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

International Telecommunication Union (ITU)

WHO WE ARE:

ITU is the UN specialized agency for information and communication technologies (ICTs)

WHAT OUR ROLE IS:

To facilitate peaceful relations, international cooperation between peoples, and economic and social development by means of efficient telecommunications services

PROMOTING GLOBAL COLLABORATION FOR A CONNECTED WORLD

International Telecommunication Union (ITU)

OUR MEMBERS:

193

MEMBER STATES

900+

COMPANIES, UNIVERSITIES, AND INTERNATIONAL AND REGIONAL ORGANIZATIONS

3 SECTORS:

Each sector has separate mandate, but all work cohesively towards connecting the world

STANDARDIZATION

DEVELOPMENT

RADIOCOMMUNICATION

ITU Resolutions on IoT and Smart Cities and Communities (1)

ITUPP
DUBAI 2018
29 October - 16 November
Dubai, United Arab Emirates

[Resolution 197 – Facilitating the Internet of things and smart cities and communities](#)

Resolves,

- to promote investment in and development of IoT in order to support the SDGs;
- to continue and further develop studies and activities on IoT and SSCCs, in order to promote their development.

Instructs the Directors of TSB and Radiocommunication Bureau:

1   to support the work of relevant ITU-T and ITU-R study groups on IoT and SSCCs and to facilitate the emergence of diverse services in the globally connected world, in collaboration with relevant sectors;

2   to continue cooperation with relevant organizations, including SDOs, for exchanging best practices and disseminating information to increase interoperability of IoT services, through joint workshops, training sessions, joint coordination activity groups and any other appropriate means;

3   to encourage the development of IoT and SSCCs, taking into account the outcomes of the work of the relevant ITU study groups on various aspects of IoT and SSCCs.

ITU Resolutions on IoT and Smart Cities and Communities (2)

ITU WTSA-20
GENEVA 2022
1- 9 March 2022
Geneva, Switzerland

Resolution 98 - Enhancing the standardization of Internet of things and smart cities and communities for global development

Resolves to instruct Study Group 20 of the ITU-T:

- to develop ITU T Recommendations aimed at implementing IoT and SC&C, including, but not limited to, on issues related to emerging technologies and vertical industries;

- to continue, within its mandate, to work with a special focus on the design of a roadmap and harmonized and coordinated international telecommunication standards for the development of IoT, taking into account the needs of each region and Member States, as well as the wide variety of use cases and applications, and the need for IoT to be open and adaptable, and fostering a competitive environment;

- to collaborate with IoT related standards organizations and other stakeholders such as industry forums and associations, consortia and SDOs, as well as other relevant ITU T study groups, taking into account relevant work;

- to collate, evaluate, assess and share IoT use cases from the interoperability and standardization standpoints for data and information exchange.

ITU Resolutions on IoT and Smart Cities and Communities (3)

ITUWTSA-20
GENEVA2022
1- 9 March 2022
Geneva, Switzerland

[Resolution 78 - Information and communication technology applications and standards for improved access to e-health services](#)
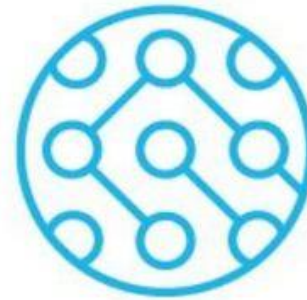
Instructs Study Groups 16 and 20 of the ITU Telecommunication Standardization Sector, each according to its mandate:

- to identify and document examples of best practice for e-health in the field of telecommunications/ICTs, for dissemination among ITU Member States and Sector Members;

- to coordinate activities and studies relating to e-health among the relevant study groups, focus groups and other relevant groups in ITU T, the ITU Radiocommunication Sector (ITU R) and ITU D, in order in particular to foster awareness of telecommunication/ICT standards pertaining to e-health;

- for ensuring the broad deployment of e-health services in diverse operating conditions, to study communication protocols relating to e-health, especially among heterogeneous networks;

- within the current mandate of the ITU T study groups, to give priority to the study of security standards (e.g. for communications, services, network aspects and service scenarios for databases and record handling, identification, integrity and authentication) relating to e-health, taking into account recognizing e)

Connect 2030 Agenda: Innovation

Goal 4 – Innovation: Enable innovation in telecommunications / ICT in support of the digital transformation of society

Resolution 200 (Rev. Dubai, 2018)
Connect 2030 Agenda for global telecommunication / information and communication technology, including broadband, for sustainable development

Target 4.1: By 2023, all countries should have policies / strategies fostering telecommunication / ICT-centric innovation

