

SONY

3GPP SA1 Meeting #106

Jeju, Korea, 20-24 May 2024

Agenda Item: 8

S1-241014

Views on the SA1 6G Study

Endorsed 6G milestones @ TSG#103

- SP-240432/RP-24083 “Additional Considerations for 6G Timeline” – endorsed during the joint RAN/SA/CT session at TSG#103.

- **For 6G SI**

- **SA WGs:**
 - SA1 SI approval: TSG#105(Sept2024) – endorsed at TSG#102
 - SA2 SI approval: TSG#108(Jun2025) – endorsed at TSG#102
 - **Other SA WG (SA3, SA4, SA5, SA6) SI approval: TBD at future TSG meeting**
 - **SA1/SA2 6G SI may continue beyond Stage-1/Stage-2 freeze dates for 5G-Advanced**
 - **6G SI (this may use time from Rel-21)**
 - » **SA1 6G SI completion: Mar 2026**
 - » **SA2 6G SI completion: Dec. 2026 or Mar 2027 (To be confirmed at future TSG meeting)**
- **RAN WGs: 21 months**
 - **RAN1 starts in 3Q/25 until 1Q/27; RAN2/3/4 start in 4Q/25 until 2Q/27**
- **CT WGs: at least 9 months**
 - **CT WG 6G SI will start 9 months after approval of SA2 SI.**

High Level Sony Views on 6G

- The transition from 5G to 6G should be evolutionary: 6G should be a network of subnetworks, continuing the trend set by 5G.
 - It is essential to protect ongoing and upcoming 5G investments and deployments while at the same time allow new innovative 6G features, services and business models to be developed and deployed in the future.
 - The difference in the life cycle between ICT (1 new "G" every 10 years) and OT (e.g. IoT devices are deployed for contracts that are expected to last 10 to 15 years) should aim to be minimized.
- While 5G deployments are focusing mainly around human-centric services, 6G should target the expansion towards new types of services (machine to machine, "smart").
- The evolution of 5G core network to 6G core limits the number of architectural options, thus the first 6G specification should aim to be delivered in a single drop.
- W.r.t. the 6G services/features available on day-1 of the 6G deployments, we think that in Rel-20 we should not aim to study "everything" in one go and instead maybe some prioritization should be considered.
- The following aspects of sustainability are seen as key 6G drivers:
 - Economic: lowering TCO and connectivity cost
 - Environmental: energy saving
 - Social: overcome the digital divide

SA1 6G Study: General Comments

- **6G SI duration:** there is enough time (Nov 2024 to Feb 2026 = max of 6 SA1 meetings) allocated to have a solid study of use cases and corresponding RQs.
- **Intermediate milestones:** There are no explicit requirements/expectations on delivering any intermediate output during the SA1 study, however:
 - the RAN plenary 6G SI kicks off in **March 2025** -> 2 SA1 meetings into the SA1 6G SI(s).
 - not sure it would be wise to force “consolidation-related” decisions so early in the SA1 study.
 - potential target: be ready to present the structure of the SA1 study (namely how many and what “studies”, accompanied by a snapshot of the current TR(s)) .
 - it would be good to keep in mind **June 2025** which is the kick-off of the SA2 and also the RAN WGs 6G SIs.
 - potential target: have a number of agreed use cases to provide to SA2 and RAN WGs, which can be used as a starting point in their corresponding 6G studies.
- Note: aiming for consolidation too early could risk the quality of the SA1 work, so we think it should be avoided.
- The SA1 6G SI(s) should result in a **single Rel-21 6G WID** that will capture the (initial ?) 6G RQs.
 - We believe that not “everything” needs to be studied in the initial SA1 6G SID(s) -> there could be further 6G (BB) SIs in Rel-21.

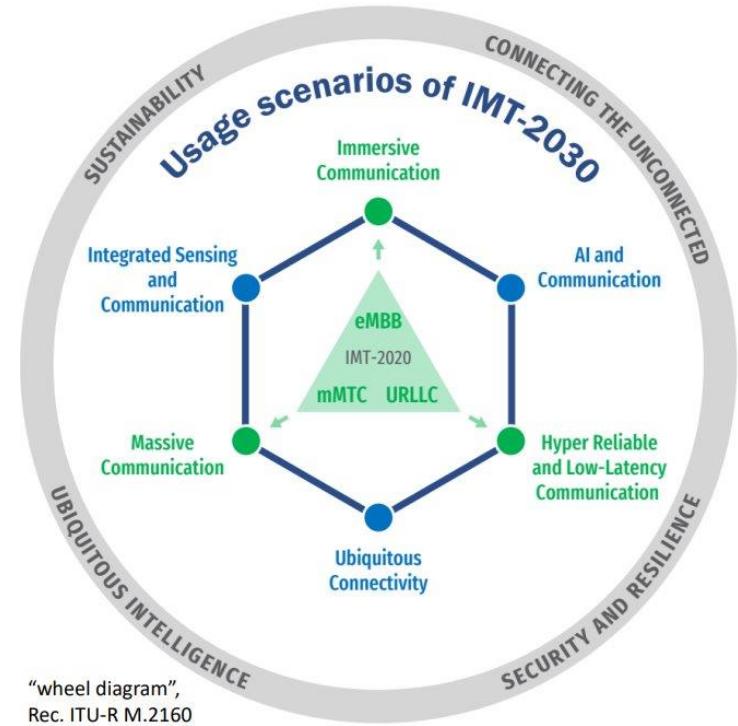
View on the IMT2030 Usage Scenarios

Usage scenarios extended from IMT-2020 (5G)

