

ITU-T Study Group 20 "Internet of Things, digital twins and smart sustainable cities and communities"



International Telecommunication Union

Promoting global collaboration for a connected world





The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies (ICTs)





Member States



Companies, universities, research institutes and international organizations





Resolution 197 – Facilitating the Internet of things for smart sustainable scities and communities



Resolution 200 – Connect 2030 Agenda for global telecommunication/information and communication technology, including broadband, for sustainable development

Resolution 98 - Enhancing standardization of Internet of Things, digital twins, and smart sustainable cities and communities for global development



Resolution 78 - Information and communication technology applications and standards for improved access to e-health services

Resolution 101 - Standardization activities of the ITU Telecommunication Standardization Sector on artificial intelligence technologies in support of telecommunications/information and communication technologies

Resolution 103 - Enhancing standardization activities on digital public infrastructure

Resolution 104 - Promoting and strengthening standardization activities for vehicular communications

Resolution 105 - Promoting and strengthening metaverse standardization

Resolution 106 - Enhancing standardization activities on sustainable digital transformation



Revised Resolution 98 on "Enhancing the standardization of the Internet of Things, digital twins, and smart sustainable cities and communities for global development"

Key highlights





Smart sustainable cities and communities



metaverse and citiverse



People-centred & Multistakeholder approach



UN Initiative U4SSC

Resolves:

- to explore and study the citiverse to enhance urban planning, sustainability, and citizen engagement;
- to leverage the use of **open source** in the development and implementation of IoT and digital twins standards in SSC&C.

Instructs:

- to provide support and accelerate the **implementation of U4SSC KPIs** in collaboration with Member States and cities;
- to organize forums, seminars, training programmes and workshops including Digital Transformation Dialogues webinars.

Invites:

- to participate in U4SSC initiative and Global Initiative on Virtual Worlds Discovering the CitiVerse;
- to cooperate and participate actively in the implementation of this resolution.

New Resolution 101 on "Standardization activities of the ITU Telecommunication Standardization Sector on artificial intelligence technologies in support of telecommunications/information and communication technologies"

Key highlights





Global collaboration

Recognizing:

- the necessity for global collaboration and dialogue among Member States, Sector Members and other stakeholders in addressing opportunities and potential challenges of AI regarding its role in telecommunications/ICTs, including aspects of trustworthiness;
- that studies related to AI in ITU T have advanced telecommunication/ICT standardization, including through, inter alia, study groups and focus groups in various areas and various AI initiatives, including the AI for Good platform;

Instructs:

to continue work on applying AI to telecommunications/ICTs when developing ITU T Recommendations, guidelines, best practices
and assessment procedures, such as those related to telecommunication operation, management, energy aspects, reliability,
security, AI-enabled networks and protocols, services and applications, the Internet of Things, and tools to enhance the efficiency
and capabilities of AI-enabled telecommunications/ICTs

New Resolution 103 on "Enhancing standardization activities on digital public infrastructure"

Key highlights



secure, and resilient digital connectivity



Interoperable ecosystem

Recognizing:

 that development of standards for the telecommunication/ICT aspects of digital public infrastructure building blocks contribute to the development of an open and interoperable digital public infrastructure ecosystem,

Resolves:

 to foster cooperation and collaboration with relevant stakeholders to share knowledge and best practices, and explore common understandings on the technical requirements and standardization aspects of digital public infrastructure,

Instructs:

- to assist the Director of the Telecommunication Standardization Bureau by compiling relevant existing work that could support digital public infrastructure;
- to develop ITU T Recommendations, and other ITU T deliverables, within their existing mandates, that can lead to the sustainable, interoperable, inclusive and efficient adoption of digital public infrastructure,

New Resolution 104 on "Promoting and strengthening standardization activities for vehicular communications"

Key highlights



Standards development for vehicular communications



Collaboration with other SDOs and UNECE



Application Scenarios and Use-cases

Recognizing:

that ITU-T should play a role within the ICT sector in developing standards for vehicular communications, such as V2X and ITS.

Resolves:

to collaborate with other SDOs, UNECE and other stakeholders, such as industry forums, associations and company alliances, as well
as relevant ITU T and ITU R study groups, on vehicular communications, such as V2X and ITS, including vehicular communications to
support automated driving.

