FS_XRApp:
KI, solution discussion and work plan

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Outline

- KI and solution discussion (55min)

  - Support multi-modal service in SEALDD(S6-240199?)

  - Multi Modal App Transfer

  - Multi Modal SEALDD Policy Config

  - Policy Based Multi Modal SEALDD Flow Establishment

  - Support multi-modal QoS measurement and exposure in SEALDD (S6-240200)

  - FS_XRAPP- discussion(including two new KIs)

- Recap of work plan and Update of the TU estimation (5min)

Contentious topic 1: Multi-modal flows

- As defined in TS 23.501 clause 5.37.2, Policy control enhancements to support multi-modal services, A multi-modal service is a communication service that **consists of several data flows that relate to each other and that are subject to application coordination**. The data flows can transfer different types of data (for example audio, video, positioning, haptic data) and may come from different sources(e.g. a single UE, a single device or multiple devices connected to the single UE, or multiple UEs).

- Multi-modal flows in single UE
  - Mutli-modal flows from single client
  - Mutli-modal flows from multiple client

- Multi-modal flows from multiple devices
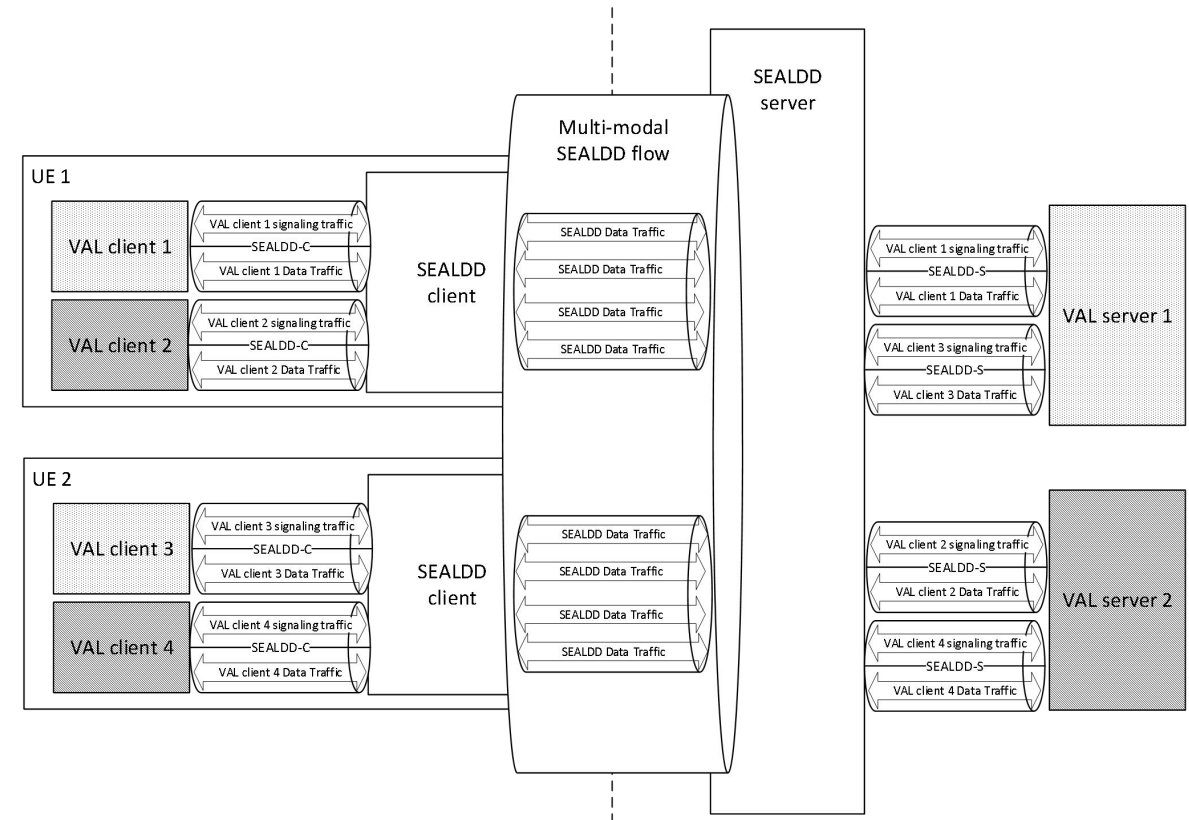
# Contentious topic 2: dealy related E2E KPI

