**SA WG2 Meeting #168 S2-250xxxxv6**

**07 - 11 April, 2025, Goteborg**

**Source: Moderator**

**Title: Discussion on work areas of 6G SA2 study**

**Document for: Discussion**

**Agenda Item: 30.7**

**Work Item / Release: Rel-20**

*Abstract of the contribution:* *This paper discuss the work areas of 6G SA2 study.*

# 1 Discussion

Several input papers on the technique areas of 6G are submitted into SA2#168 and a summary is provided in the following link.

<https://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_168_Goteborg_2025-04/INBOX/DRAFTS/6G%20SID/6G%20Input%20Summary%20v2.xlsx>

Based on the input paper the moderator generates an initial set of work areas for SA2 6G study. It is proposed to discuss the initial set of work areas and figure out the contentious aspects that need further NWM discussion, and identify any missing aspects.

NWM discussion on the 6G SID is expected after SA2#168, from Apr. 15(Tue)-25(Fri), 2025. After the NWM discussion the moderator will provide a summary and a proposal of 6G SID for SA2#169 meeting.

The following are moderator proposals on the work areas and NWM questions

# 2. Work Area Descriptions

It is proposed to endorse the following WA for NWM discussion.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

## 1.0 System architecture requirement, principle and assumption

**Moderator proposal:**

|  |  |
| --- | --- |
| Work Area Description | Investigating architectural requirements, assumptions and principles for 6G system |

## 1.1 System Architecture

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study the overall architecture to support 6G RAN, taking into account the work done in the other work areas. This includes at least the following aspects:* Study and identify functionalities, NFs etc. that use 5GC NFs as basis and any potential enhancements.
* Study and identify functionalities, NFs etc. that need further study and that may be redesigned
* Study and identify new functionalities, NFs etc. to be added for supporting new features

Study how to achieve a harmonized RAN and CN functionalities split, e.g. to avoid duplication of functionality in 6G RAN and Core for UE tracking, paging and data buffering and etc, while delivering a high performance system. |

## 1.2 Migration and interworking

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study all aspects on migration and interworking for 6GS, including at least the following* Study how to interwork 6GS with legacy systems (i.e. 5GS, and potential EPS.)
* Study how to support migration from legacy systems (i.e. 5GS, and potential EPS).
 |

## 1.3 AI aspect

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study all aspects of AI in 6GS, including at least the following:* E2E AI based framework(i.e. AI for Network, Network for AI)
* Support of AI Agents
 |

## 1.4 Common Data framework

**Moderator proposal:**

|  |  |
| --- | --- |
| Work Area Description | Study common data framework for all aspects related to data handling including data collection, distribution, processing, storage and data access, with consideration of access control/user consent and privacy. The example of data may include data of AI and Sensing. |

## 1.5 Sensing

**Moderator proposal:**

|  |  |
| --- | --- |
| Work Area Description | Study the Common framework for all sensing modes and access technologies.NOTE: The relationship with 5GA sensing will be discussed at SA#108(Jun). |

## 1.6 Computing

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study potential enhancement on computing service in 6GS, including at least the following:* Coordination between UE and core network for computing services
* Exposure framework to offer computing service to authorized (third-party) applications.
 |

## 1.7 SBA enhancement

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study any potential enhancement on the SBA  |

## 1.8 NAS and other UE-Core network interaction

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study support for NAS for 6G for connectivity and beyond connectivity services, including at least the following:* how to enable the introduction of a new NAS functionality without impacting other NAS functionalities.
* how to identify a minimal set of NAS functionalities that does not get impacted by additional NAS functionalities

Study a common framework for support of operator services beyond connectivity services, over the user-plane, or via a new plane |
|  |  |

## 1.9 Network Slicing

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support network slicing in 6G, including at least the following aspects* How to support network slicing in 6G
* Interworking and mobility with 5G system on network slicing.
 |

## 1.10 QoS framework

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study any enhancement on QoS framework, including at least the following:* Extend QoS framework to support of new services
* Content awareness, elastic and agilely adaptive QoS framework
 |

## 1.11 User plane architecture

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study the need for any potential enhancement on the user plane architecture, including at least the following:* Study more flexible, efficient UP handling
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## 1.12 IMS enhancement

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study any potential enhancement on the IMS architecture, including at least the following:* IMS architecture simplification, including network elements convergence and signaling optimization.
* Support for legacy service, immersive service and Intelligent RTC services communication
 |

## 1.13 Distributed Autonomous Network

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support distributed and simplified networking in localized deployment |

## 1.14 User consent framework

**Moderator proposal:**

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| --- | --- |
| Work Area Description | User consent framework is expected to be studied in SA3 first and coordinated with SA2. |

## 1.15 Network Sharing

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support the network sharing in 6G, including at least the following:* Different network sharing architecture in 6G, e.g. MOCN, INS, and potential new.
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## 2.1 Sustainability and Energy Efficiency