Instructs:

- ITU T Study Group 20 to leverage the deployment of IoT applications to contribute to a more connected, sustainable and safer transportation, looking in particular into interoperability and backward compatibility issues.
- relevant ITU T study groups to determine and assess the standardization landscape for vehicular communications, such as V2X and ITS, including vehicular communications to support automated driving, while ensuring collaboration and avoiding overlap with other SDOs.

New Resolution 105 on "Promoting and strengthening metaverse standardization"

Key highlights



Connectivity and access



Interoperability



Security and trust



Global Initiative on CitiVerse



JCA on metaverse



Support for Developing Countries

Recognizing:

 the importance of engaging with UN organizations by means of initiatives such as the ITU Forums on metaverse, UN Virtual Worlds Day, UN Think-a-thon among others.

Resolves:

to establish a Joint Coordination Activity - metaverse (JCA-MV) under TSAG.

Instructs:

- to organize workshops and forums, as appropriate, in collaboration with relevant SDOs and UN entities;
- to continue collaboration in the context of the ITU-UNICC-Digital Dubai Global Initiative on Virtual Worlds Discovering the CitiVerse:
- to report to ITU Council, TSAG and WTSA on the progress in implementing this Resolution.

New Resolution 106 on "Enhancing the standardization activities on sustainable digital transformation"

Key highlights



Empower Development



Global Collaboration



Capacity Building



Innovative Standards

Resolves to instruct TSAG:

continuation of the Rapporteur Group on Sustainable Digital Transformation and other necessary steps.

Instructs:

- to develop ITU-T Recommendations, guidelines and best practices that will help membership in particular developing countries
 take advantage of new and emerging telecommunication/ICTs.
- to coordinate and collaborate with other groups within ITU and recognized SDOs.

Invites:

• to contribute to studies and development of **ITU-T Recommendations**, **guidelines and best practices** related to telecommunications/ICTs in support of sustainable digital transformation.



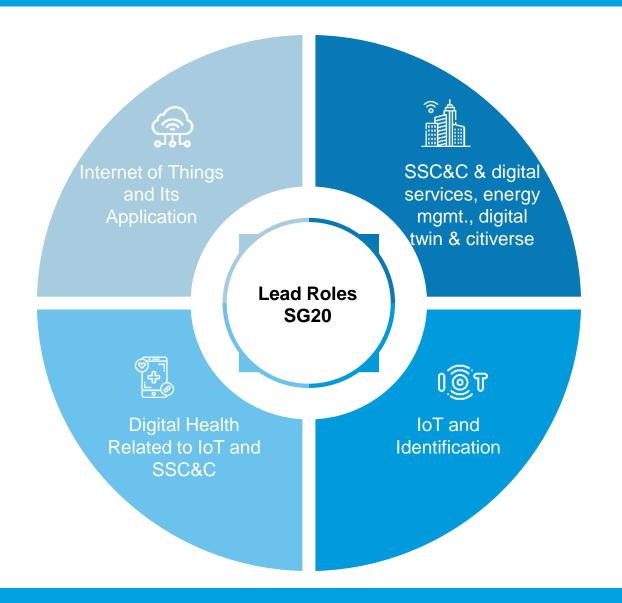


ITU-T Study Group 20 (SG20) is responsible for:

the development of innovative standards (called "ITU-T Recommendations"), guidelines, reports, methodologies, and best practices for the Internet of Things (IoT), digital twins, and smart sustainable cities and communities (SSC&C), with the goal of accelerating digital transformation.











<u>Chair</u>	Hyoung Jun Kim •Korea (Rep. of)		
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WP1	Requirements, human- centric solutions and evaluation	Chair: Ziqin SANG, China Information Communication Technologies Group (China) Vice-Chairs: Okan GERAY, Digital Dubai Authority (UAE), Sophia PAPATHANASOPOULOU (Greece), Toru Yamada, NEC (Japan), Sophia Nahoza (Tanzania)
WP2	Interoperability, architectures and emerging technologies	Chair: Jun Seob LEE, ETRI (Rep of Korea) Vice-Chairs: Martin BRYNSKOV (Denmark), Daniel VEGA (Spain), Chao MA, Ministry of Industry and Information Technology (MIIT) (China)
WP3	Data, security and decentralization	Chair: Ramy Ahmed FATHY (Egypt) Vice Chairs: Imen GUEICH (Tunisia), Xiongwei JIA, China Unicom (China), Ricarda RENDE (Brazil), Kishor Narang (India)







