

Terms of Reference (ToR) for ETSI ISG Augmented Reality Framework (ISG ARF)

Approved by the Director-General on **9 October 2023** following Board#144 consultation

Scope

The purpose of the ISG ARF is to define a framework for the interoperability of Augmented Reality (AR) components, systems, and services. The framework under development will be referenced as “AR framework” in the present document. It defines an overall functional reference architecture, identifying key components and interfaces for an AR solution. The AR framework will allow AR components from different providers to interoperate through the defined interfaces. This will in turn limit vertical silos and market fragmentation and enable players in the ecosystem to offer part(s) of an overall AR solution.

The main objectives of ISG ARF are:

- to ensure that Augmented Reality services and platforms will be easier to design, deploy and operate than today taking into account the support of 5G mobile networks, edge computing, and the advent of the Metaverse and Digital Twin platforms,
- to enable the development of high-performance Augmented Reality components which are portable between different hardware vendors, and different providers of software solutions and platforms,
- to achieve the co-existence of legacy and proprietary platforms whilst enabling an efficient migration path to fully interoperable new generation augmented reality platforms.

ISG ARF will acknowledge the work of relevant standardization bodies and open-source communities already developing technical solutions for AR and will ensure consistency with other activities in ETSI, for example with regards to IoT, edge computing, and 5G.

Areas of activity:

ISG ARF continues its activities on the deviation of interoperability requirements from the published AR architecture framework GS ARF 003 and on the development of interface specifications for reference points that are located between the building blocks of the architecture framework.

List of already published specifications regarding interoperability requirements:

- GS ARF 004-2: requirements between World Storage and AR Authoring
- GS ARF 004-3: requirements between World Capture, World Analysis and Scene Management
- GS ARF 004-4: requirements between World Analysis, World Storage and Scene Management
- GS ARF 004-5: requirements between Scene Management and External Application Support

List of working areas in addition to the ones mentioned above:

- Requirements between User Interaction and Scene Management
- Requirements between World Storage and AR Authoring

Regarding the work of interface specifications represented as APIs, the group already published GS ARF 005 dealing with the interfaces to the World Storage function. An Open API specification is available by ETSI Forge. A new activity covers the interface specification for the World Analysis function that is required to track elements in the real world and to determine the actual position of an AR system in the real world.

Additionally, the ISG will update and revise the ARF initial group report on the AR standards landscape published in April 2019 as GR ARF 001v1.1.1 by writing a new report based on the functional reference model defined in GS ARF 003.

The group also aims to investigate the usage of the functional reference architecture in connection with Digital Twin systems for the benefit of several use cases in e.g., industry, retail, tourism, or smart cities:

- Usage of Digital Twin data to recognize and track the real-world counterpart of an AR system.
- Augmentation of Digital Twin data by information delivered by an AR system.
- Identification of the relevant building blocks of the architecture framework to allow collaboration between an AR and a Digital Twin system.

The workplan of the ISG is summarised in figure 1 below.

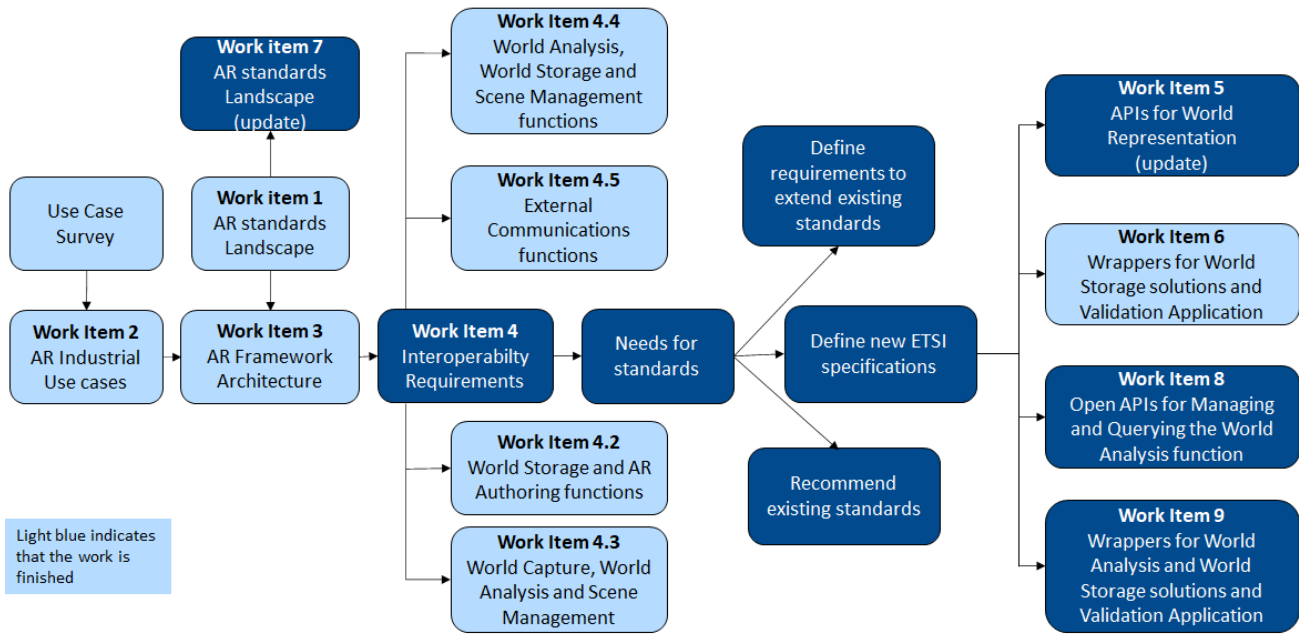


Figure 1: ISG ARF Workplan

ANNEX (Informative): Collaboration with other bodies

ISG ARF will set-up the appropriate communication channels to groups both within and outside of ETSI.

ETSI groups

- ISG MEC
- EPP 3GPP/SA4-Codec
- ISG CIM
- TC SmartM2M
- EPP oneM2M

External Groups

- IEEE
- ISO MPEG
- W3C AR Community Group
- ITU-T
- Khronos
- The AREA
- Open AR Cloud
- Metaverse Standards Forum (by individual membership)