- eMBB Immersive Communication
 - *Sony view: new solution part of day-1.*
- mMTC Massive Communication
 - *Sony view: it is important to consider certain IoT aspects in the initial (day-1) design, but could be part of the second wave.*
- URLLC HRLLC (Hyper Reliable & Low-Latency Communication)
 - *Sony view: Could be part of the second wave.*

New usage scenarios

- Ubiquitous Connectivity
 - *Sony view: NTN solution, based on evolution of 5G-A NTN can be part of day-1,*
- AI and Communication
 - *Sony view: new solution part of day-1,*
- Integrated Sensing and Communication
 - *Sony view: its day-1 applicability requires some more discussion. ISAC has the potential to bring revolutionary new services and therefore components of it should be considered as part of day 1.*



"wheel diagram",
Rec. ITU-R M.2160

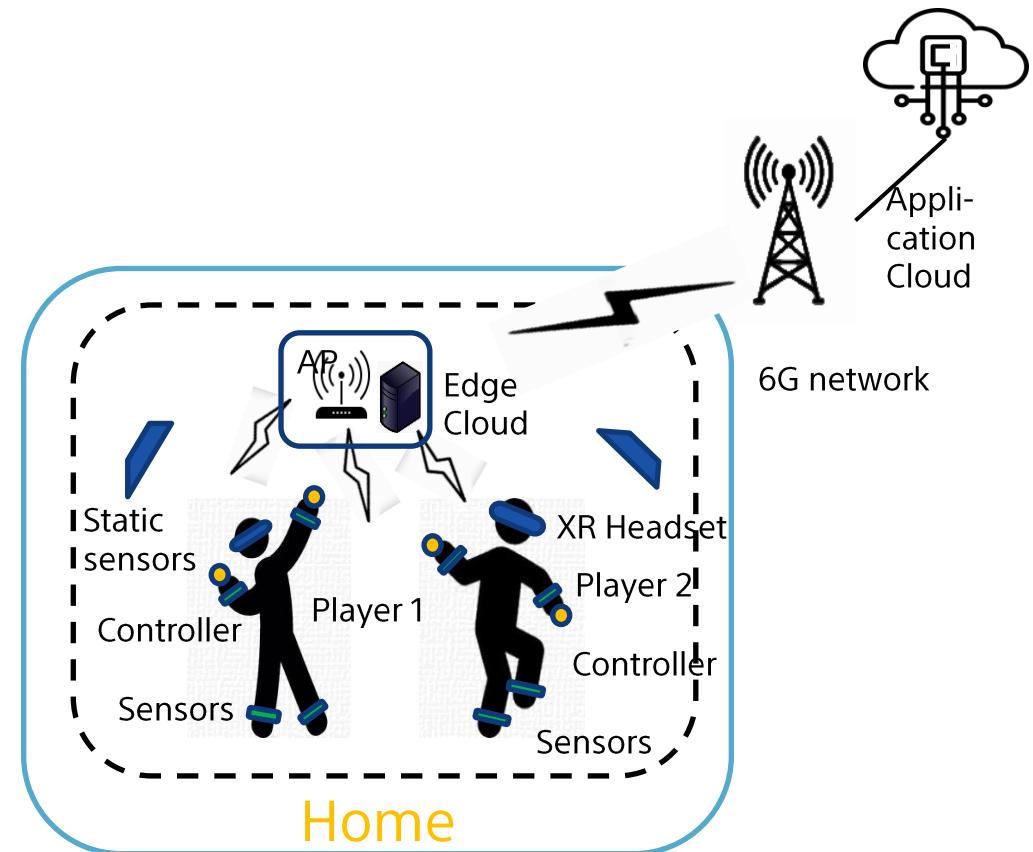
Thoughts on the SA1 6G study structure

- Regardless of the approach taken in structuring the 6G SA1 SI or SIs, we think that the outcome should be the same.
- However, what could be impacted in the various study approaches is:
 - time to complete the study: sequential events (first umbrella then BBs) have some risk of taking more time.
 - easiness of working: opening and working with a single huge TR has not been easy in the past and consolidation could be challenging.
- So:
 - A single SI and a corresponding single TR might result in something too complex, yet there could be ways to simplify things.
 - Starting with an Umbrella SI and then after a number of meetings, agree a reasonable number of BB SIs might require more time to get us to the point where we have some concrete material to share with downstream groups.
 - Starting with a combination of an Umbrella SI and some BB SIs might be the middle ground, but then looking at the work SA1 has delivered already in previous releases (of 5G-A), the question becomes what “topic” goes where.
 - Open to discuss other options ...