1/20

Interworking between smart city platforms including digital twins



2/20

Requirements, capabilities and architectural frameworks of Internet of Things (IoT) and smart sustainable cities and communities (SSC&C) across verticals



3/20

Architectures, functionalities and protocols in applications of verticals and infrastructures of Internet of Things (IoT) and smart sustainable cities and communities (SSC&C)



4/20

Data analytics, sharing, processing and management, including big data aspects, of Internet of Things (IoT) and smart sustainable cities and communities (SSC&C)



5/20

Terminology and definitions, study and research of emerging digital technologies



6/20

Security, privacy, trustworthiness, and identification of Internet of Things (IoT) and smart sustainable cities and communities (SSC&C)



7/20

Evaluation and assessment of smart sustainable cities and communities and digital services



8/20

Human-centric digital services enabled by Internet of Things (IoT) and smart sustainable cities and communities (SSC&C) related to digital health, accessibility and inclusion



9/20

Decentralized/ distributed Internet of Things (IoT)



10/20

IoT solutions for effective energy management in Smart Sustainable Cities and Communities (SSC&C)







Recommendation ITU-T Y.4219

"Accessibility requirements for user interface of smart applications supporting IoT"

Recommendation ITU-T Y.4225

"Requirements and capability framework of digital twin for intelligent transport system"

Recommendation ITU-T Y.4228

"Requirements and framework of Industrial IoT (IIoT) infrastructure for smart manufacturing"

Recommendation ITU-T Y.4487

"A functional architecture of roadside multi-sensor data fusion systems for autonomous vehicles"

Recommendation ITU-T Y.4494

"Reference architecture of collaborative decentralized machine learning for intelligent IoT services"

Recommendation ITU-T Y.4703

"Internet of things service management application programming interface Representational State Transfer specification"

Recommendation ITU-T Y.4505

"Minimal interoperability mechanisms for smart and sustainable cities and communities"

Recommendation ITU-T Y.4605

"Information exchange model for digital twin federation in smart cities and communities"

Recommendation ITU-T Y.4607

"Requirements for the interworking of autonomous urban delivery robots"

Recommendation ITU-T Y.4498

"Framework of city-level energy data sharing and analytics among buildings"

Recommendation ITU-T Y.4504

"Service framework of prediction for intelligent IoT"

Recommendation ITU-T Y.4560

"Blockchain-based data exchange and sharing for supporting Internet of things and smart cities and communities"

Recommendation ITU-T Y.4906:

"Assessment framework for digital transformation of sectors in smart cities"

Recommendation ITU-T Y.4909

"Assessment framework of IoT sensing quality"

Recommendation ITU-T Y.4910

"Maturity model of digital supply chain for smart sustainable cities"

Recommendation ITU-T Y.4052

"Vocabulary for blockchain for supporting Internet of things and smart cities and communities in data processing and management aspects"

Recommendation ITU-T Y.4500.3

"oneM2M - Security solutions"

Recommendation ITU-T Y.4809:

"Unified IoT Identifiers for intelligent transport systems"











SG20RG-LATAM - Management Team



SG20RG-LATAM Chair:

Juan Pablo Martín

(Universidad Tecnológica Nacional,

Argentina)

SG20RG-LATAM Vice-chairs:

Amparo Arango (INDOTEL)

Héctor Budé (URSEC, Uruguay)





SG20RG-EECAT - Management Team



SG20RG-EECAT Chair:

Alexey Borodin (Russian Federation)

SG20RG-EECAT Vice-chair:

Umida Musaeva (Uzbekistan)





SG20RG-ARB - Management Team



SG20RG-ARB Chair: Muath AlRumayh

(Communications, Space & Technology

Commission (CST))

SG20RG-ARB Vice-chairs: Ali Abbassene

(Algeria)

Abdulhadi Aboualmal (United Arab Emirates)

Rana Alsaqabi (CITRA, Kuwait)

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

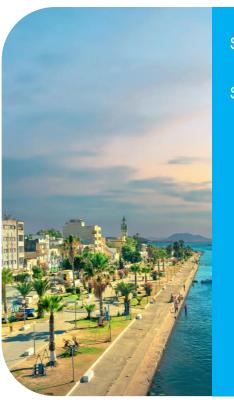
Ramy Ahmed Fathy

(Egypt)





SG20RG-AFR - Management Team



SG20RG-AFR Chair: Ramy Ahmed Fathy (Egypt)

SG20RG-AFR Vice-chairs: Ali Abbassene (Algeria)

