



The Standards People

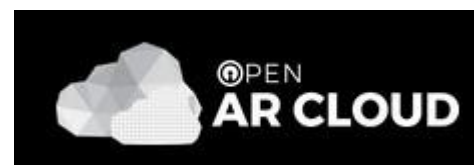
ETSI Industry Specification Group ARF: Building interoperability for AR systems

ISG ARF Leadership Team

Objectives and results

- ✔ To define a framework for the interoperability of AR components, systems and services, in order to reduce market fragmentation and enable providers to offer components of complete AR solutions
- ✔ To encourage an ecosystem with a diverse range of solution providers including smaller players, new entrants and academics
- ✔ Publication of a modular functional reference architecture for AR solutions with interoperability provided at the interfaces between building blocks
 - ✔ An important step towards greater interoperability for AR (and more generally XR)
 - ✔ The focus is on interfaces, defining requirements enabling interoperability between building blocks and APIs

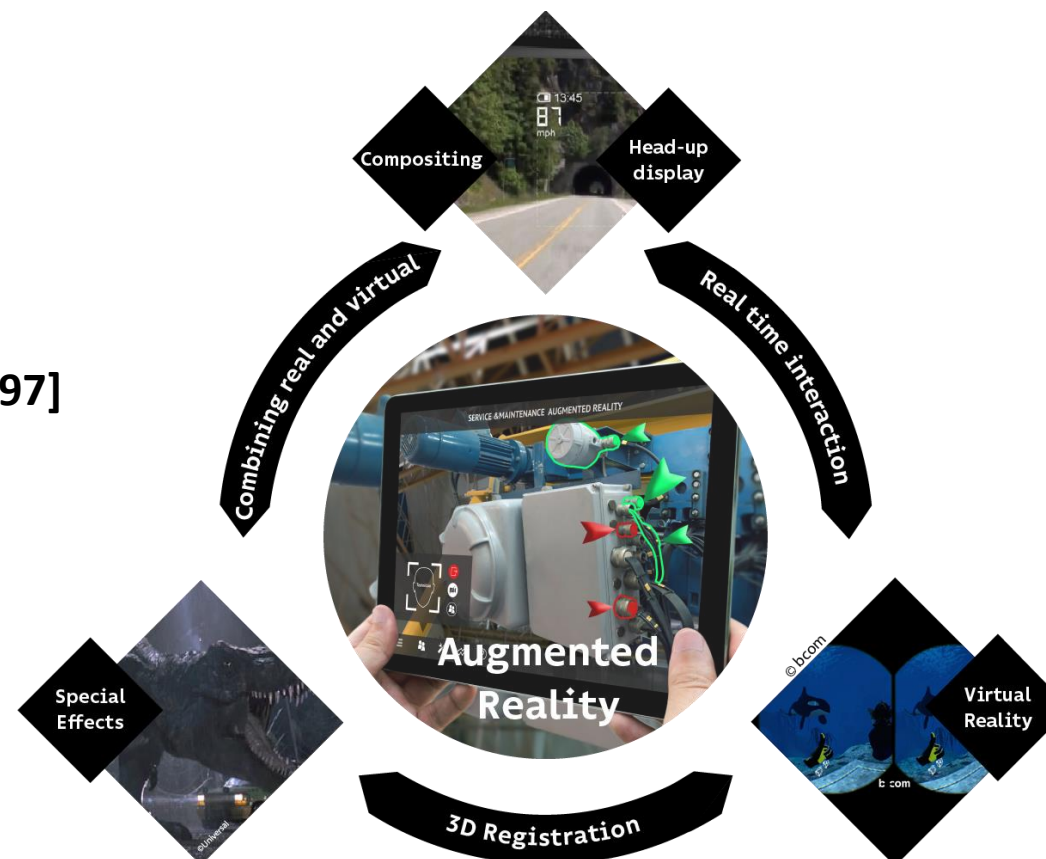
ISG ARF membership - February 2023



Definition of Augmented Reality

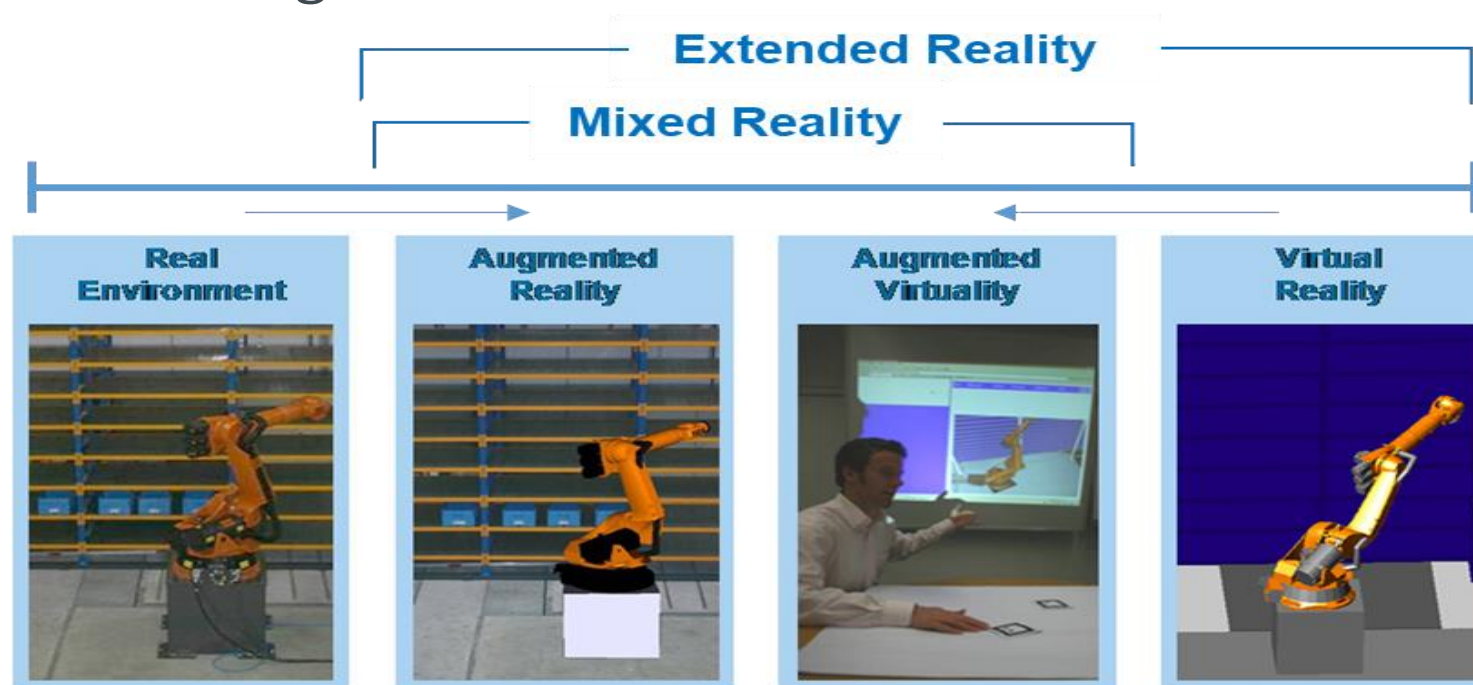
- ✓ Augmented Reality (AR) is the ability to mix in real-time spatially-registered digital content with the real world.
- ✓ Combines real and virtual world
- ✓ Interactive in real-time
- ✓ Registered in 3D

[Augmented Reality - Azuma, 1997]