How ITU supports IoT and Smart Cities and Communities

SUSTAINABLE DEVELOPMENT GOALS

GROWTH INCLUSIVENESS SUSTAINABILITY INNOVATION PARTNERSHIP

U4SSC:
United for Smart Sustainable Cities initiative

Focus Group on "Artificial Intelligence (AI) and Internet of Things (IoT) for Digital Agriculture" (FG-AI4A)

Joint IEC-ISO-ITU Smart Cities Task Force

JCA-IoT and SC&C:
Joint Coordination Activity on IoT and Smart Cities and Communities

Correspondence Group on Artificial intelligence of Things (CG-AIoT)

ITU:
International Telecommunication Union – the UN specialized agency for ICTs that plays a vital role in supporting standardization, globally.

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

ITU-T's focus on IoT and Smart Cities and Communities

ITU-T Study Group 20 is responsible for:

- studies relating to Internet of Things (IoT) and its applications, and smart cities and communities (SC&C);

- studies relating to big data aspects of IoT and SC&C, digital services for SC&C, and digital transformation relevant IoT and SC&C aspects.

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

Lead Study Group 20 Roles

Internet of Things and its Applications

Smart Cities and Communities

IoT Identification

Digital health related to IoT and SSC

ITU-T SG20 - Management Team

Chairman

Hyoung Jun KIM
• (Electronics and Telecommunications Research Institute (ETRI))

Vice-Chairmen

Ali ABBASSENE
(Ministère de la Poste et des Télécommunications (MPT))

Ramy Ahmed Fathy
(National Telecom Regulatory Authority)

Achime Malick Ndiaye
(Ministère de l'Économie Numérique et des Télécommunications)

Muath ALRUMAYH
(Communication and Information Technology Commission)

Harinderpal Singh GREWAL
(Infocomm Media Development Authority (IMDA))

Ziqin Sang
(China Information Communication Technologies Group)

Fabio Bigi
(Ministero Dello Sviluppo Economico (Dipartimento Comunicazioni))

Shane HE
(Nokia Corporation)

Toru Yamada
(NEC Corporation)

Héctor Mario Carril
(CeSPI, Universidad Nacional de la Plata)

Emmanuel MANASSEH
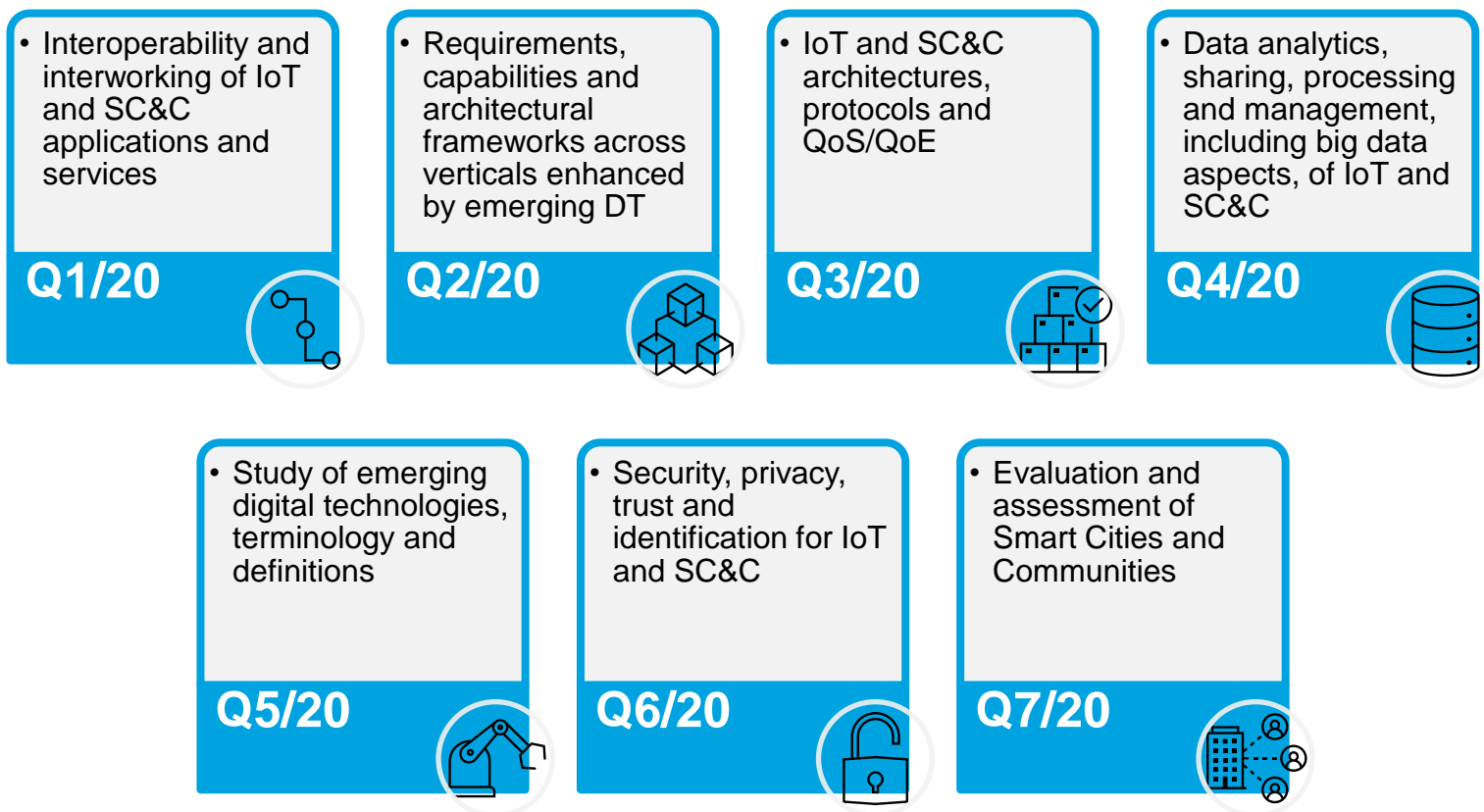(Tanzania Communications Regulatory Authority)

