Radiocommunication Study Groups

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CHARACTERISTIC TEMPLATE AND EVALUATION TEMPLATES OF IMT-2030 TECHNOLOGIES

Proposal to the Characteristics Template and Evaluation Template as part of IMT-2030 technology development

Introduction

ITU-R WP 5D is progressing work on developing the framework for IMT-2030 technology development. From an IEG perspective, the documents of interest include the Characteristic Template, which defines prominent technical features of the RIT/SRIT, and the evaluation template, which outlines how these features need to be evaluated. In this paper we present our thoughts on few capabilities identified for IMT-2030.

The IMT-2030 Framework

The IMT-2030 framework in ITU-R M.2160 outlines a comprehensive approach to the design, development and evolution of the next-generation IMT systems. It emphasizes on the key usages evolved from those of IMT-2020; enhanced mobile broadband, ultra-reliable and low-latency communications, and massive machine-type communications into Immersive communications, hyper reliable & low-latency communications and massive communications respectively. In addition to these evolved usage scenarios, there are new usage scenarios identified including – ubiquitous connectivity, integrated sensing and communications and AI and communication. These elements introduce new dimensions to the evaluation process, necessitating more sophisticated methodologies, tools and resources.

In a previous document, we pointed to challenges in the evaluation of candidate IMT-2030 RIT/SRIT proposals, and then provided informative proposals on how the evaluation need to be performed. Amongst others, we proposed for the evaluation to focus solely on the mandate of ITU-R when evaluating the radio aspects of IMT-2030 technologies. Building on top of that we propose in this document details to the characteristic template and TPR for few capabilities including Security, Resilience, AI and Interworking.

Proposals

1. **Security and Resilience:**
   In [xxx], we proposed that ITU-R WP5D should expect the proponents to report such details of the capabilities *supported by radio access network to higher layers functions in their submission templates as informative material.*

In support of the same, we offer examples of elements that need to become part of the characteristic templates as described below,

Sl. No.	Capability	Characteristic Template
1	Security	a. Provide a description to the list of techniques/technologies employed in L1 and L2 that defines the security strength of the RIT/SRIT b. Provide details if the RIT/SRIT is designed to be quantum safe c. Is the proposed RIT/SRIT backward compatible with previous IMT technologies? If yes, provide details on the security framework employed in the interface d. Is the proposed RIT/SRIT designed to interwork with non-IMT technologies? If yes, provide details on the security framework employed in the interface e. Is the candidate RIT/SRIT designed to be quantum safe? YES/NO f. …
Evaluation		-
2	Resilience	a. Is the proposed RIT/SRIT designed to be resilient? If yes provide details of the features employed that define the resilience behaviour of the proposed RIT/SRIT b. Is the RIT/SRIT designed with interfaces to resilient networks (e.g., PPDR)? If yes, provide details of the related functionalities in the RIT/SRIT
Evaluation		a. Is the candidate RIT/SRIT designed to be natively resilient? YES/NO b. What is the anticipated downtime in msec?

2. Artificial Intelligence

In [xxx], we proposed that ITU-R WP5D should expect the proponents to report relevant technical study done that demonstrates possible gains by exposure of metrics and interfaces from the radio functionalities which assist in developing AI inferencing.

In support of the same, we offer examples of elements that need to become part of the characteristic templates as described below,

Sl. No.	Capability	Characteristic Template
3	AI related capabilities	a. Is the RIT/SRIT designed to natively support AI models? If yes, provide such details b. Does the RIT/SRIT define API's for AI models? If yes, provide such details
Evaluation		a. Does the RIT/SRIT natively employ AI?

	YES/NO (to be verified by inspection)

3. NTN Interworking
   In [xxx], we proposed that ITU-R WP5D should strictly evaluate candidate RIT/SRIT proposals based on the scope of WP 5D, which is terrestrial IMT. However, there is wide recognition now that the overarching objective of ubiquity can only be achieved if it interworks with non-terrestrial networks.

   In support of the same, we offer examples of elements that need to become part of the characteristic templates as described below,

Sl. No.	**Capability**	**Characteristic Template**
4	NTN Interworking	a. Is the RIT/SRIT designed to natively support interworking with NTN? If yes, provide such details b. If the RIT/SRIT does not natively support interworking with NTN, is it designed with interfaces to interwork with NTN? If yes, provide such details c. Provide a list of bands in which NTN is expected to operate? d. Provide details on anticipated downtime in connectivity to move from TN to NTN, and vice versa e. Provide details on the authentication mechanisms available in the RIT/SRIT available for the operator of a service
Evaluation metrics		a. Does the RIT/SRIT support interworking with NTN? YES/NO

We further propose, that WP5D discuss and agree on the proposals in this document to be carried forward to the characteristic template and evaluation documents.