ITU-T Y.4100 series **"Use cases of User-Centric work Space (UCS) Service**
- ITU-T Y.Supp.34 to ITU-T Y.4000 series **"Smart Sustainable Cities - Setting the stage for stakeholders' engagement"**
- ITU-T Y.Supp.33 to ITU-T Y.4000 series **"Smart Sustainable Cities - Master plan"**
- ITU-T Y.Supp.32 to ITU-T Y.4000 series **"Smart sustainable cities - a guide for city leaders"**
- ITU-T Y.Supp.31 to ITU-T Y.4550 series **"Smart Sustainable Cities - Intelligent sustainable buildings"**
- ITU-T Y.Supp.28 to ITU-T Y.4550 series **"Integrated management for smart sustainable cities";**
- ITU-T Y.Supp.29 to ITU-T Y.4250 series **"Multi-service infrastructure for smart sustainable cities in new-development areas";**
- ITU-T Y.Supp.30 to ITU-T Y.4250 series **"Overview of smart sustainable cities infrastructure";**
- ITU-T Y.Supp.27 to ITU-T Y.4400 series **"Setting the framework for an ICT architecture of a smart sustainable city".**

Some ongoing work items under study

- Y.Accessibility-IoT - Accessibility requirements for the Internet of things applications and services
- Y.del-fw - Framework of delegation service for the IoT devices
- Y.IoT-DA-Counterfeit - Information Management Digital Architecture to combat counterfeiting in IoT
- Y.IoT-Interop - An Interoperability framework for IoT
- Y.IoT-IoD-PT - Identity of IoT devices based on secure procedures and ensures privacy and trust of IoT systems
- Y.ODI - Open Data Indicator in smart cities
- Y.smartport – Requirement of smart managements of supply services in smart port
- Y.frame-scc - Framework and high-level requirements of smart cities and communities
- Y.fsn - Framework and Service scenarios for Smartwork

Measure your city's progress

KPIs structure

54 Core Indicators + 37 advanced Indicators

20 Smart + 32 Structural + 39 Sustainable

Dimension	Economy	Environment	Society and culture
Category	▪ ICT Infrastructure ▪ Water and sanitation ▪ Drainage ▪ Electricity supply ▪ Transport ▪ Public sector ▪ Employment ▪ Innovation ▪ Urban Planning ▪ Buildings	▪ Air quality ▪ Energy ▪ Environmental quality ▪ Infrastructure ▪ Public space and nature ▪ Waste ▪ Water and sanitation	▪ Culture ▪ Education ▪ Health ▪ Housing ▪ Safety ▪ Social inclusion ▪ Food security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