Counsellor

Cristina Bueti
(ITU)

Administrative Assistant

Chiara Co
(ITU)

SG20 - Study Group Structure (Study Period 2022-2024)

- Interoperability and interworking of IoT and SC&C applications and services

Q1/20

- Requirements, capabilities and architectural frameworks across verticals enhanced by emerging DT

Q2/20

- IoT and SC&C architectures, protocols and QoS/QoE

Q3/20

- Data analytics, sharing, processing and management, including big data aspects, of IoT and SC&C

Q4/20

- Study of emerging digital technologies, terminology and definitions

Q5/20

- Security, privacy, trust and identification for IoT and SC&C

Q6/20

- Evaluation and assessment of Smart Cities and Communities

Q7/20

KEY TOPICS & ITU-T Recommendations

Requirements and use cases

Recommendation ITU-T Y.4208: "IoT requirements for support of edge computing"

Recommendation ITU-T Y.4211: "Accessibility requirements for smart public transportation services"

Recommendation ITU-T Y.4214: "Requirements of IoT-based civil engineering infrastructure health monitoring system"

Infrastructure and architecture

Recommendation ITU-T Y.4470: "Reference architecture of artificial intelligence service exposure for smart sustainable cities"

Recommendation ITU-T Y.4480: "Low power protocol for wide area wireless networks"

Recommendation ITU-T Y.4500.1: "oneM2M-Functional Architecture" (Y.4500 series)

Interoperability

Recommendation ITU-T Y.4200: "Requirements for interoperability of smart city platforms"

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

Recommendation ITU-T Y.4805: "Identifier service requirements for the interoperability of smart city applications"

Data management and Processing

Recommendation ITU-T Y.4461: "Framework of open data in smart cities"

Recommendation ITU-T Y.4464: "Framework of blockchain of things as decentralized service platform"

Recommendation ITU-T Y.4472: "Open data application programming interface (APIs) for IoT data in smart cities and communities"

Evaluation and Assessment

Recommendation ITU-T Y.4903: "Key performance indicators for smart sustainable cities to assess the achievement of sustainable development goals"

Recommendation ITU-T Y.4904: "Smart sustainable cities maturity model"

