

**Source:                      Ericsson**

**Title:                              3GPP timeline for IMT-2030 and beyond**

**Document for:      Discussion, Decision**

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## 1                      Introduction

During the TSG #101 the IMT-2030 timeline was briefly discussed in RAN, SA, and CT correspondingly. Based on the brief discussion it was concluded to have a more in-depth discussion at the following TSG.

Late last year, ITU-R published a paper on technology trends in the context of the next generations IMT system [1]. It describes emerging trends in our society and technology enabler for supporting those trends. Triggered by the work in ITU-R and in flagship research projects for future development of IMT for 2030 and beyond, such as Hexa X, it's now time for 3GPP to act and take a leading position in the development of technology of IMT for 2030 and beyond. This will allow us to influence the early phases of the developments for future deployments of IMT for 2030 and beyond, and it will inspire the evolution of 5G Advanced. Further, to the TSG #101 meetings, 3GPP received the "Framework and overall objectives of the future development of IMT for 2030 and beyond" in [2] from ITU-R WP5D.

Given the ITU actions, it is important that 3GPP takes the initial steps by including IMT for 2030 and beyond in the planning of the coming releases. Firstly, this means to agree on the duration of Rel-20 and Rel-21 since two releases will be needed to develop the IMT-2030 standards. For such a plan, it is important to meet the ITU defined requirements set for technologies aiming to be defined as an IMT 2030 and beyond technology. We note here that such a plan needs to be an overall plan including all TSGs in 3GPP. In this contribution we provide a holistic view covering all RAN, SA, and CT parts.

Secondly, we see that work related to IMT for 2030 and beyond technology needs to start before Rel-20 so that the corresponding technology studies can start at the beginning of Rel-20 based on well-defined scenarios and performance requirements. Hence, a discussion on when such a requirements study could start and roughly on its contents, is needed.

In this document, we present our thoughts on the above two points.

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## 2                      Discussion

### 2.1                      Release timeline

ITU-R has published report M.2516 [1] on future technology trends of terrestrial IMT systems towards 2030 and beyond and the work on the IMT-2030 framework. In addition, WP5D has agreed on the IMT-2030 framework document in their latest meeting and have provided it to 3GPP [2]. WRC 2023, currently ongoing, will decide the agenda items for WRC 2027. In ITU-R, the work on Technical Performance Requirements for IMT-2030 is expected to start in early 2024. The full ITU timeline for future development of IMT for 2030 and beyond is available in [3]. The same timeline is described in Figure 1, although a bit simplified.



**Figure 1: ITU timeline for future development of IMT for 2030 and beyond**

From a 3GPP timeline perspective, it is important that 3GPP starts to solidify a release timeline to cover future development of IMT for 2030 and beyond. From the ITU timeline perspective, there are some important milestones that 3GPP needs to be involved in and adhere to.

ITU requires that any proponent aiming to fulfil the requirements of IMT for 2030 and beyond shall submit their concept with self-evaluations in the beginning of 2029. This sets a natural end date for the completion of 3GPP related activity. Hence, in order to base the submission on stable specifications, any work item(s) in 3GPP would need to finish before that.

The end date of Rel-19 was decided at TSG#99. With this as a basis, release planning for the two following releases can start. We envision that the development of 3GPP technology for IMT for 2030 and beyond should be based on a first release of technical study item(s) followed by a second release containing corresponding work item(s). Further, multiple drops of the 3GPP concept should be avoided and a single date for finalization should be decided. Reiterating the point of targeting the ITU submission, 3GPP will submit its complete submission including description, self-evaluation and compliance template based on the available specification in Q4 2028. This date is one of the last possible dates for 3GPP to complete the work before its submission to ITU. The ASN.1/OpenAPI Freeze does not need to be part of the first submission and can be completed later, i.e., Q1 2029. 5G advance will continue its evolution in parallel and it is very important that 3GPP still supports this. Any commercial needs addressed for 5G advanced in Release 20 should come as early as possible. With 39 months between the Rel-19 functional freeze date and the end of 2028, Rel-20 should be the shorter 18 months long and Rel-21 will then be 21 months long.

All in all, this means the following:

- Proposal 1** Rel-20 duration is 18 months and contains the Study Item(s) of IMT for 2030 and beyond technologies,
- Proposal 2** Rel-21 duration is 21 months and contains the Work item(s) of IMT for 2030 and beyond technologies with ASN.1/OpenAPI Freeze Q1 2029.
- Proposal 3** 3GPP submission to ITU shall be based on the outcome of Rel-21.

