Question 2/20 – Requirements, capabilities and architectural frameworks across verticals enhanced by emerging digital technologies

(Continuation of Question 2/20)

1   Motivation

With the ever-increasing number of Internet of Things (IoT) services and applications, it is needed to study the requirements, capabilities and architectural frameworks for IoT and Smart Cities and Communities (SC&C). Emerging IoT and SC&C services and applications are placing more and more requirements on networks and the provisioning of new services, resulting in the need to make networks more and more intelligent with the provisioning of new capabilities.

One essential objective is the maximization of the usage of common capabilities and architectural frameworks in order to provide support to a broad range of IoT and SC&C services and applications in different verticals, in cost efficient, multi-vendor and easily deployable ways over converged infrastructures.

In the IoT there is an increasing integration and convergence of Information and Communication Technologies (ICTs) and emerging digital technologies, including but not limited to, edge computing, artificial intelligence/machine learning (AI/ML), blockchain, digital twin, data processing and analytics, orchestration and automation technologies, emerging networking technologies, with advanced sensing and actuation technologies. These technologies are making available a large set of advanced capabilities for the support of IoT and SC&C services and applications, which need to be integrated in terms of architectural frameworks, from both common (not vertical dependent) and vertical specific viewpoints.

It is also needed to make the effective linkage between the IoT and SC&C standards and the practical aspects of implementation, deployment, operation and maintenance, in order to assess the opportunities and benefits of using these standards in concrete application scenarios.

2   Questions

This Question addresses the common and specific requirements, capabilities and architectural frameworks enhanced by emerging technologies across verticals.

On the basis of use cases and related ecosystem aspects, the requirements, capabilities and architectural frameworks enhanced by emerging technologies for the support of IoT and SC&C services and applications will be specified from both common (not vertical dependent) and vertical specific viewpoints.

Study items include, but are not limited to:

–   What are the use cases for IoT and SC&C applications and services across different verticals?

–   What are the requirements, capabilities and architectural frameworks needed for the support of emerging services and applications for IoT and SC&C across different verticals?

–   With which standards development organizations (SDOs) collaboration would be necessary to maximize synergies and harmonize existing standards?

3   Tasks

Tasks include, but are not limited to:

–   Developing Recommendations, Reports, Roadmaps, Guidelines etc. as appropriate for the support of emerging services and applications for IoT and SC&C, covering:

   •   use cases of IoT and SC&C services and applications across different verticals;

   •   ecosystem aspects taking into account business models and use cases;

- common and specific requirements, capabilities and architectural frameworks enhanced by emerging technologies across different verticals; and
- related implementation, deployment, operation and maintenance, as well as Proof of Concepts, for IoT and SC&C with respect to the above tasks.

– 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=2/20).

4 Relationships

WSIS Action Lines:

– C2, C3, C5, C6, C7, C8, C10

Sustainable Development Goals:

– 9, 10 and 11

Recommendations:

– Y.4000-series including Y.4000/Y.2060, Y.4003, Y.4100/Y.2066, Y.4101/Y.2067, Y.4102/Y.2074, Y.4103/F.748.0, Y.4105/Y.2221, Y.4108/Y.2213, Y.4109/Y.2061, Y.4110/Y.2065, Y.4111/Y.2076, Y.4112/Y.2077, Y.4113, Y.4116, Y.4117, Y.4118, Y.4119, Y.4120, Y.4121, Y.4201, Y.4203, Y.4204, Y.4207, Y.4208, Y.4250/Y.2222, Y.4401/Y.2068, Y.4408/Y.2075, Y.4457, Y.4464, Y.4552/Y.2078, Y.4702, Y.Suppl.53, Y.Suppl.56 to Y-series

Questions:

– All Questions of ITU-T SG20

Study Groups:

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

Other bodies:

– IETF
– Open Mobile Alliance (OMA)
– Open Geospatial Consortium (OGC)
– IEEE
– ATIS
– ETSI TC Smart M2M
– CCSA TC10
– oneM2M
– ISO/IEC JTC 1/SC41, ISO/IEC JTC 1/WG11
– Joint IEC-ISO-ITU Smart Cities Task Force
– GSMA
– 3GPP/3GPP2
– W3C
– Organization for the Advancement of Structured Information Standards (OASIS)
– Object Management Group (OMG)

- Industrial Internet Consortium (IIC)
- Alliance of Industrial Internet (AII)
- Alliance for IoT Innovation (AIOTI)
- Open Connectivity Foundation (OCF)
- 5G Alliances (e.g., 5G AA, 5G ACIA, etc.)