Recommendation ITU-T Y.4906: "Assessment framework for digital transformation of sectors in smart cities"
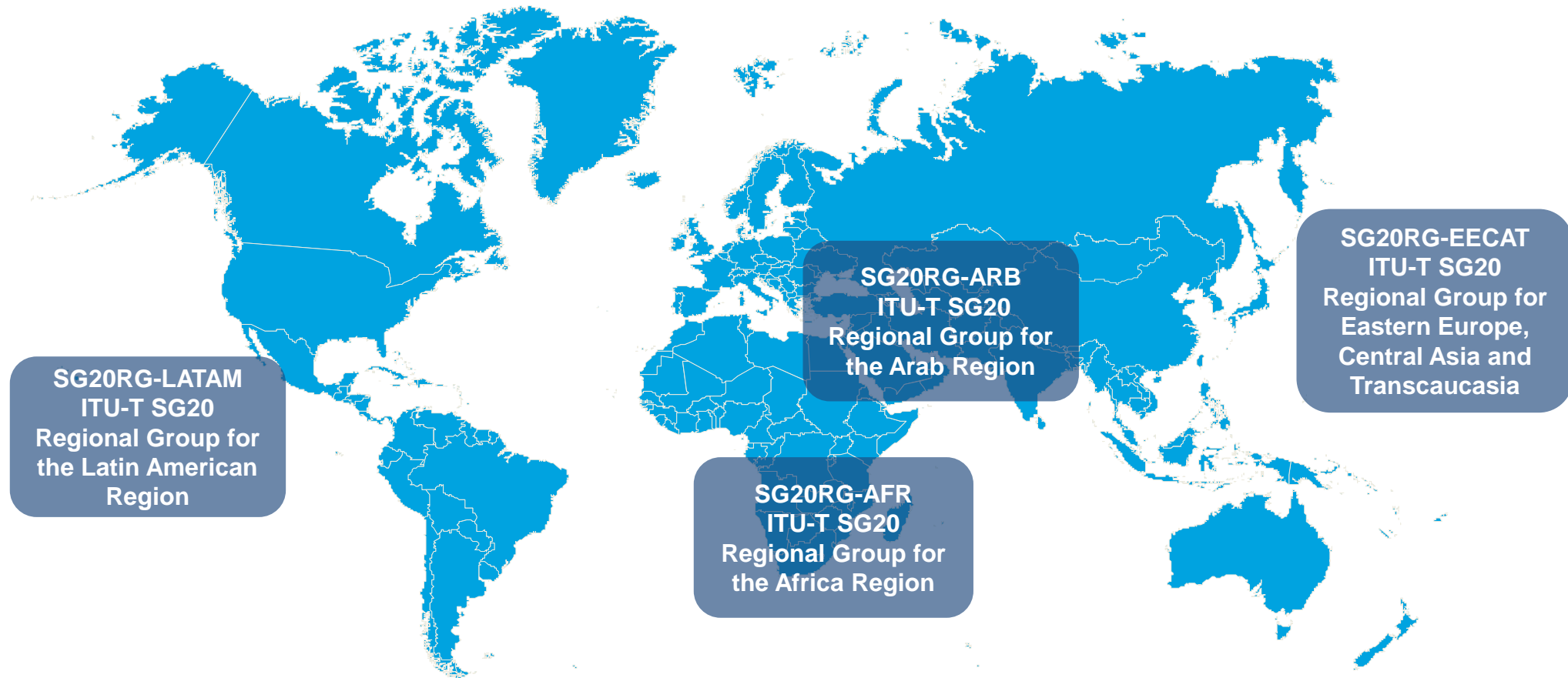
Identification and security

Recommendation ITU-T Y.4807: "Agility by design for ICT Systems security used in the Internet of Things"

Recommendation ITU-T Y.4808: "Digital entity architecture framework to combat counterfeiting in IoT"

Recommendation ITU-T Y.4809: "Unified IoT Identifiers for intelligent transport systems"

ITU-T SG20 - Regional Groups

SG20RG-EECAT
ITU-T SG20
Regional Group for
Eastern Europe,
Central Asia and
Transcaucasia

SG20RG-ARB
ITU-T SG20
Regional Group for
the Arab Region

SG20RG-LATAM
ITU-T SG20
Regional Group for
the Latin American
Region

SG20RG-AFR
ITU-T SG20
Regional Group for
the Africa Region

ITU-T SG20 Regional Group for Latin America (SG20RG-LATAM)

SG20RG-LATAM - **Management Team**

SG20RG-LATAM Chairman: **Juan Pablo Martín**
(Universidad Tecnológica Nacional, Argentina)

SG20RG-LATAM Vice-chairmen: **Héctor Budé** (URSEC, Uruguay)

Neil Checo
(Instituto Dominicano de las Telecomunicaciones (INDOTEL))

Last Meeting:

📅 13-14 October 2020

📍 Virtual via MyMeetings

ITU-T SG20 Regional Group for Eastern Europe, Central Asia and Transcaucasia (SG20RG-EECAT)

SG20RG-EECAT - **Management Team**

SG20RG-EECAT Chairman: **Alexey Borodin** (PJSC «Rostelecom»)

SG20RG-EECAT Vice-chairman: **Umida Musaeva** (Uzbekistan)

Last Meeting:

📅 16-18 March 2021

📍 Minsk, Belarus

ITU-T SG20 Regional Group for the Arab Region (SG20RG-ARB)

SG20RG-ARB - Management Team

SG20RG-ARB Chairman: **Abdurahman M. Al Hassan**
(National Cyber Security Authority (NCA))