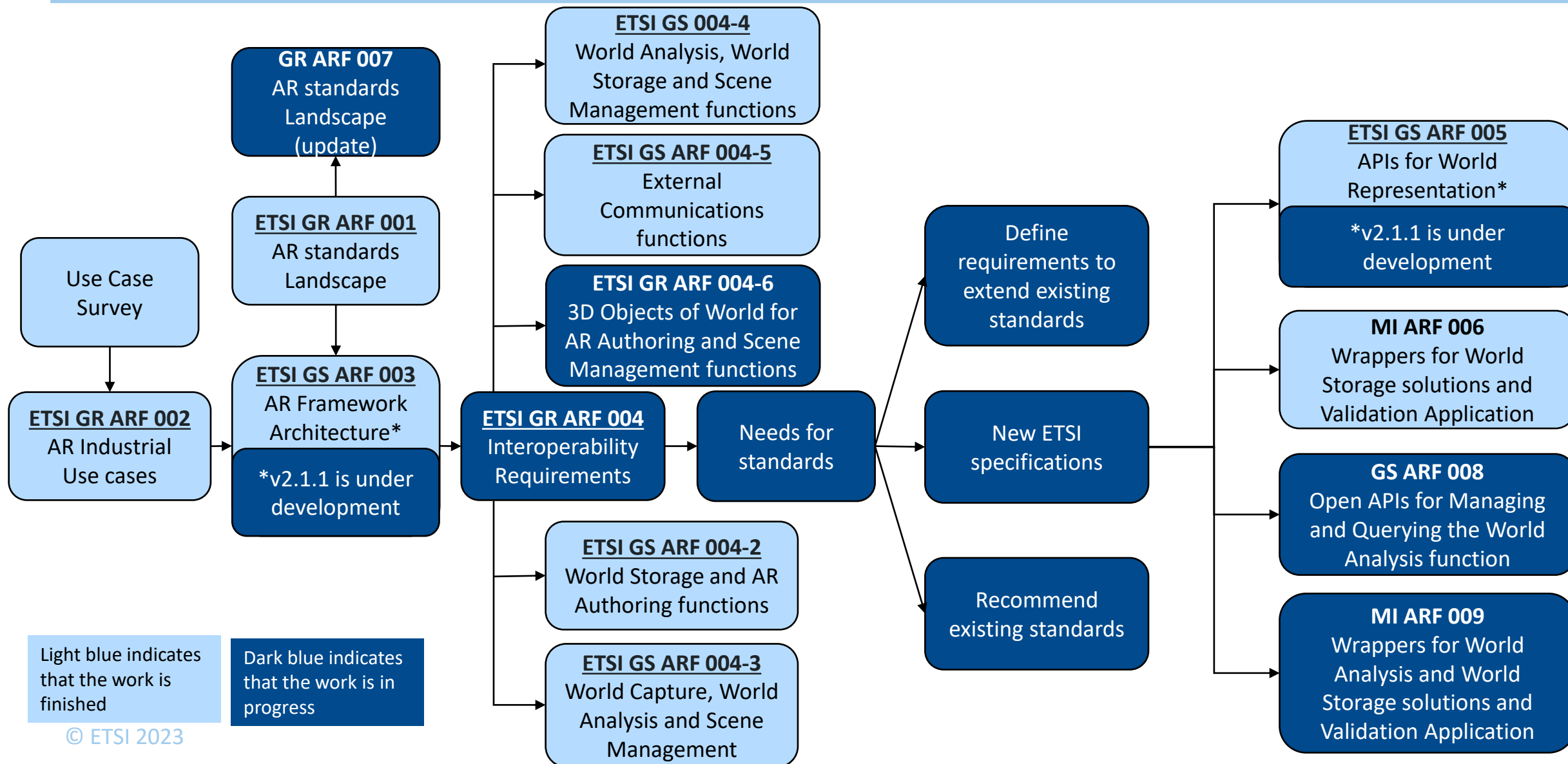
Scope of xReality

- ✎ **eXtended Reality (XR)** is the umbrella term used for Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), as well as all future immersive technologies.