## 2.2 3GPP studies on scenarios and performance requirements

The work on the technical performance requirements within ITU will start already next year. To be able to influence that work, parallel work in 3GPP should be started involving both SA1 and RAN plenary as the technical performance requirements involves both.

SA1 will focus on the end-to-end requirements for IMT-2030 while the RAN plenary will focus firstly on interaction with ITU-R WP5D in defining the scenarios and performance requirements and assisting in the assessment of the applicable targets. Hence the discussion related to the ITUs 6G KPIs are associated with the RAN plenary led topic on scenario and performance requirements. Later during submission process RAN will evaluate the 3GPP concept towards the final ITU targets. By that we foresee a similar setup as for IMT-2020 where the corresponding resulting TS and TR in [4] and [5] are good references.

We see a workshop as a good way of starting the IMT-2030 related work in SA1. Aligning with the ITU timeline, a suitable time to have such a workshop is during May 2024

- Proposal 4** 3GPP will arrange an SA1 workshop on IMT-2030 in May 2024.

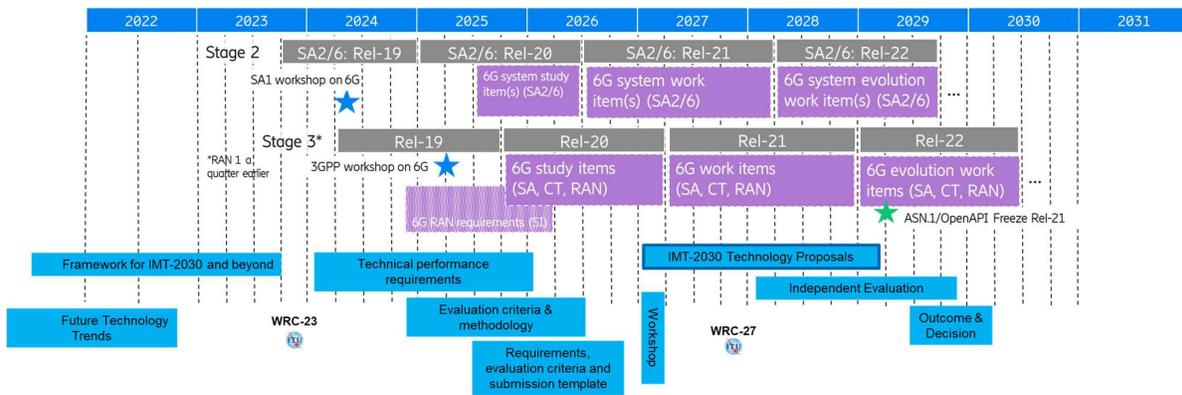
In order for the RAN plenary to effectively influence the ITU technical performance requirements and be able to give meaningful guidance towards the draft of the Rel-20 technical study item on IMT-2030, the RAN-level requirements study item should be approved at TSG RAN #105 with the work starting at TSG RAN #106. One should note that this is significantly later compared to in 5G wherein the corresponding RAN level lead study was started before ITU started working on the performance requirements. That said, with the proposed starting time it is still possible for RAN to be able to work in parallel with ITU and by that having influence on the ITU process.

**Proposal 5 Target approval of RAN-level study item on scenarios and performance requirements at TSG RAN #105 with work starting at TSG RAN #106.**

Lastly, before 3GPP starts the technical work in the form of studies on IMT-2030 in Rel-20 a 3GPP wide workshop on IM-2030 should be arranged. The workshop should involve various initiatives, Market Representation and Organizational Partners. Given that RAN1 will start work in Q3 2025, a suitable timing for the workshop is in March 2025.