SG20RG-ARB Vice-chairmen: **Ali Abbassene**
(Ministère de la Poste, des Télécommunications, des Technologies et du Numérique (MPTTN))

Abdulhadi Aboualmal (Etisalat)

Khaled Al-Azemi (CITRA)

Bilel Chabou (Ministère Des Technologies De La Communication Et De L économie Numérique)

Ramy Ahmed Fathy
(National Telecom Regulatory Authority)

Last Meeting:

📅 7 October 2019

📍 Riyadh, Saudi Arabia

ITU-T SG20 Regional Group for Africa (SG20RG-AFR)

SG20RG-AFR - Management Team

SG20RG-AFR Chairman: **Bako Wakil** (Nigerian Communications Commission)

SG20RG-AFR Vice-chairmen:

Ali Abbassene
(Ministère de la Poste, des Télécommunications, des Technologies et du Numérique (MPTTN))

Bilel Chabou (Ministère Des Technologies De La Communication Et De L économie Numérique)

Ramy Ahmed Fathy (NTRA)

Melvin King (Sierra Leone)

Guy-Michel Kouakou (ARTCI)

Emmanuel Manasseh
(Tanzania Communications Regulatory Authority)

Achime Malick Ndiaye
(Ministere Des Postes Et Des Telecommunications)

Last Meeting:

📅 3 June 2021

📍 Virtual via MyMeetings

AI and Internet of Things for Digital Agriculture
ITU Focus Group

Co-Chair(s):
- Ramy Ahmed Fathy (Egypt)
- Sebastian Bosse (Fraunhofer HHI, Germany)

Working Groups

Working Group on Digital Agriculture Use Cases and Solutions (WG-AS)

Working Group on Data Acquisition and Modelling for digital agriculture (WG-DAM)

Working Group for Mapping and Analyzing AI and IoT standards related Activities in Digital Agriculture (WG-Roadmap)

Working Group on Ethical, Legal, and regulatory Considerations relating to the use of AI for agriculture (WG-ELR)

Working Group on Collaboration and Outreach (WG-CO)

Topic Groups

TG-Data Science for surface and underground water monitoring

TG-Georeferenced Data Management

TG-Weather modelling and forecasting

TG-Irrigation strategy and smart water management

Correspondence Group on Artificial intelligence of Things (CG-AIoT)
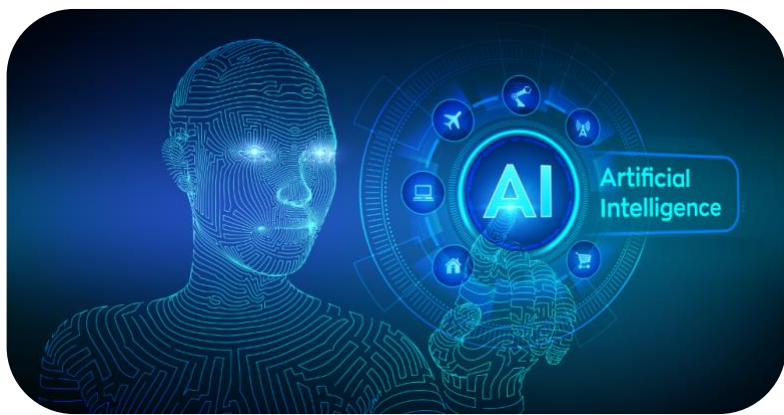
SG20, at its October 2021 meeting agreed to continue or set up the Correspondence Group listed below. To subscribe to any of the mailing lists, visit http://www.itu.int/ITU-T/services/

Correspondence Group on Artificial intelligence of Things (CG-AIoT)
- Terms of reference: HERE
- Convener: Gyu Myoung Lee
- Mailing list: cg-aiot@lists.itu.int

Joint Coordination Activity on Internet of Things (IoT) and Smart Cities and Communities (SC&C)

