

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

Approved by the Director-General on **24 September 2021** following Board#134 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 siloes 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 advent of 5G networks and edge computing,
- 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 foster 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 published the first version of the AR framework in March 2020 and has been working on developing a set of interoperability requirements for AR components, systems and services. The ISG ran a survey amongst its members to establish the list of Reference Points identified as high priority for achieving interoperability and of most interest to the group members. The first set of interoperability requirements between the World Storage and AR Authoring functions was published in July 2021 as GS ARF 004-2. Work will continue on other Reference Points identified by the group as high priority and the results will be published as additional parts of GS ARF 004; however not all Reference Points may be addressed.

The ISG will update and revise ARF initial group report on AR standards landscape 1.1.1 published in April 2019 as GR ARF 001, by mapping the identified standards to the functional reference model defined in GS ARF 003. Having ETSI GS ARF 003 as the foundation for the updated standards landscape will ensure that the European-developed reference model is widely accepted. Furthermore, as a result of the breadth and depth of the ETSI ISG ARF functional reference model, SDOs and other stakeholders in the AR industry will be able to use the updated standards landscape for their development in confidence.

Based on the standards landscape group report, relevant standards will be mapped onto the reference architecture. The set of interoperability requirements will be used to identify interfaces that are essential to achieve interoperability. The combination of both activities will ensure to focus specification work on these interfaces.

Where existing standards have been identified and fulfil the interface requirements, they will be referenced by the AR framework.

Where existing standards have been identified but extensions are required, the requirements will be contributed to the corresponding standards organisations where appropriate.

Where interfaces in the reference architecture have been identified as key interoperability points but no standards could be identified, new technical specifications relating to APIs, interfaces or data models will be developed within ETSI or in external groups if deemed more appropriate.

ISG ARF launched a call for expertise in July 2021 to set up a Specialist Task Force to accelerate the specification of the APIs to the World Storage function by following an implementation-driven standardization approach. The World storage function is responsible for storing information that is required to track elements in the real world and to determine the actual position of an AR system in the real world. This implementation-driven standardization approach will use open source software development to support the API development and ensure that the APIs are complete and validated with several implementations at the time of their publication. The STF is expected to start work by the end of September 2021.

The workplan can be summarised in figure 1 below.

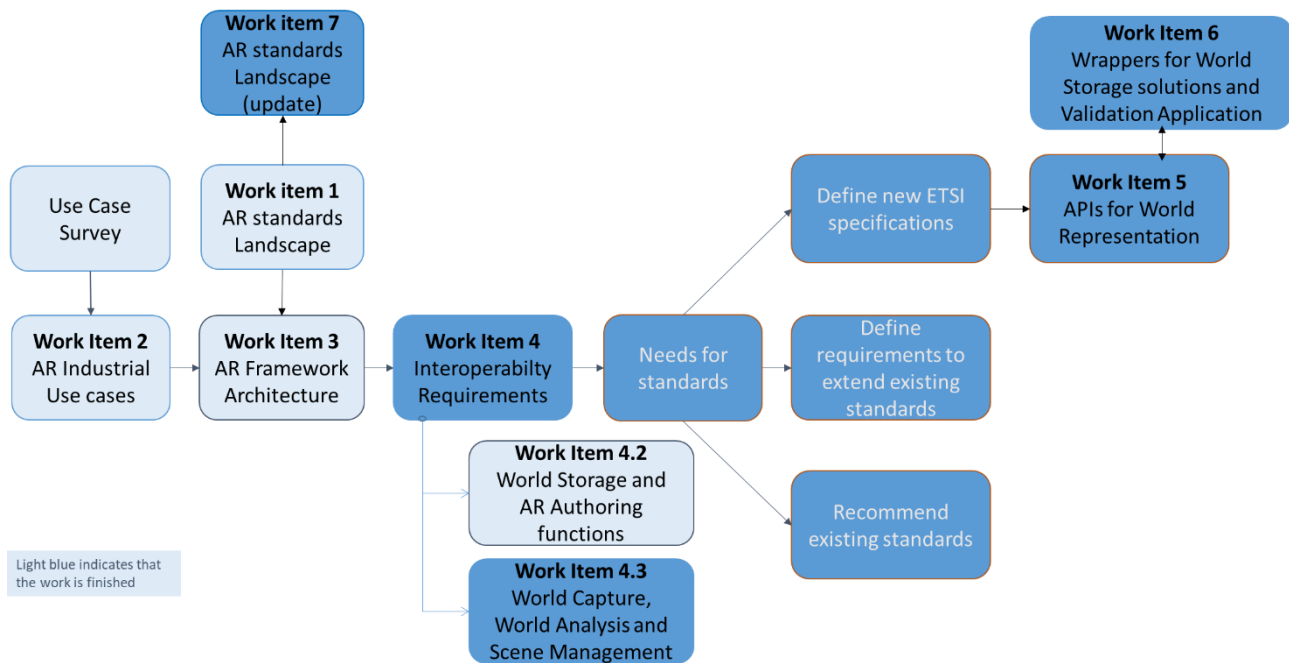


Figure 1: ISG ARF Workplan

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

- ETSI ISG MEC
- 3GPP/SA4-Codec

External Groups

- IEEE
- ISO MPEG
- W3C AR Community Group
- ITU-T
- Khronos
- The AREA
- OpenAR Cloud