- E2E delay(S6-240264):
  - Definition: End-to-end delay refers to the total time it takes for a data packet to travel from the source to the destination in a networked communication system.
  - Delay composition: Transmission delay and application processing

- Delay difference(S6-240154):
  - Definition: The time elapsed for the first arrived flow to await other related flows
  - Delay composition: This latency is typically caused by the varied routing paths for different flows.

- Crossflow delay (MTP latency?)(S6-240261):
  - Definition: the time it takes for an input action, such as a button press or movement of a controller, to be translated into a visual response on a display, such as a monitor or VR headset.
  - Delay composition: This latency includes the time it takes for the movement of your head to be detected by sensors, processed by the system, and for the visual feedback to be displayed on a screen.
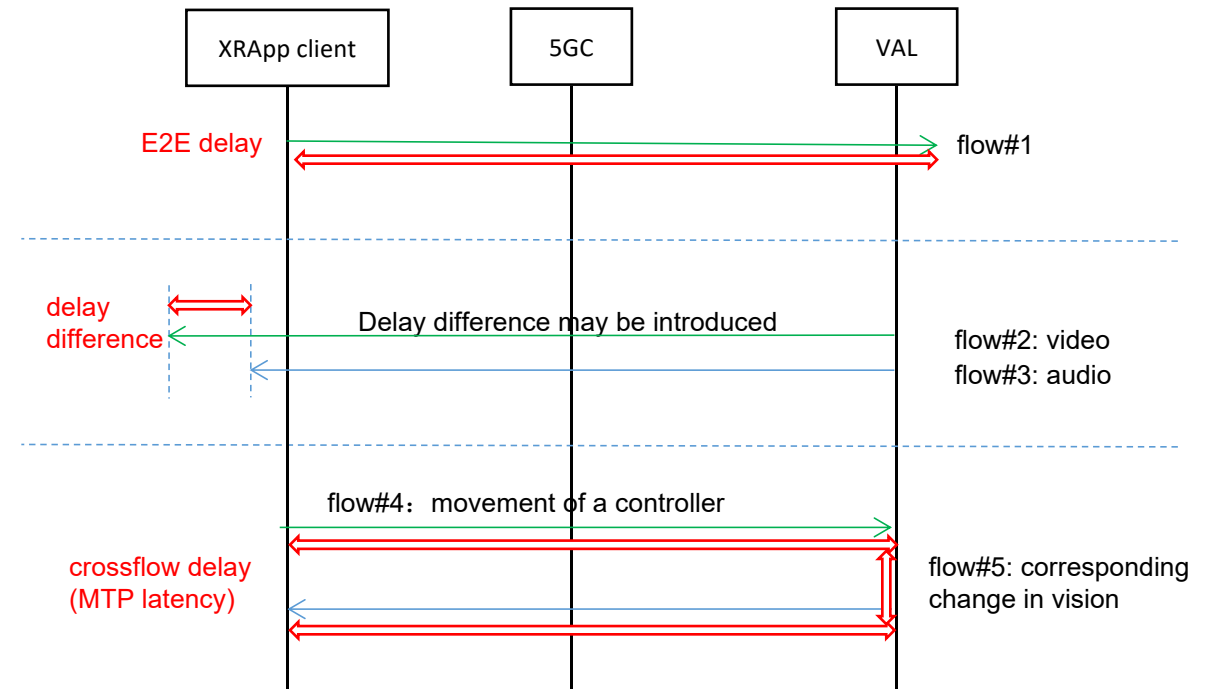
New KI on architecture enhancement

☞ Current Architecture:

- The XRApp can be deployed as functionality component of the SEALDD, then the architecture for SEALDD is applicable to XRApp.