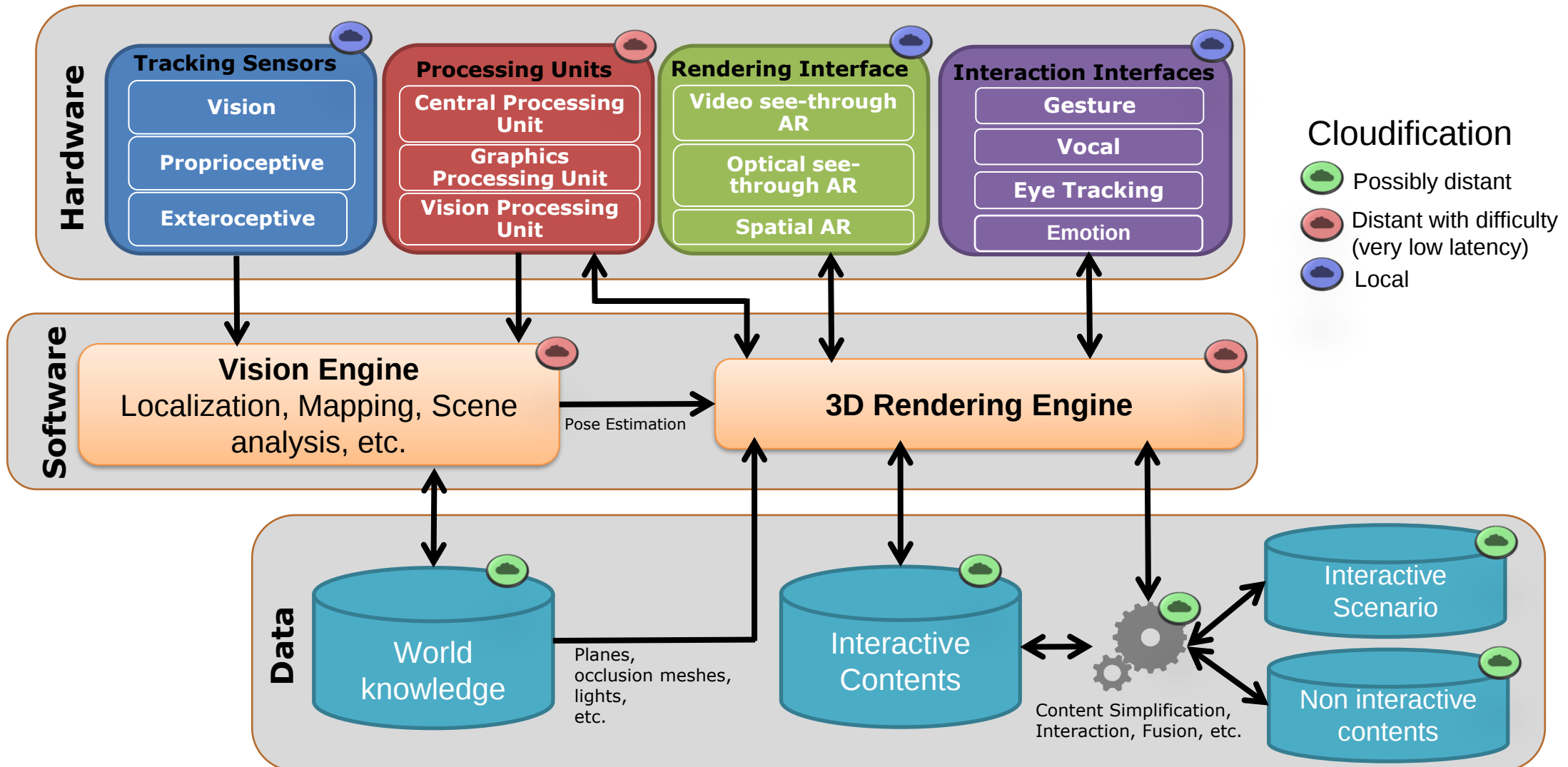


[Reality-Virtuality Continuum - Milgram, 1994]