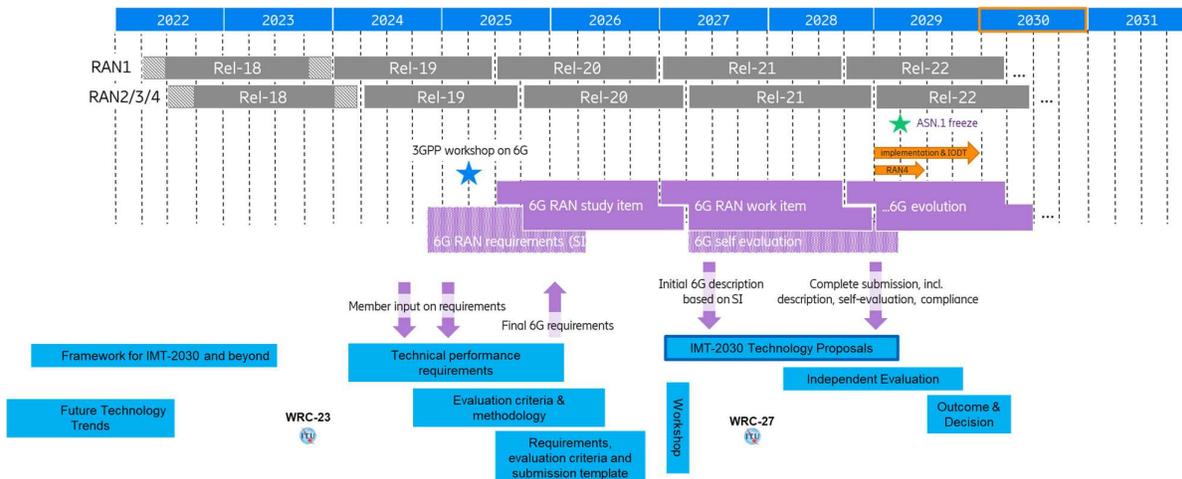
**Proposal 6 A 3GPP wide workshop on IMT-2030 will be arranged in March 2025.**

An illustration capturing all the above can be found in Figure 2.



**Figure 2: Illustration of 3GPP timeline with the ITU timeline**

Focusing just on the RAN related aspects and its relation to ITU, this is illustrated in Figure 3. As currently, RAN1 is a quarter ahead of the remaining working groups.



**Figure 3: Illustration of 3GPP RAN timeline with the ITU timeline**

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## Conclusion

Based on the discussion in the previous sections we propose the following:

- Proposal 1**      **Rel-20 duration is 18 months and contains the Study Item(s) of IMT for 2030 and beyond technologies,**
- Proposal 2**      **Rel-21 duration is 21 months and contains the Work item(s) of IMT for 2030 and beyond technologies with ASN.1/OpenAPI Freeze Q1 2029.**
- Proposal 3**      **3GPP submission to ITU shall be based on the outcome of Rel-21.**
- Proposal 4**      **3GPP will arrange an SA1 workshop on IMT-2030 in May 2024.**
- Proposal 5**      **Target approval of RAN-level study item on scenarios and performance requirements at TSG RAN #105 with work starting at TSG RAN #106.**
- Proposal 6**      **A 3GPP wide workshop on IMT-2030 will be arranged in March 2025.**

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## References

- [1] ITU-R Report M.2516-0 – Future technology trends of terrestrial International Mobile Telecommunications systems towards 2030 and beyond, ITU-R, November 2022, Link: [ITU-R M.2516](#)
- [2] [RP-231518/CP-232245](#) LS on completion of draft new Recommendation ITU-R M.[IMT.FRAMEWORK FOR 2030 AND BEYOND]: Framework and overall objectives of the future development of IMT for 2030 and beyond (ITU-R WP5D\_TEMP\_899rev1; to: RAN, CT, SA, 5G Americas, 5GAA, 5G-ACIA, 5G Innovation Centre, 5GIF, APCO, APT Wireless Group, ARIB, ATIS, ATIS Next G Alliance, CCSA, DECT-Forum, EBU/5G-MAG, ETNO, ETSI, GSA, GSMA, HAPS-Alliance, Hexa-X, IEEE, IMT-2030(6G) Promotion Group, IOWN GF, ISO TC-204, ITRI, NGMN, NYU Wireless, OASIS, one6G, OnGo Alliance, OMA, TIA, Telecom Engineering Centre India, TSDSI, TTA, TTC, UIC, Wi-Fi Alliance, WiMAX Forum, Wireless Innovation Forum, WWRF; cc: -; contact: Counsellor ITU-R SG5) ITU-R WP5D
- [3] [IMT towards 2030 and beyond \(itu.int\)](#)
- [4] 3GPP "Service requirements for the 5G system" [TS 22.261](#) V15.0.0 2017-03-01
- [5] 3GPP "Study on scenarios and requirements for next generation access technologies" [TR 38.913](#) V14.0.0 2016-10-04