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| The International Teleocmmunication Union - Connecting the World. | **International telecommunication union****Telecommunication Standardization Bureau** |  |
|  | Geneva, 27 February 2020 |
| **Ref:** | **TSB Circular 235**SG13/TK | **To:**- Administrations of Member States of the Union |
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| **E-mail:** | tsbsg13@itu.int  | **Copy to:**- ITU-T Sector Members;- Associates of ITU-T Study Group 13; - ITU Academia;- The Chairman and Vice-Chairmen of ITU-T Study Group 13;- The Director of the Telecommunication Development Bureau;- The Director of the Radiocommunication Bureau |
| **Subject:** | **Approval of revised Question 20/13**  |

Dear Sir/Madam,

1 At the request of the Chairman of Study Group 13, *Future networks, with focus on IMT 2020, cloud computing and trusted network infrastructures*, I have the honour to inform you that, in accordance with the procedure described in Resolution 1, Section 7, § 7.2.2, of WTSA (Rev. Hammamet, 2016), Member States and Sector Members present at the at the fifth Study Group 13 meeting in this study period held in Geneva from 14 to 25 October 2019 agreed by reaching consensus to approve the revised Question 20/13:

1.1 Question 20/13 (*IMT-2020: Network requirements and functional architecture*)

 The text of revised Question 20/13 is in Annex 1 of this Circular. The attached **Note** in
**Annex 1** summarizes the reason for the revision.

2 Revised Question 20/13 has been endorsed by the TSAG meeting held on 10 to 14 February
2020 in Geneva.

3 Revised Question 20/13 is therefore approved.

Yours faithfully,

Chaesub Lee
Director of the Telecommunication
Standardization Bureau

**Annexes: 1**

Annex 1

**IMT-2020: Network requirements and functional architecture**

(Continuation of Question Q20/13)

 **Motivation**The objective of the development of IMT-2020 is to address the anticipated needs of users of mobile services in the years 2020 and beyond. The vision and service scenarios will have been identified by related SDOs (ITU-R, 3GPP, NGMN, etc.), e.g., Enhanced Mobile Broadband, ultra-reliable and low latency communications, massive machine type communications.

IMT-2020 systems will differentiate themselves from fourth generation (4G) systems not only through further evolution in radio-interfaces but also through greatly increased flexibility end-to-end. This end-to-end flexibility will bring challenges to the architecture and functional design of IMT-2020 considering the diversity of service requirements. Challenges come in large part from the incorporation of network softwarization into every component. Well-known techniques such as NFV and SDN will together allow unprecedented flexibility in the IMT-2020 systems. Such flexibility will enable many new capabilities including network slicing.

Considering also the complexity implied by such flexibility, the application of artificial intelligence including machine learning technologies will be also very beneficial for IMT-2020 systems in terms of network operations and application support capabilities.

This question focuses on the study of the requirements, capabilities, architecture and key technologies to realize IMT-2020 networks. And the ecosystem from business models and use cases should be promoted to build and realize the better cooperation with users. Open source projects should also be utilized and guide to meet the requirements of IMT-2020 networks.

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

* What are the key requirements and capabilities of IMT-2020 networks based on the service scenarios of IMT-2020?
* What framework and architecture are required to realize IMT-2020 networks based on the identified requirements and capabilities?
* What key technologies related to IMT-2020 are required to realize IMT-2020 networks?
* How to incorporate network intelligence into IMT-2020?
* How to build and/or guide the ecosystem on IMT-2020 taking into account business models and use cases?
* How to utilize and guide the open source software related to IMT-2020 to meet the requirements of IMT-2020?

**Tasks**Tasks include, but are not limited to:

* Development of Recommendations on the requirements and capabilities for the networks of IMT-2020 based on the service scenarios of IMT-2020
* Development of Recommendations on the framework and architecture design of IMT-2020 based on, but not limited to, the above-identified requirements, capabilities and the gap analysis identified by FG on IMT-2020 and FG on Machine Learning for Future Networks including 5G.
* Development of Recommendations and other relevant documents on overall requirements and functional architecture of IMT-2020 incorporating technologies including network softwarization, network slicing, orchestration, capability exposure, artificial intelligence including machine learning, etc.
* Development of Recommendations on the interworking with current networks including IMT-Advanced, etc.
* Study of potential utilization and guide of open source software activities in IMT-2020 networks
* Development of Recommendations on ecosystem aspects taking into account business models and use cases
* An up-to-date status of work under this Question is contained in the SG13 Work Programme.
[http://www.itu.int/itu-t/workprog/wp\_search.aspx?sg=13](https://www.itu.int/itu-t/workprog/wp_search.aspx?sg=13)

**Relationships**

**Recommendations:**

* Y-series in SG13

**Questions**:

* All SG13 related Questions, such as Q6/13, Q16/13, Q21/13, Q22/13, Q23/13

**Study Groups:**

* ITU Study Groups involved with IMT-2020 studies

**Standardization bodies:**

* ITU-R
* 3GPP
* NGMN
* IETF
* ETSI

*Note: The revision of the Q20/13 was initiated at the October 2019 SG13 meeting in order to increase the visibility to the large portion of the actual work in this Question devoted to the machine learning and beginning of artificial intelligence as applied to networks. In addition, this Question is a main recipient of the work from the FG ML5G.*

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