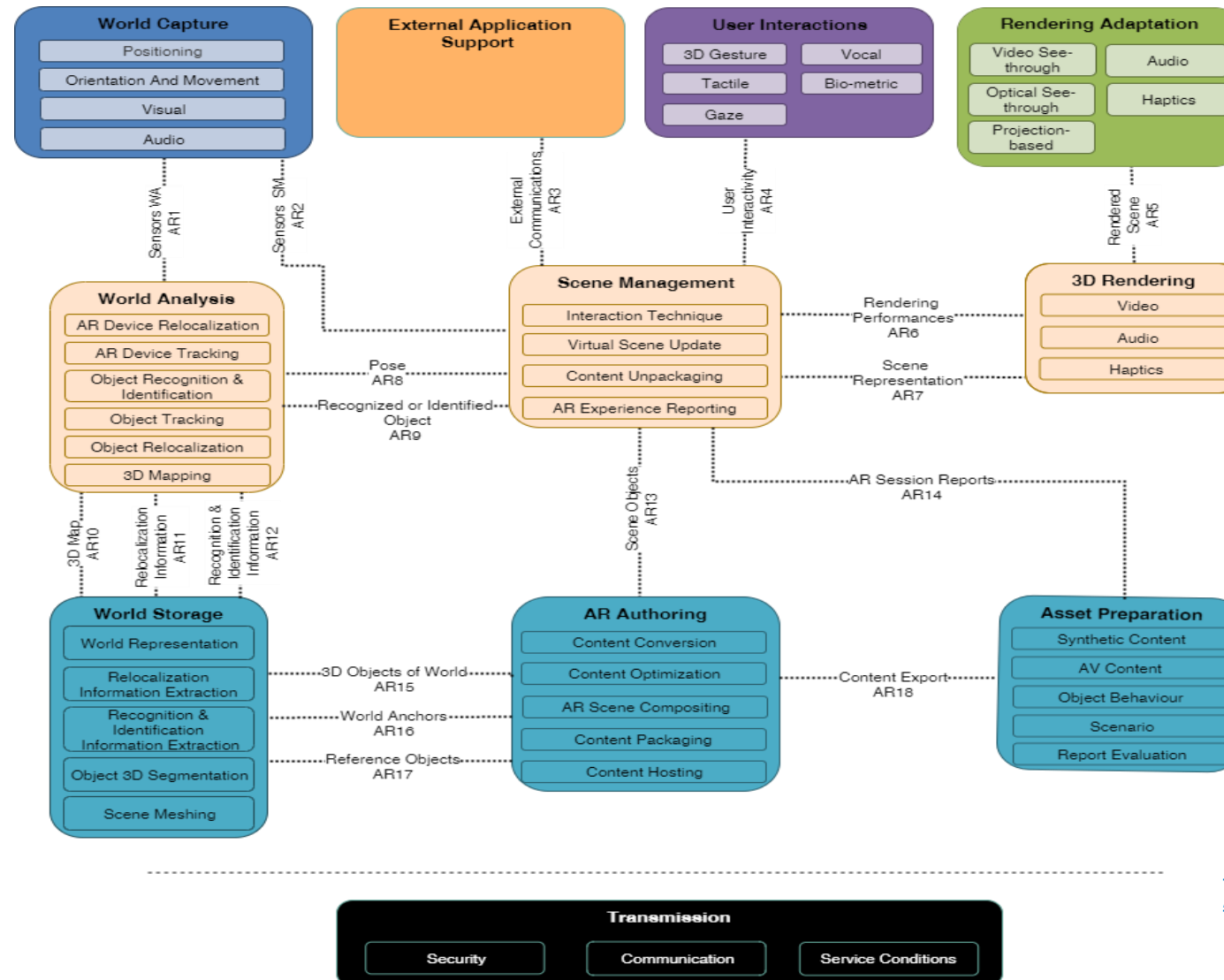
ISG ARF Work Structure



Global overview of the architecture of an AR system

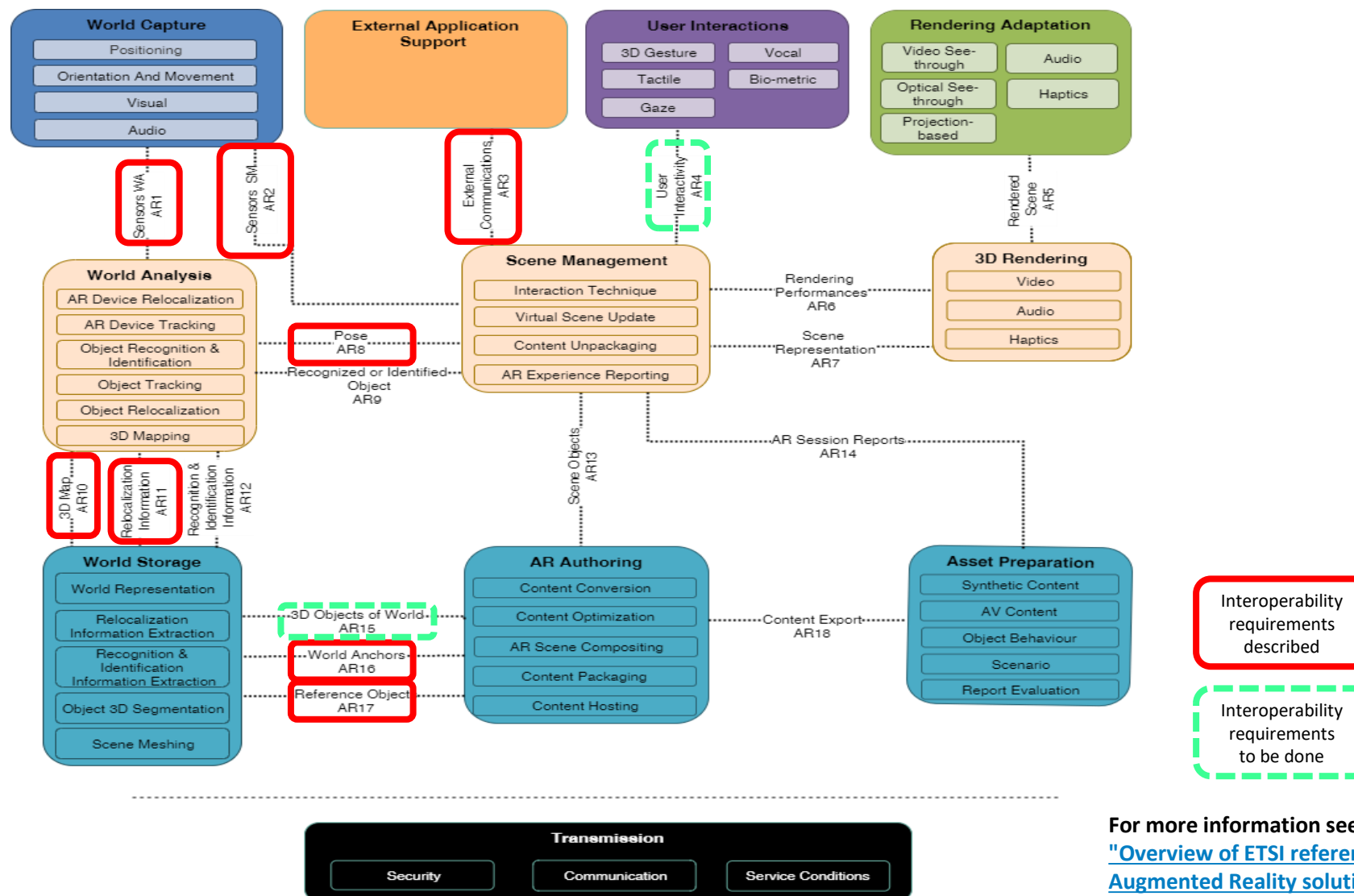


ISG ARF functional reference architecture



For more information see the webinar:
["Overview of ETSI reference architecture for Augmented Reality solutions"](#)