☞ XR features:

- It could utilize **3GPP access** (e.g. PC5) or **non-3GPP** access (e.g. WiFi, Bluetooth) or via PIN communication.
- The device could be 5G UE or **tethered UE.**
- **Multiple participants** could have a consistent immersive impression.
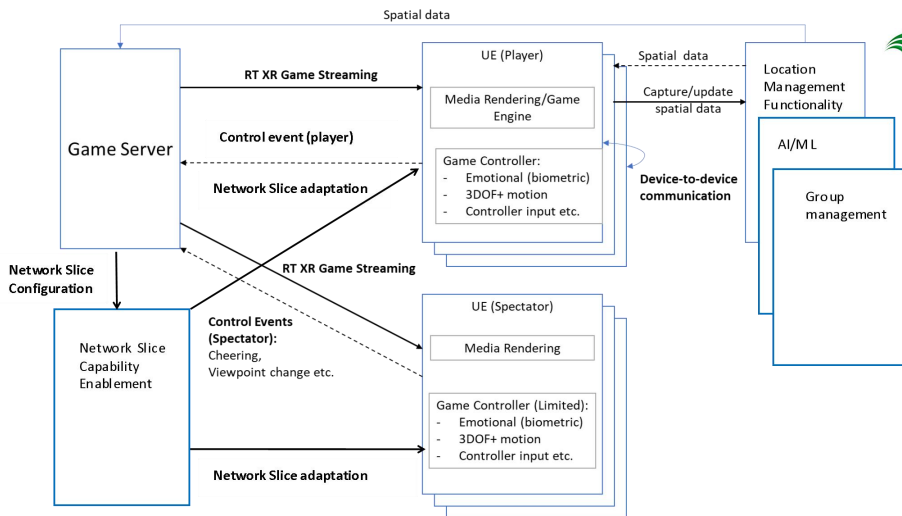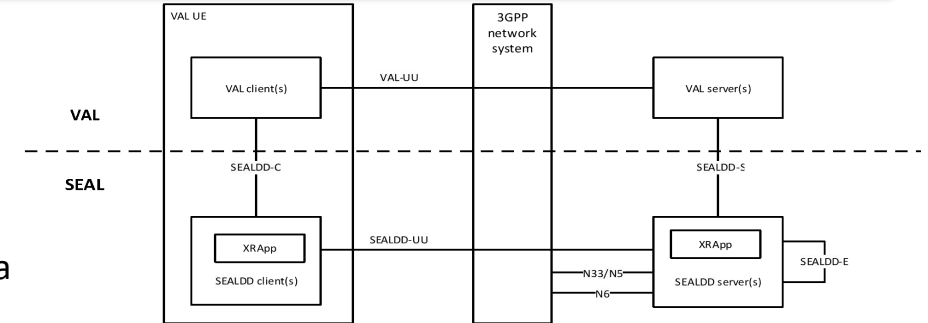
☞ Potential Gap:

- Easy access for XR service provider.
- Enhancement to support the UE direct communication, and tethered UE.
- Jointly optimize transmission for XR services: SEALDD, NSCE, PINAPP, 5GFLS, can be utilized to jointly optimize transmission for XR services. For example: for online AR Gaming, A geofenced area may be used as the game arena for an AR gaming, with support from
  - Network Slice Capability Enablement for network provisioning,
  - Location management for location registration and update, and
  - a Group management for identifying and matching players.
  - AI/ML may be required for Image & Object Recognition.

