

Question 5/20 – Study of emerging digital technologies, terminology and definitions

(Continuation of Question 5/20)

1 Motivation

The Internet of Things (IoT) has the potential to change the lifestyle of the people and the way they interact with the surroundings, especially in smart cities and communities (SC&C). In this regard, it is important to explore the emerging technologies and trends that will contribute to that change. It is expected that IoT will have a significant impact on key infrastructural elements pertaining to cities, including the transportation, health and energy sectors, quality of life (QoL) and environment, as well as on society and the economy as a whole. Due to its ubiquitous nature, the IoT is in direct interaction with all application domains and all countries, with a direct impact on the achievement of the Sustainable Development Goals.

To facilitate discussions and to have a common background of relevant issues, the terminologies relating to IoT and SC&C need to be coordinated and unified. It would also be appropriate to identify, research, and analyse emerging digital technologies that are relevant for IoT and/or SC&C standardization. This Question intends to serve as a bridge with the research community and where appropriate to facilitate and accelerate transfer of emerging technologies to standardization. This Question will focus on topics that are not yet addressed by the other Questions.

2 Questions

This Question is tasked to capture and develop definitions, to contribute to a common terminology for IoT and SC&C. This Question can also contribute to research solutions for interoperability across different technologies, taking into account both end-user, regulatory and market needs. Considering the rapid evolution of the IoT domain, this Question can also contribute to the identification and discussion of relevant research and technological developments in this area, to bring the most relevant topics to the attention of the ITU-T Study Group 20 (SG20) and/or to the corresponding Questions. Considering the fast evolution of IoT technologies and shorter time to market, this question is expected to serve as a facilitator with the research and innovation community in order to identify emerging technologies requiring standardization for the global market and the industry.

Study items to be considered include, but are not limited to:

- What are the terms, definitions, abbreviations, letter symbols and schematic symbols used for IoT and SC&C?
- What are the emerging research and technologies related to IoT and/or SC&C that are relevant for standardization?
- How can IoT technologies contribute to implement the Sustainable Development Goals (SDGs)?
- What are the impacts of introducing IoT on human activities and how can the corresponding constraints be addressed?
- How can end-user experience with IoT be enhanced?
- How can IoT comply with regulatory requirements and how can IoT systems and components communicate information on their legal compliance with each other in a standardized manner?
- How will IoT change the business models and the market environment?
- Collaboration with which standards development organizations (SDOs) would be necessary to maximize synergies and harmonize existing standards?

- How to engage with the IoT community at large, including its various stakeholders for supporting global standardization and interoperability?

3 Tasks

Tasks include, but are not limited to:

- Developing Recommendations, Reports, Guidelines, etc. as appropriate on:
 - developing, maintaining and enhancing the Recommendations on terminology related to IoT and SC&C;
 - maintaining and enhancing the Study Group 20 Recommendations;
 - development in collaboration with other SG20 Questions, of frameworks and roadmaps, for the harmonized and coordinated development of Internet of things (IoT), including M2M communications and ubiquitous sensor networks in ITU-T;
 - cooperating with ITU-D and ITU-R Study Groups and other regional and international standards development organizations (SDOs), academia and industry forums;
 - developing guidelines, methodologies and best practices related to IoT and SC&C to support the achievement of the Sustainable Development Goals (SDGs) and to prevent a digital gap with developing countries;
 - developing guidelines, methodologies and best practices related to IoT to support legal compliance of IoT systems and solutions in a standardized and interoperable manner;
 - identifying emerging technologies and relevant research work on IoT and SC&C that are relevant for standardization;
 - liaising and fostering cooperation with academia, research and innovation community, as well as with other SDOs and industry forums including small and medium enterprises (SMEs) on IoT and SC&C;
 - identifying in coordination with other SG20 Questions, new work areas linked to IoT and SC&C, and collaborating with relevant ITU-T SGs and other SDOs and forums, to initiate studies on those identified work areas.
- Providing the necessary collaboration for joint activities in this field within ITU and between ITU-T and other relevant SDOs, consortia and forums.

An up-to-date status of work under this Question is contained in the SG20 work programme (https://www.itu.int/ITU-T/workprog/wp_search.aspx?sp=17&q=5/20).

4 Relationships

WSIS Action Lines:

- C1, C6, C11

Sustainable Development Goals:

- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17

Recommendations:

- Y.4050/Y.2069

Questions:

- All ITU-T SG20 Questions

Study Groups:

- ITU-T (e.g., considering their lead study group role), ITU-D and ITU-R Study Groups, as appropriate

- TSAG Rapporteur Group on Standardization Strategy (RG-SS)
- ITU Standardization Committee for Vocabulary

Other bodies:

- IEC
- ISO
- Joint IEC-ISO-ITU Smart Cities Task Force
- IEEE
- IETF
- IPv6 Forum
- IoT Forum
- IoT Lab