Coordinating ITU-T work on IoT and SC&C
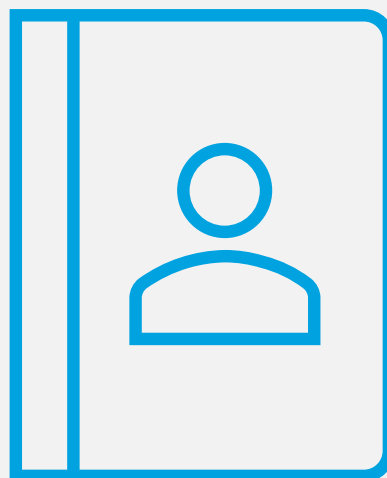
Providing contact point for IoT & applications, including SC&C activities
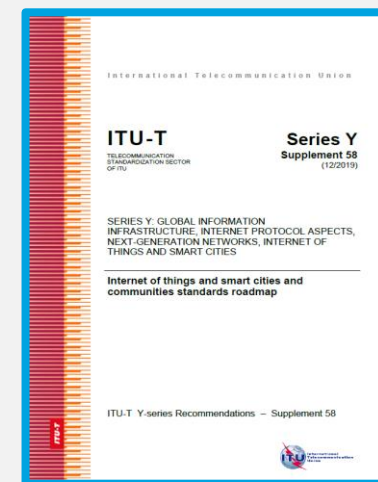
JCA-IoT and SC&C roadmap

Joint Smart Cities Task Force

Joint Collaboration is Key

ISO co-Chairman
Mr Bernard Gindroz
(Chair, ISO/TC 268)

ITU co-Chairman
Mr Hyoung Jun Kim
(Chair, ITU-T SG20)

IEC co-Chairman
Mr Michael Mulquin
(Chair, IEC SyC
Smart Cities)

ITU-T documents

- Formal meeting documents ([SG home page](#))

  o Collective letters – meeting announcements

  o Circulars – other info to all membership (e.g. on events)

  o [Resolutions (revised every 4 years in WTSA)]

  o **Contributions** – written proposals submitted by members (sequential numbering inside a study period) – submit Contributions at least **12 calendar days** before the meeting in question if no translation required.

  ITU-T is a contribution-driven (and consensus-based) organization …….

ITU-T documents (cont.)

- o **TDs** – produced by SG leadership team and TSB (sequential in a study period, multiple TD series possible)

- o Liaison statements – communications with liaison partners

- o Reports – reports created at meetings, draft texts

- Working documents (informal FTP area, collaboration site)

- o Rapporteur group meetings documents - some docs have no life outside the meeting (e.g. drafting docs), others are submitted as TD to next SG/WP meeting

Mailing lists

General distribution list for SG20	Q1/20: Interoperability and interworking of IoT and SC&C applications and services	Q2/20: Requirements, capabilities and architectural frameworks across verticals enhanced by emerging digital technologies	Q3/20: IoT and SC&C architectures, protocols and QoS/QoE
•t22sg20all@lists.itu.int	•t22sg20q1@lists.itu.int	•t22sg20q2@lists.itu.int	•t22sg20q3@lists.itu.int

Q4/20: Data analytics, sharing, processing and management, including big data aspects, of IoT and SC&C	Q5/20: Study of emerging digital technologies, terminology and definitions	Q6/20: Security, privacy, trust and identification for IoT and SC&C	Q7/20: Evaluation and assessment of Smart Sustainable Cities and Communities
•t22sg20q4@lists.itu.int	•t22sg20q5@lists.itu.int	•t22sg20q6@lists.itu.int	•t22sg20q7@lists.itu.int

ITU-T SG20 Regional group for the Arab Region	ITU-T SG20 Regional group for the African	ITU-T SG20 Regional group for Latin American	ITU-T SG20 Regional group for Eastern Europe, Central Asia and Transcaucasia
•tsg20rgarb@lists.itu.int	•tsg20rgafr@lists.itu.int	•tsg20rglatam@lists.itu.int	•tsg20rgeecat@lists.itu.int

Correspondence Group on Artificial intelligence of Things (CG-AIoT)
•cg-aiot@lists.itu.int

United for Smart Sustainable Cities (U4SSC)

U4SSC Key Performance Indicators

- Dubai
- Singapore
- Riyadh
- Valencia
- Daegu
- Santa Fe
- Wels
- Pully
- Bizerte
- Krimpen aan den Ijssel

150+ more cities!

Collection Methodology for Key Performance Indicators for Smart Sustainable Cities

City Snapshot
Valencia, Spain
June 2020

Verification Report
Mashhad, Iran
August 2021

Factsheet
Riyadh, Saudi Arabia
June 2020

Case study
Daegu, Korea (Republic of)
February 2022
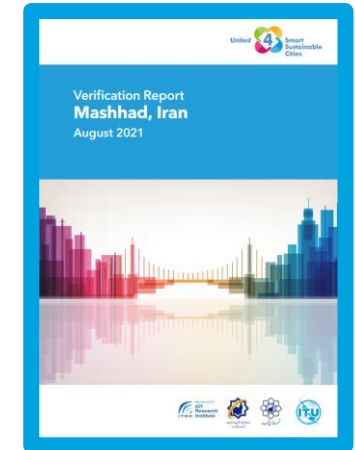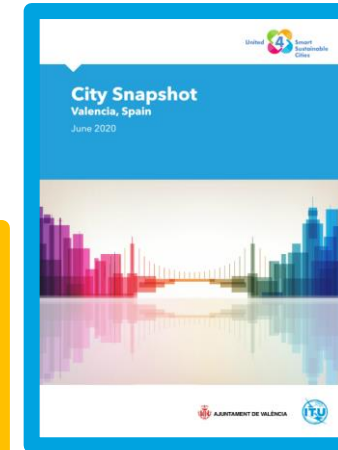
U4SSC Latest Publications