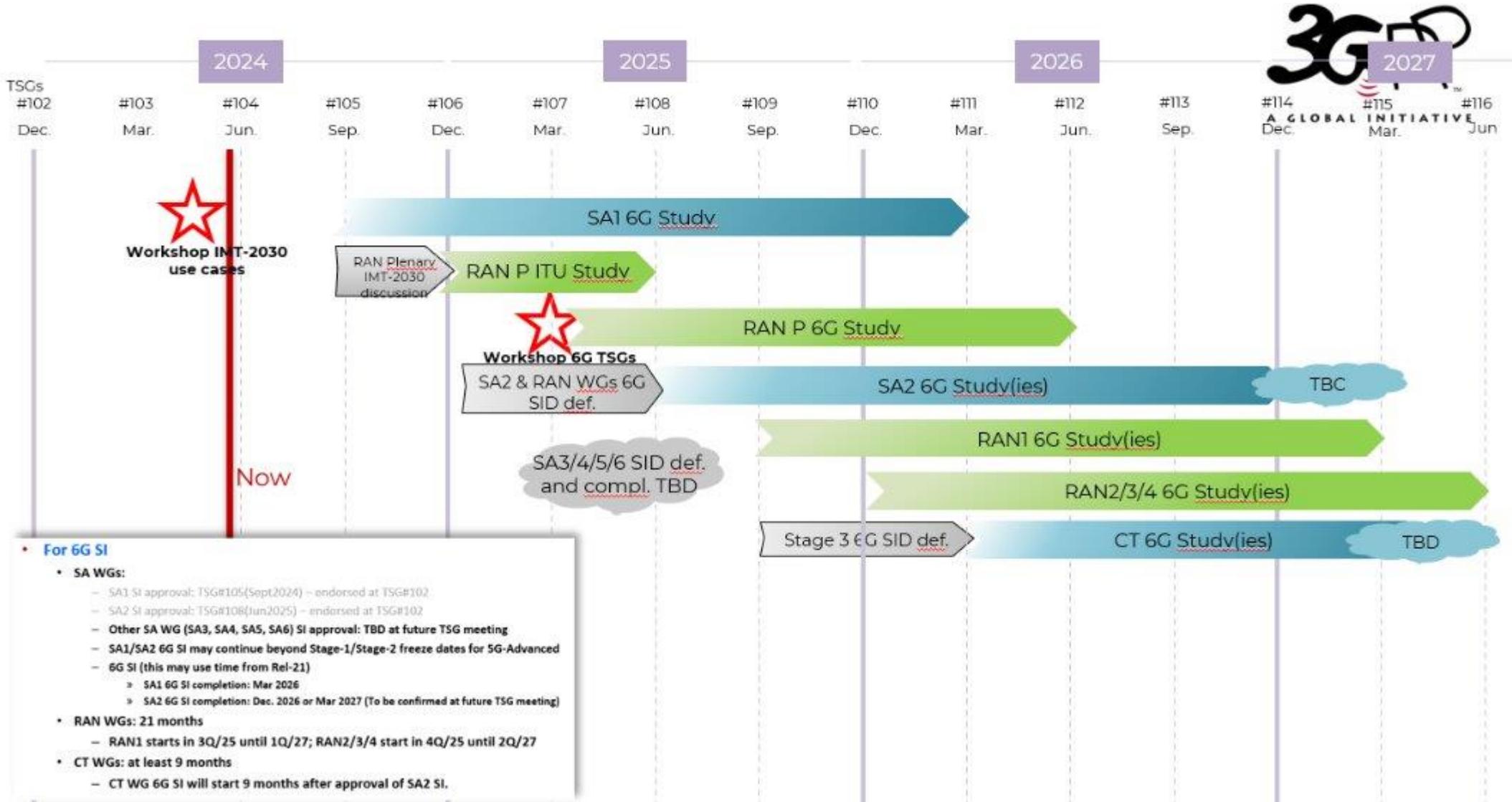
Use case example

Use case summary:

- A number of persons (gamers) play at home online interactive games.
- Players wear wireless head-mounted XR glasses as well as body (e.g. tracking movement) sensors. Furthermore, the room where gaming takes place could also be equipped with additional (static) wireless sensors that are used during the gaming session.
- (6G) Wireless connectivity is used to enable the communication among all devices (e.g. gaming console, XR glasses, controllers, body sensors and static room sensors) involved in the gaming session.



6G Study Time-line



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