New KI on architecture enhancement

🖙Proposal : A new KI with open issue:

- Whether and how the application enablement architecture could support the tethered UE? Including support direct connection between the UEs.
- Whether and how the application enablement architecture could support multiple VAL server coordination.
- Whether and how the application enablement architecture could support the XR services taking advantage of the capability of SEAL/SEALDD layer functionalities.
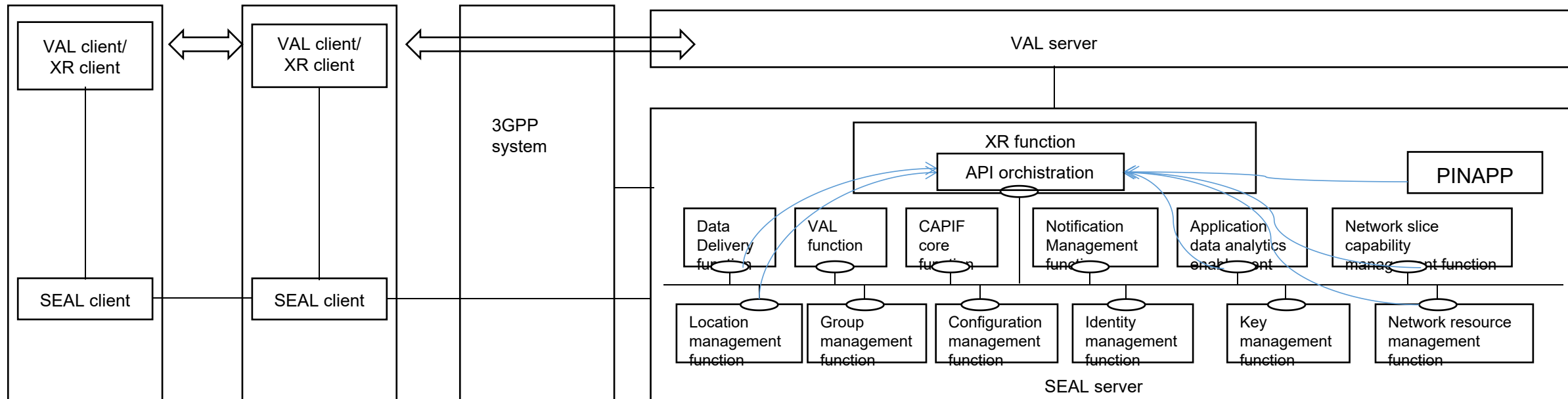
New KI on support the tethered UE

In order to fulfil the end-to-end QoS requirements for the AR glass session, the consumer need to acquire the tethering link status via measurement tests or empirical values, and takes it into account when determining the QoS for the 5G system link. With the tethering link status, the application enablement layer may communicate with AF for dynamic QoS policy adjustment accordingly.

Open issues Proposal:

- Whether and how the application enablering layer to identify traffic flows from the tethered devices behind the UE.

- Whether and how the application enablering layer to support the acquisition of tethering link status via measurement tests or empirical values, considering different type of the tethered UE(standalong tethered device, or wire/wireless tethered device).

- Whether and how the PINAPP could be utilized to support the tethered UE.
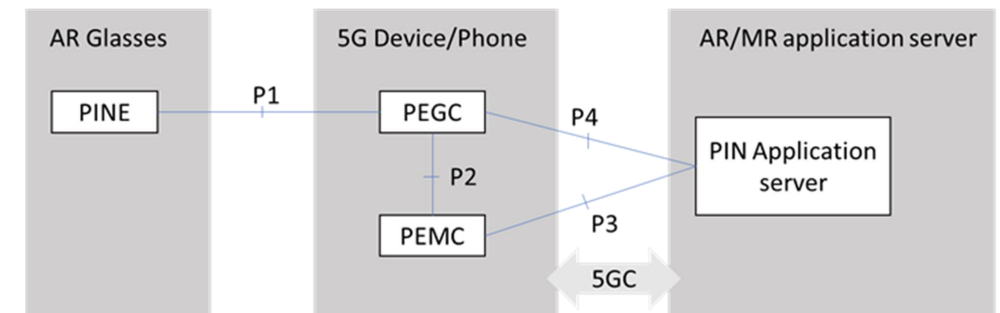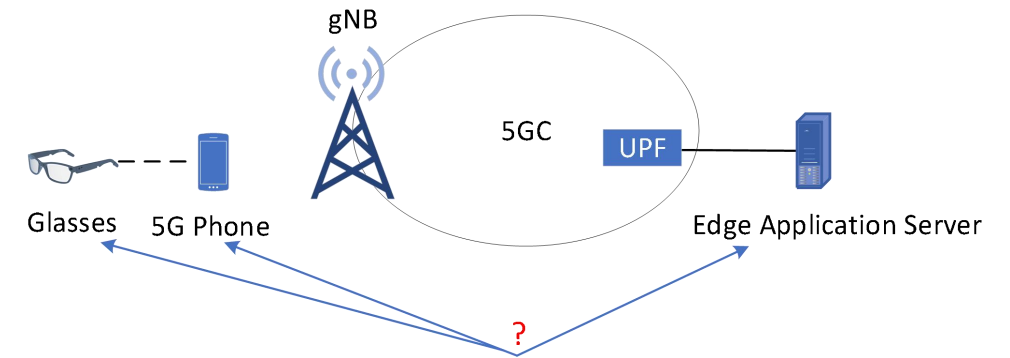
FS_XRApp(SID) TU planning

