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| PROPOSED MODIFICATIONS TO RESOLUTION 98 |
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| **Abstract:** | This contribution proposes to modify WTSA Resolution 98 to integrate the Internet of Things (IoT) and digital twins in smart sustainable cities and communities (SSC&C), to assist developing countries in implementing SSC&C standards, and to reflect a comprehensive approach to leveraging emerging technologies for sustainable development and global cooperation. |
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RESOLUTION 98 (Rev. New Delhi, 2024)

Enhancing the standardization of Internet of Things and
smart sustainable cities and communities for global development

(Hammamet, 2016; Geneva, 2022; New Delhi, 2024)

The World Telecommunication Standardization Assembly (New Delhi, 2024),

recalling

*a)* Resolution 197 (Rev. Dubai, 2018) of the Plenipotentiary Conference, on promoting the development of the Internet of things (IoT) and smart sustainable cities and communities (SC&C);

*b)* Resolution 66 (Rev. Sharm el-Sheikh, 2019) of the Radiocommunication Assembly, on studies related to wireless systems and applications for the development of IoT;

*c)* Resolution 85 (Rev. Buenos Aires, 2017) of the World Telecommunication Development Conference, on facilitating IoT and SC&C for global development;

*d)* the Global Pulse initiative launched by the United Nations Secretary-General to promote opportunities to use big data for sustainable development and humanitarian action;

*e)* Resolution 123 (Rev. Bucharest, 2022) of the Plenipotentiary Conference on Bridging the standardization gap between developing and developed countries and in particular to the highlights of the need to extend and facilitate cooperation with international, regional and national standardization bodies;

*f)* Recommendation ITU‑T Y.4000/Y.2060, on overview of IoT, which defines IoT as "a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies";

*g)* Recommendation ITU‑T Y.4702, on common requirements and capabilities of device management in IoT, which establishes common requirements and capabilities of device management in IoT for different application scenarios;

*h)* Recommendation ITU-T Y.4900, on Overview of key performance indicators in smart sustainable cities;

*i)* Recommendation ITU-T Y.4600, on Requirements and capabilities of a digital twin system for smart cities,

considering

*a)* that it is expected that the development of IoT and digital twins technologies will make it possible to connect billions of devices to the network, impacting almost all aspects of daily life;

*b)* the importance of IoT and digital twins in contributing to achievement of the 2030 Agenda for Sustainable Development, in particular recalling Sustainable Development Goal 11 (SDG 11) (Make cities and human settlements inclusive, safe, resilient and sustainable);

*c)* that digital twins can be used to implement strategies to achieve specific goals of SSC&C by conducting simulations;

*d)* that various sectors, such as energy, transportation, health, education, manufacturing, and agriculture, are collaborating for the development of IoT, digital twins and SSC&C applications and services across verticals;

*e)* that IoT digital twins and SSC&C can be key enablers for the information society and offer the opportunity to transform the urban infrastructure, taking advantage, among other things, of the efficiencies of smart buildings and transport systems, and smart water management, working together with services for the benefit of users;

*f)* that SSC&C can use IoT and digital twins to discover and respond to regional and/or global crises such as natural disasters and epidemics/pandemics;

*g)* that research and development of emerging digital technologies, including IoT, artificial intelligence (AI), digital twins and metaverse can help to improve global development, delivery of basic services and monitoring and evaluation programmes in different sectors;

*h)* that IoT involves various stakeholders and areas, which may require coordination and cooperation;

*i)* that IoT has evolved into a wide variety of applications with different aims and requirements, as a result of which it is necessary to work in coordination with other international standardization bodies and other related organizations in order to integrate better standardization frameworks;

*j)* that international standards as well as public-private partnerships should reduce the time and cost for implementing IoT and digital twins with benefits in terms of economies of scale;

*k)* that ITU‑T should play a leading role in the development of IoT-related, digital twin-related and SSC&C‑related standards;

*l)* the importance of collaboratively assessing and standardizing IoT, digital twins and SSC&C data interoperability;