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Sustainability and Energy Efficiency aspects will be discussed as part of architecture requirement, and has high dependency on the system architecture.Whether to have dedicated work area will be decided during the study. |

## 2.2 Cloud native

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Cloud native aspects will be discussed as part of architecture requirement, and has high dependency on the system architecture.Whether to have dedicated work area will be decided during the study. |

## 2.3 Robustness and Resiliency

**Moderator proposal:**

|  |  |
| --- | --- |
| Work Area Description | Robustness and Resiliency aspects will be discussed as part of architecture requirement, and has high dependency on the system architecture.Whether to have dedicated work area will be decided during the study. |

## 3.1 Legacy service

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support legacy services (e.g. voice, SMS, location services, MPS, Mission Critical services, PWS, etc.) in 6G.. |

## 3.2 Immersive service

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support immersive service in 6G, including at least the following* IMS enhancement to support immersive service
* QoS enhancement to support immersive service
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## 4.1 NTN

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support 6G NTN, including the following aspects:* Support of new 6G NTN RAT
* TN-NTN Service Continuity Enhancements
* Support enhancement of Core Network NFs onboard satellites
 |

## 4.2 Non 3GPP access

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study how to support non 3GPP access (e.g., Wi-Fi, wireline) and support multi-access data connections. |

## 4.3 6G IoT

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study all aspects to support 6G IoT.NOTE X: RAN aspects on 6G IoT depends on RAN progress |

## 5. System aspect for security

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Security aspects of the overall System are SA3 responsibility, SA2 activities and interactions on Security will be coordinate with the SA3.There is no need for dedicated work area for security. |

## 6. Network Exposure

**Moderator proposal:**

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| --- | --- |
| Work Area Description | Study a unified network exposure framework to foster API economies of scale |

## 7. Policy framework

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| --- | --- |
| Work Area Description | Study potential enhancement on policy aspects related to UE and CN  |

## 8. Other aspects (single company proposal)

The following aspects are proposed by single company.

**Moderator proposal:**

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| --- | --- |
| Work Area Proposal | No need for dedicated work area on these aspects |

|  |  |  |  |
| --- | --- | --- | --- |
| SK TELECOM | 6 | Background  | Potential objectives/WTs related to,1. Explore mechanisms for the UE to indicate whether a session is background or foreground in a standardized or harmonized manner.2. Investigate how this information could be considered in access control decisions, URSP selection, slicing preferences, and other traffic-handling policies.3. Examine benefits for UE OS, including improved power efficiency, user experience control. |
| SK TELECOM | 5 | Observability / Visibility | Potential objectives/WTs related to, 1. How to provide observability of NFs. How to bring inter/intra NF monitoring for accurate real-time diagnosis.2. How to improve the accuracy of analysis based on internal and external NF/system information.3. How to refine the control and execute (closed-loop) based on analytical results.4. How to measure, monitor and/or gather different NF status including state-transition, changes of normal/abnormal behaviours efficiently |
|  |  |  |  |
| NTT DOCOMO | 8 | Access integrations | -Indoor coverage support |
| LG ELECTRONICS  | 4 | Support of Mobile RAN(e.g. Advanced Air Mobility (AAM), Vehicle Mounted RAN (vmRAN)) | The following objective can be considered to support Mobile RAN (e.g. Advanced Air Mobility (AAM), Vehicle Mounted RAN (vmRAN)):1)  Configuration of Mobile RAN2)  Authorization of Mobile RAN3)  Location service procedures for accurate UE location estimation when it is served by Mobile RAN4)  Control of UEs’ access to Mobile RAN5)  Support of the mobility for UEs moving together with Mobile RAN6)  Support of UE's emergency services when connected via a Mobile RAN |
| ETRI, SK Telecom, KT, LG Uplus | 7 | 6G Architecture for Deep Semantic Communication (DSC) | Providing a framework for 6G DSC(Deep Semantic Communication)Key Work Tasks include defining – 1.AI Model Repository Function for AI model as Semantic Knowledge2.QoS Profile Influence on Source Coding |
| InterDigital Canada | 5 | Identity Layer | Study to support the ability to Identity, authenticate, and authorize applications and human users of the UE. |

# 2. NWM question Proposals

It is proposed to endorse the following NWM questions for each work area for NWM discussion.

Q1: Should this work area be included in objectives of SA2 6G SID?,

If the answer is yes, then provide answer to the following (Q2-Q6)

Q2: Which of the proposed aspects do you support for the study?

Q3: Which of the proposed aspects do you not support for the study?

Q4: Which proposed aspects should be reworded?

Q5: Which aspects should additionally be studied?

Q6: What dependency does this work area have? (with other work areas and/or with other WGs)

# 3. Annex - Company input

See S2-2504139