Meeting	TUs Planned		Work Planned	Completion rate	TUs Consumed	Work Completed
	SID	WID				
SA6#57 (Oct-23)	-	-	SID Approval		-	SID Approval completed
SA6#58 (Nov-23)	0.5 TU	-	Skeleton, introduction, scope and Key Issues	SID: 10%	0.5 (SID)	Skeleton, introduction, scope, and 2 Key issues agreed
SA6#59 (Feb-24)	1.0 TUs	-	Key Issues, Architecture Requirements, Architecture , Business Models, Solutions	SID:20%	1.5 TU(SID)	Key Issues, Architecture Requirements, Architecture , Business Models
SA6#60 (Apr-24)	1.0 TUs	-	Key Issues (Freeze), Architecture, Architecture Requirements, Solutions, Solution evaluation	SID:50%?		
SA6#61 (May-24)	1.0 TUs	-	Solutions, Solution evaluation and Conclusions. Send for Information. WID proposal	SID:80%?		
SA6#62-Adhoc-e (Jul-24)	0.5 TUs	1.0 TUs	Finish Solution Conclusions, Send for Approval Begin Normative work (Architecture and Solutions, Business Relationships)	SID:100%? WID:10%?		
SA6#62 (Aug-24)	-	1.0 TUs	Architecture and Solutions	WID:40%?		
SA6#63 (Oct-24)	-	1.0 TUs	Architecture and Solutions	WID:70%?		
SA6#64 (Nov24)	-	1.0 TUs	Complete unfinished work, Send for Approval.	WID:100%?		
Total	4 TUs	4 TUs			1.5 TUs	

Updated TU Estimation

Meeting	Original TU Plan		Updated TU Plan	
	FS_XRApp (SID)	XRApp(WID)	FS_XRApp (SID)	XRApp(WID)
SA6#58 (Nov-23)	0.5 TU	-	0.5 TU	
SA6#59 (Feb-24)	1.0 TUs	-	1.0 TUs	
SA6#60 (Apr-15)	1.0 TUs	-	2.0 TUs	-
SA6#61 (May-20)	1.0 TUs	-	2.0 TUs	-
SA6#62-Adhoc-e (Jul-10)(TBD)	0.5 TUs	1.0 TUs	1.0 TUs	1.0 TUs
SA6#62 (Aug-19)	-	1.0 TUs	-	1.5 TUs
SA6#63 (Oct-14)	-	1.0 TUs	-	1.0 TUs
SA6#64 (Nov-18)	-	1.0 TUs	-	1.0 TUs
Total	4TUs	4 TUs	6.5TUs	4.5TUs
	8TU		11 TUs	

Summary

- TU Estimation Updated

- More Key Issues and solutions are welcomed.

- Suggested Work Plan
  - SA6#60 (target: 50% complete)
    - Get Key Issues freezed.
    - As many solutions approved as possible.