*m)* that IoT and digital twins and SSC&C may have an impact in many areas, which may require further cooperation between national, regional and international entities concerned on relevant aspects in order to maximize the benefits of IoT and digital twins;

*n)* that in IoT and digital twins and SSC&C environments, connected devices and applications represent a diverse range of ecosystems;

*o)* that security and privacy aspects are a key component in the development of a reliable and secure IoT ecosystem;

*p)* that the development of an IoT ecosystem must rely on a secure regulatory and legal environment based on the protection of privacy and data security;

*q)* that the evaluation and assessment of SSC&C and related digital technologies can help measure the implementation and success of SSC&C goals;

*r)* the open source is vital for SSC&C as it fosters innovation, collaboration and accessibility in developing smart sustainable solutions;

*s)* that interoperability is a necessary condition for the development of IoT systems and services on a global scale; the lack of interoperability is often the main obstacle to ensure good collaboration between the different actors in the value chain,

recognizing

*a)* that industry forums, standards-development organizations (SDOs) and partnership projects are developing technical specifications for IoT;

*b)* the role of the ITU Radiocommunication Sector (ITU-R) in conducting studies on the technical and operational aspects of radio networks and systems for IoT;

*c)* the role of the ITU Telecommunication Development Sector (ITU-D) in encouraging telecommunication/information and communication technology (ICT) development at the global level, and in particular the relevant work carried out by ITU-D study groups;

*d)* that the purpose of the Joint Coordination Activity on Internet of things and smart sustainable cities and communities (JCA-IoT and SC&C), under the leadership of ITU‑T Study Group 20, is to coordinate the work on IoT and SSC&C within ITU, and to seek cooperation from external bodies working in the field of IoT and SSC&C;

*e)* that much progress has been made in efforts to develop collaboration between ITU‑T and other organizations, such as, but not limited to, active participation in different committees and working groups of Joint Technical Committee 1 of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC 1) and of the European Telecommunications Standards Institute (ETSI), and there has also been collaboration with forums such as oneM2M, the Alliance for Internet of Things Innovation and the LoRa Alliance, and collaboration on intelligent transport system (ITS) communication standards;

*f)* that Study Group 20 is responsible for studies and standardization work relating to IoT and its applications, including SSC&C and related digital services, including effective energy management, digital health, digital twins and metaverse;

*g)* that Study Group 20 is also a platform where the ITU‑T membership, including Member States, Sector Members, Associates and Academia, can come together to exert an impact on the drafting of international standards for IoT and their implementation;

*h)* that United for Smart Sustainable Cities (U4SSC) is a United Nations initiative coordinated by ITU, the United Nations Economic Commission for Europe (UNECE), United Nations Environment Programme (UNEP) and the United Nations Human Settlements Programme (UN-Habitat) and supported by 19 UN entities to achieve SDGs, including SDG 11;

*i)* that U4SSC is supporting cities and countries to leverage the full potential of digital transformation and SDGS;

*j)* the significant challenges, that developing countries face, in implementing and maintaining telecommunications and Internet of Things technologies for smart sustainable cities and communities;

*k)* that the Global Initiative on Virtual Worlds – Discovering the CitiVerse has been launched by ITU, United Nations International Computing Centre (UNICC) and Digital Dubai during the first UN Virtual Worlds Day to foster open, interoperable and innovative virtual worlds that can be used safely and with confidence in SSC&C;

*l)* that the Digital Transformation Dialogues (DTD) provide an avenue for disseminating knowledge and expanding the understanding about the rapidly evolving landscape of emerging digital technologies and technical standardization, including IoT, AI, digital twin and metaverse in cities and communities,

resolves to instruct Study Group 20 of the ITU Telecommunication Standardization Sector

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

2 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 and digital twin, 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 and digital twin to be open and adaptable, and fostering a competitive environment;

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

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

5 to conduct guidelines aiming at assisting developing countries to implement Study Group 20 deliverables related to creating smart sustainable cities & communities;