El Hadj Sekou Ascofare (Autorité Malienne de Régulation des Télécommunications, des Technologies de l'Information et de

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Bilel Chabou (Ministère Des Technologies de la Communication et de L économie Numérique)

Mwesigwa Elton Felician (Tanzania Communications

Regulatory Authority (TCRA))

Mel Paule Renee Lasme (ARTCI)

Achime Malick Ndiaye

(Ministere des Postes et des Telecommunications)





SG20RG-AP - Management Team



SG20RG-AP Chair:

Sushil Kumar (Ministry of Communications, India)

SG20RG-AP Vice-chairs:

Chao Ma (Ministry of Industry and Information Technology (MIIT), China)

Shamsuzzoha (The Bangladesh Telecommunication Regulatory Commission (BTRC))







Coordinating ITU-T work on IoT and SC&C



Providing contact point for IoT & applications, including SC&C activities



JCA-IoT, DT and SSC&C roadmap







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)



Collaboration with industry & fora

















General distribution list for SG20

•t25sg20all@lists.itu.int

Q1/20: Interworking between smart city platforms including digital twins

•t25sg20g1@lists.itu.int

Q2/20: Requirements, capabilities and architectural frameworks of IoT and SSC&C across verticals

•t25sg20q2@lists.itu.int

Q3/20: Architectures, functionalities and protocols in applications of verticals and IoT and SSC&C

•t25sq20q3@lists.itu.int

Q4/20: Data analytics, sharing, processing and management, including big data aspects, of IoT and SSC&C

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Q5/20: Terminology and definitions, study and research of emerging digital technologies

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Q6/20: Security, privacy, trustworthiness, and identification of IoT and SSC&C

•t25sg20q6@lists.itu.int

Q7/20: Evaluation and assessment of smart sustainable cities and communities and digital services

•t25sq20q7@lists.itu.int

Q8/20: Human-centric digital services enabled by IoT and SSC&C related to digital health, accessibility and inclusion

•t25sq20q8@lists.itu.int

Q9/20: Decentralized/distributed Internet of Things (IoT)

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Q10/20:

IoT solutions for effective energy management in Smart Sustainable Cities and Communities (SSC&C)

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ITU-T SG20 Regional group for the African

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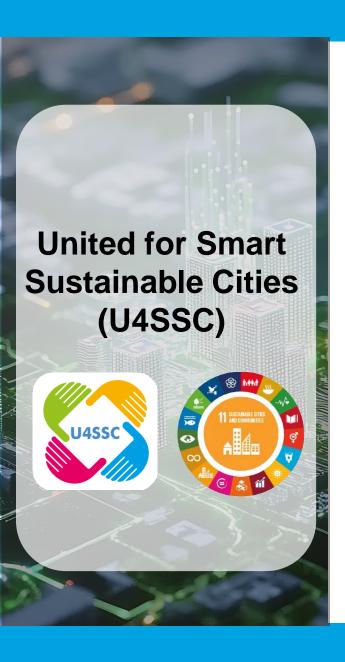
ITU-T SG20 Regional group for Latin American

tsg20rglatam@lists.itu.int

ITU-T SG20 Regional group for Eastern Europe, Central Asia and Transcaucasia

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U4SSC Partners

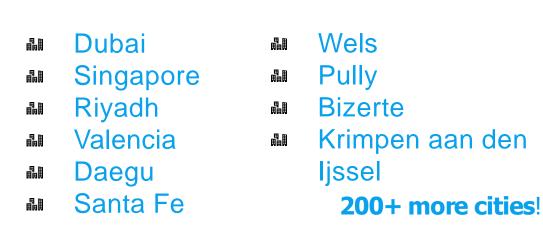


U4SSC Thematic Groups

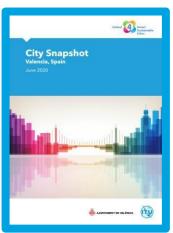


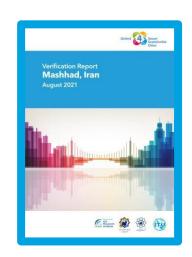




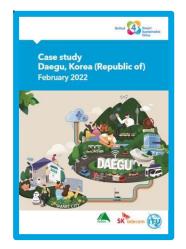






















ITU-T Activities on Digital
Transformation for People-Centred
Cities

ITU-T Study Group 20: Internet of Things, digital twins and smart sustainable cities and communities