Development of interoperability requirements



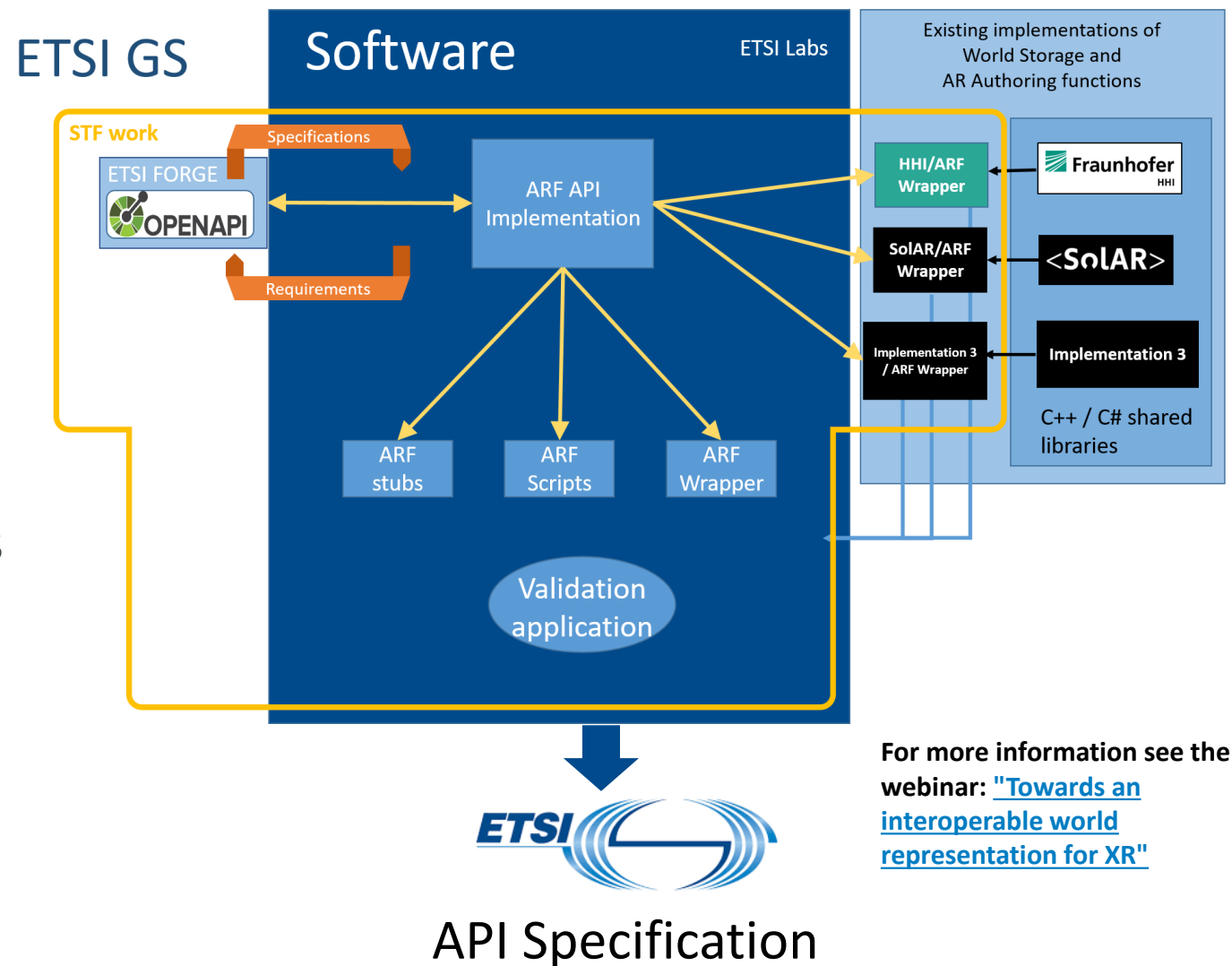
Published Deliverables

- ✓ Standards Landscape: the role of existing standards relevant to AR [ETSI GR ARF 001 v1.1.1](#)
- ✓ Industrial use cases for AR applications and services [ETSI GR ARF 002 v1.1.1](#)
- ✓ Reference architecture for AR solutions [ETSI GS ARF 003 v1.1.1](#)
- ✓ Interoperability Requirements; Overview [ETSI GR ARF 004-1 v1.2.1](#)
- ✓ Interoperability Requirements for World Storage and AR Authoring functions [ETSI GS ARF 004-2 v1.1.1](#)
- ✓ Interoperability Requirements for World Capture, World Analysis and Scene Management [ETSI GS ARF 004-3 v1.1.1](#)
- ✓ Interoperability Requirements for World Analysis, World Storage and Scene Management functions [ETSI GS 004-4 v1.1.1](#)
- ✓ Interoperability Requirements for External Communications [ETSI GS ARF 004-5 v1.1.1](#)
- ✓ Open APIs for the Creation and Management of the World Representation [ETSI GS ARF 005 v1.1.1](#)

World Representation APIs - Implementation Driven Standards Development



- ✔ Iterative process
- ✔ Initial specification of the APIs
- ✔ Implementation of the APIs as Open Source
- ✔ Testing/validation on existing implementations through the development of dedicated wrappers and use cases
- ✔ Publication of an implementation-independent specification (see [ARF GS 005 v1.1.1](#))



Coordination and collaboration are key

Partnering with a range of organisations to coordinate efforts for the benefit of the XR ecosystem



By individual membership of participants



MoU in place



The Standards People



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Do get involved!

- ✓ More information: <https://www.etsi.org/committee/1420-arf>
- ✓ ISG ToR : [Terms of Reference](#)
- ✓ If your company is **an ETSI member** just register to any ISG ARF meeting
- ✓ If your company is **not an ETSI member**, you can participate after signing the [ARF participant agreement](#)
 - ✓ Access to ISG ARF documentation, subscription to mailing list and participation to online conference calls are free
 - ✓ There is a small fee per day per plenary meeting (F2F/online participation)

THANK YOU