Relevant links

ITU-T Programme on Smart Sustainable Cities	• https://www.itu.int/en/ITU-T/ssc/Pages/default.aspx
ITU-T Study Group 20: Internet of things (IoT) and smart cities and communities (SC&C)	• https://www.itu.int/go/tsg20
SG20 Correspondence Group on Artificial intelligence of Things (CG-AIoT)	• https://www.itu.int/en/ITU-T/studygroups/2022-2024/20/Pages/Correspondence_groups.aspx
ITU-T SG20 Regional Group for the Africa Region	• https://www.itu.int/en/itu-t/regionalgroups/sg20-afr
ITU-T SG20 Regional Group for the Arab Region	• https://www.itu.int/en/itu-t/regionalgroups/sg20-arb
ITU-T SG20 Regional Group for the Latin America Region	• https://www.itu.int/en/itu-t/regionalgroups/sg20-latam
ITU-T SG20 Regional Group for Eastern Europe, Central Asia and Transcaucasia	• https://www.itu.int/en/itu-t/regionalgroups/sg20-eecat
Focus group on Artificial Intelligence (AI) and Internet of Things (IoT) for Digital Agriculture (FG-AI4A)	• https://www.itu.int/go/fgai4a
Focus Group on Data Processing and Management to support IoT and Smart Cities & Communities (FG-DPM)	• https://www.itu.int/en/ITU-T/focusgroups/dpm/Pages/default.aspx
Joint Coordination Activity on Internet of Things and Smart Cities and Communities (JCA-IoT and SC&C)	• https://www.itu.int/en/ITU-T/jca/iot/Pages/default.aspx
United for Smart Sustainable Cities (U4SSC)	• https://www.itu.int/go/u4ssc

ITU's Global Portal on Environment and Smart Sustainable Cities

Smart Sustainable Cities

Cities' actions to tackle COVID-19
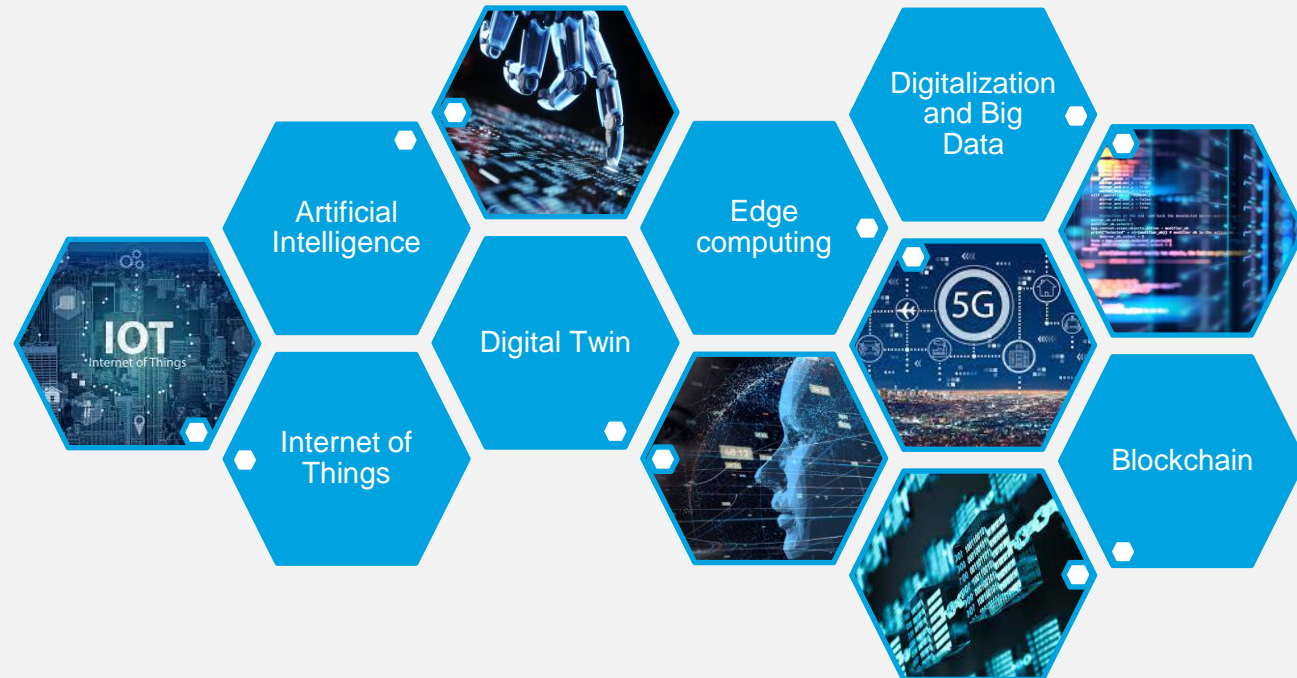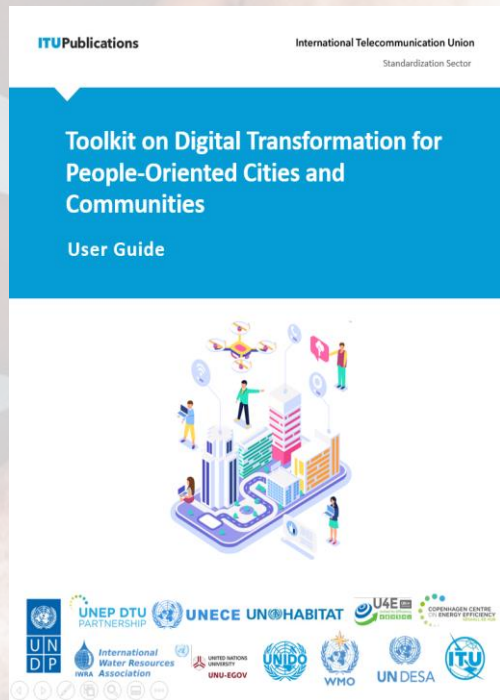
Frontier technologies

