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| **Radiocommunication Assembly (RA-12) Geneva, 26‑30 October 2015** |  |
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| **PLENARY MEETING** | **Addendum 3 to Document RA15/PLEN/21-E** |
| **9 October 2015** |
| **Original: Russian** |
| Regional Commonwealth in the field of Communications Common Proposals | |
| PROPOSALS FOR THE WORK OF THE ASSEMBLY | |
| draft new resolution ITU-R [IOT] | |
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# 1 Introduction

The Internet of Things (IoT) is rapidly becoming a reality. In the near future, there will be significant growth in the number of connections for machine to machine (M2M) interaction, reflecting a growth in network infrastructure for IoT. New trends in the telecommunications/ICT sphere, such as combining mobile Internet and IoT, are seen as the technology of the coming decades, posing new challenges and with the capacity to change the landscape of the telecommunication sector and the face of other basic sectors of the economy. The emergence of new digital devices, networks, services and applications, constitutes a profound change which is re‑shaping the basic sectors.

A specific feature of the IoT segment is the great diversity of services it can offer, making a range of demands as regards network coverage, interfaces and architecture.

Study Group 20 in ITU’s Telecommunication Standardization Sector (ITU-T) is developing international standards for the coordinated development of IoT technologies including machine to machine (M2M) communications and Ubiquitous Sensor Networks (USN) based on them. IoT issues are already being discussed in ITU-R in various study groups and working groups in the context of the development of a whole range of technologies and networks. Currently, however, ITU-R has no Questions or Resolutions that would facilitate a more systematic approach to describing aspects of the use of the radiofrequency spectrum by various IoT segments.

# 2 Discussion

The deployment of IoT is expected to enable the connection of 20 billion or more devices to the network by 2020. This will influence almost every aspect of our everyday lives. IoT promotes convergence (mixing) of branches of industry, and SG20 is providing a specialized platform for IoT standardization in order to promote that process and make available an effective set of international standards.

Many assessments and forecasts suggest that IoT will create a significant burden on existing broadband applications in the mobile service including RLAN and next-generation IMT networks (“IMT-Advanced” and “IMT-2020”). In order to ensure successful broadband deployment of IoT services, communication networks must ensure universal coverage that extends into building interiors and includes sparsely populated rural areas, allows large-scale connection of IoT devices (tens to hundreds of thousands) to a single cell, ensures a many-fold reduction in network delays and simplifies signalling, with the aim of reducing terminal equipment costs and cutting energy consumption. Regulators need to keep constantly in mind the efficient use of spectrum already allocated to mobile communications for IoT applications, the availability of additional spectrum including modifications to radio-interface parameters for IoT communications in the context of short-range systems, and measures to boost the throughput capacity of transport networks connecting IoT hubs in the Internet.

Nevertheless the growth in demand for wireless access and mobile broadband communications in the future may limit the ability to provide the capacity needed for IoT applications in existing and developing IMT networks, which calls for the implementation of new technologies and the development of new radio-interfaces for IoT applications. New IoT radio-interfaces, whether using already allocated spectrum or requiring dedicated spectrum for interference-free and uninterrupted operation, require more accurate forecasts of future trends.

This gives rise to a number of questions regarding the use of radiofrequency spectrum by the new IoT technologies.

# 3 Proposals

The RCC Administrations consider that, in view of the work being carried out in ITU-T and the rapidly growing interest of manufacturers in developing the Internet of Things, it would be helpful to adopt an ITU-R Resolution setting the general direction for studies in the field of IoT within the remit of ITU-R and helping to systematize the knowledge acquired by the various study groups and working groups in this area.

Annex 1

**RCC/XA3/1**

Draft new Resolution ITU-R [IOT]

Studies related to wireless systems and applications for the development of the Internet of Things (IoT)

(2015)

The ITU Radiocommunication Assembly,

considering

*a)* that a globally connected "Internet of Things" (IoT) world will be built on the connectivity and functionality made possible by telecommunication networks;

*b)* that the globally connected world also requires considerable enhancement of transmission speed, device connectivity and energy efficiency to accommodate the significant amounts of data among a plethora of devices;

*c)* that ITU-T Study Group 20, which is dealing with “IoT and its applications including smart cities and communities (SC&C)”, is developing international standards for the development of IoT technologies including machine to machine (M2M) networks and Ubiquitous Sensor Networks (USN);

*d)* that many administrations, equipment developers and standardization bodies are considering wireless technologies and short-range applications for IoT use in various license-exempt frequency bands including bands earmarked for the deployment of industrial, scientific and medical (ISM) applications;

*e)* that many administrations, equipment developers and standardization bodies are also considering wireless technologies and applications for IoT in various frequency bands allocated to the relevant services;

*f)* Recommendation ITU-R M.2002, on Objectives, characteristics and functional requirements of wide-area sensor and/or actuator network (WASN) systems;

*g)* Recommendation ITU-R M.2083, on IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond;

*h)* Question ITU-R 250-1/5,onMobile wireless access systems providing telecommunications for a large number of ubiquitous sensors and/or actuators scattered over wide areas as well as machine to machine communications in the land mobile service;

*i)* Report ITU-R M.2370-0, on IMT traffic estimates for the years 2020 to 2030,

recognizing

*a)* Resolution 197 (Busan, 2014), on Facilitating the Internet of Things to prepare for a globally connected world;

*b)* the use of different radiofrequency bands by radiocommunication services, many of which provide communication channels, infrastructure and capacity that could be used in IoT deployment with the aim of ensuring cost-effective deployment and efficient use of the radiofrequency spectrum,

resolves to invite ITU-R

1 to conduct studies in the area of development of radio networks and systems for the development of the Internet of Things;

2 to develop appropriate ITU-R Recommendations and/or reports, as appropriate, on the basis of the studies referred to above;

3 that the study groups conducting studies regularly inform the Radiocommunication Advisory Group of the results of the implementation of this Resolution,

further resolves

to support close cooperation and to collaborate regularly with ITU-T, to take account of the results of work being done in that Sector, and to avoid duplication of effort,

invites Members of the Union

to participate actively in implementing this Resolution by, *inter alia*, submitting contributions for consideration by ITU-R and providing relevant information from sources outside ITU-R.

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