

**Terms of Reference (ToR) for
ETSI ISG “5th Generation Fixed network” (ISG F5G)**

Approved by the Director-General on **10 December 2019**, following ETSI Board consultation

Scope

ISG F5G aims to document the 5th generation fixed network including:

- identifying the overall characteristics of the 5th generation fixed network,
- exploring all relevant F5G scenarios and related use cases that may include (*but are not limited to*) home, business and multiple vertical industries,
- performing a gap analysis to identify the necessity for both enhancements to existing technology specifications and developments of new technology specifications where required,
- studying the overall framework, outlining the complete F5G technology landscape.

The principal technical and performance characteristics of the distinct fixed network generations from F1G to F5G should be documented through investigating the historic and future evolution of the fixed network, including transport, access and in-premises networks. Each generation is identified through a number of key characteristics such as use cases, technology, and performance.

The further evolution of the fixed network creates a new era of opportunities by extending fibre to the home to fibre to other scenarios, such as to business and to vertical industries.

- For home scenarios, emerging services such as Cloud VR (virtual reality) and AR (augmented reality) video streaming, online gaming, etc., introduce the necessity for ultra-broadband, extremely low latency and zero packet loss.
- Business scenarios such as enterprise Cloudification, leased line, POL, etc., require high reliability and high security.
- Vertical industry scenarios have specific requirements on the deployment of fibre infrastructures including environmental conditions (e.g. humidity, temperature, electromagnetic).

Various use cases of these different scenarios will be investigated by F5G, and relevant potential requirements will be clearly documented.

In order to fulfil the 5th generation of business requirements for fixed network ISG F5G will work on the corresponding framework, which will provide a profile of F5G network functions and performance indices as well as the corresponding technology landscape. F5G targets a full fibre network in order to maximize the value of utilizing the related transport, access and in-premises network technologies such as OTN, XG(S)-PON and supplementary technologies such as Wi-Fi 6.

Throughout the F5G work, new technologies or extensions to existing technologies will be identified through gap analysis. These topics may include, but not limited to, new ODN technologies, XG(S)-PON enhancements, Wi-Fi 6 enhancements, control plane and user plane separation, smart energy efficiency, end-to-end full stack slicing, autonomous operation and management, Artificial Intelligence enabling, synergy of Transport and Access Networks, adaptation of Transport Network to industrial scenarios and applications, mobile network x-hauling, and convergence with 5G core network, etc. These new features shall be supported by E2E network architecture, including legacy network and SDN-based networks.

Furthermore, F5G will also look to the future, as well as consider what could be an eventual evolution path.

ISG F5G considers a wide range of technologies, and therefore seeks to actively cooperate with a number of relevant standardization groups, both inside and outside of ETSI, as well as vertical industrial organizations.

ISG F5G's work will be oriented to pre-standards work including the identification of technology and standards gaps with references to the appropriate standardization group/body (either inside or outside of ETSI) that may be required to further enhance or develop the relevant technology specifications.

Areas of activity

ISG F5G will focus on following activities:

- An overview and clear definition of the F5G.
- Study of all relevant business scenarios and use cases.
- Standards landscape and gap analysis.
- The overall framework of F5G.

Annex (informative): collaboration with other bodies

ISG F5G will seek to actively coordinate and cooperate with the following groups both inside and outside of ETSI:

ETSI Groups

- ETSI PP 3GPP
- ETSI TC ATTM
- ETSI TC BRAN
- ETSI TC NTECH
- ETSI TC STQ
- ETSI ISG ENI
- ETSI ISG NFV
- ETSI ISG ZSM

and others as identified during the progression of the work.

External groups

- ITU-T (ITU Telecommunication Standardization Sector)
- BBF (The Broadband Forum)
- IEEE (Institute of Electrical and Electronic Engineers)
- IETF (Internet Engineering Task Force)
- WFA (Wi-Fi Alliance)
- TM Forum
- CCSA (China Communications Standards Association)

and others as identified during the progression of the work.