Energy efficient ICTs

E-waste and circular economy

Climate Actions

A global resource for policy-makers, regulators, academia and cities

Cross-Sector Partnership

Standardizing digital transformation for people-oriented cities

Digital Transformation for Cities and Communities Webinar Series

These webinars discuss topics related to Digital transformation for cities and communities and their standardization. The goal of this initiative is to increase the collaboration with city stakeholders and it also aims to bring new knowledge which may contribute to ITU-T standardization activities.

https://itu.int/go/dt4cc
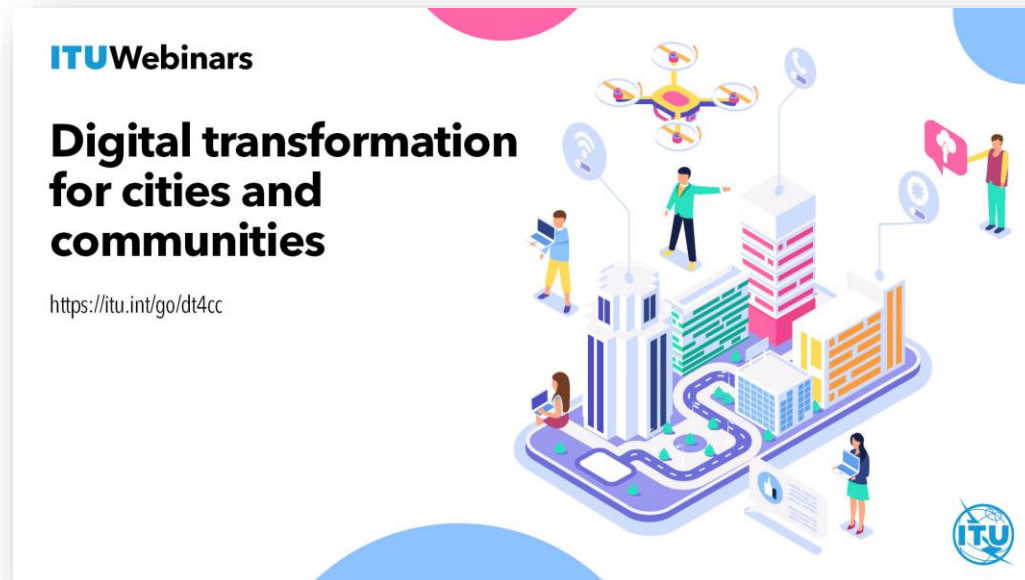
Thank you!

Questions? Interested in learning more?
Let us know!

Email

tsbsg20@itu.int

Website

SG20: IoT and Smart Cities and Communities