6 to promote the use of open source solutions in the development and implementation of IoT and digital twins to ensure accessibility, innovation, and collaboration in SSC&C;

7 to explore and integrate the concepts and frameworks of CitiVerse to enhance urban planning, sustainability, and citizen engagement,

instructs the Director of the Telecommunication Standardization Bureau

1 to provide necessary assistance in order to take advantage of every opportunity, within the assigned budget, to promote quality standardization work in a timely manner, and to communicate with telecommunication and ICT industries in order to promote their participation in ITU‑T's standardization activities on IoT, digital twin and SSC&C;

2 to carry out, in collaboration with Member States and cities, pilot projects in cities and communities related to SSC&C key performance indicator (KPI) assessment activities, aimed at facilitating the deployment and implementation of IoT, digital twin and SSC&C standards worldwide;

3 to continue to support U4SSC, and share its deliverables with Study Group 20 and other study groups concerned;

4 to accelerate the implementation of U4SSC KPIs as a standard for smart sustainable cities' self-assessment in collaboration with Member States, Sector Members, Associates and Academia to promote the deployment of the U4SSC KPIs and their implementation worldwide;

5 to continue encouraging cooperation with other international SDOs, industry forums, other related organizations, and global projects and initiatives, in order to increase the development of international telecommunication standards and reports that facilitate the interoperability of IoT services;

6 to support the work of Global Initiative on Virtual Worlds – Discovering the CitiVerse;

7 to continue organizing the Digital Transformation Dialogues to disseminate knowledge on emerging digital technologies and related international standards,

instructs the Director of the Telecommunication Standardization Bureau, in collaboration with the Directors of the Telecommunication Development Bureau and the Radiocommunication Bureau

1 to prepare reports considering, in particular, the needs of developing countries[[1]](#footnote-1)1 in terms of the study of IoT and its applications, sensor networks, services and infrastructure, taking into account the results of work being done in ITU-R and ITU-D to ensure coordination of efforts;

2 to provide support to Member States, Sector Members, Associates and Academia in implementing U4SSC KPIs for smart sustainable cities;

3 to put in a place a capacity building and skills development program aiming to form KPIs auditors that can assist cities in the deployment and implementation of U4SSC KPIs;

4 to foster joint work among ITU Sectors in order to discuss the various aspects related to the development of the IoT ecosystem and solutions for SSC&C and digital services, in the context of the achievement of the SDGs and within the framework of the World Summit on the Information Society;

5 to continue disseminating ITU publications on IoT, digital twin and SSC&C, as well as organizing forums, seminars and workshops, including Digital Transformation Dialogues on the subject, taking into account the needs of developing countries in particular;

6 to support Member States, especially developing countries, in the organization of forums, seminars and workshops on IoT and SSC&C to promote innovation, development and growth in IoT and other emerging digital technologies and solutions;

7 to report to the next world telecommunication standardization assembly on progress made in the organization of forums, seminars and workshops dedicated to developing the capacity of developing countries;

8 to assist developing countries in the implementation of Recommendations, technical reports and guidelines related to IoT, digital twin and SSC&C,

invites the ITU Telecommunication Standardization Sector membership

1 to submit contributions and continue participating actively in the work of Study Group 20 and in the studies on IoT, digital twin and SSC&C being conducted by ITU‑T;

2 to develop master plans and exchange use cases and best practices in order to promote the IoT and digital twin ecosystem, as well as SSC&Cs, and to promote social development and economic growth in order to achieve the SDGs;

3 to cooperate and exchange experiences and knowledge related to this topic;

4 to support and organize forums, seminars and workshops on IoT and other emerging digital technologies in order to promote innovation, development and growth in IoT and other emerging digital technologies and solutions;

5 to take necessary measures to facilitate the growth of IoT in relation to areas such as the establishment of standards;

6 to participate in U4SSC initiative and Global Initiative on Virtual Worlds – Discovering the CitiVerse.

1. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-1)