ITU-T SG20 Regional Group for the Africa Region

ITU-T SG20 Regional Group for the Arab Region

ITU-T SG20 Regional Group for the Latin America Region

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

ITU-T SG20 Regional Group for Asia and the Pacific

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

United for Smart Sustainable Cities (U4SSC)

https://www.itu.int/cities/

• https://www.itu.int/go/tsg20

• http://itu.int/go/tsg20rgafr

• http://itu.int/go/tsg20rgarb

• http://itu.int/go/tsg20rglatam

• http://itu.int/go/tsg20rgeecat

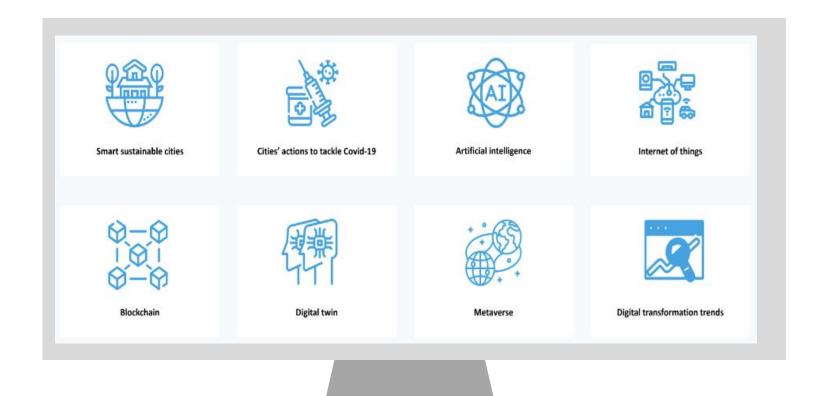
• http://itu.int/go/tsg20rgap

https://www.itu.int/en/ITU-T/jca/iot/Pages/default.aspx

• https://u4ssc.itu.int/

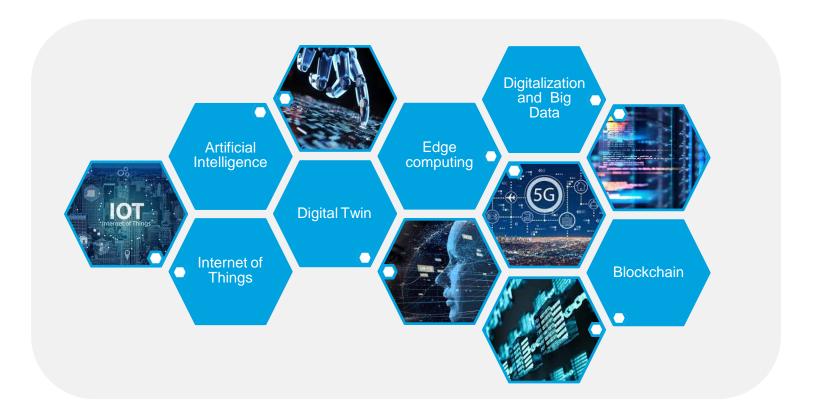




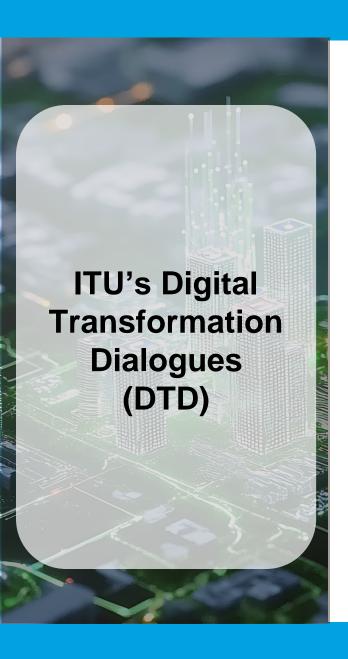












Digital Transformation Dialogues



The Digital Transformation Dialogues disseminate knowledge and expand our understanding about the rapidly evolving landscape of emerging technologies and technical standardization across different fields.

- Quantum Computing
- Machine Learning
- Artificial Intelligence
- Metaverse
- Blockchain & DLT

- Circularity
- Accessibility
- Counterfeiting
- Smart cities
- Digital twins
- Digital public infrastructure
- Virtual worlds
- Immersive inclusivity
- and more...







Questions? Interested in learning more?

Let us know!



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SG20: IoT, digital twins & smart cities

