

The Standards People

ETSI Approach to Research and Standards for B5G -> 6G

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ETSI - Bringing people together...

- ♥ Independent, non-profit standards organization
- ♥ Officially recognized by the European Union to support EU regulation
- **30** year track record of technical excellence in the ICT sector
- Founding Partner of both **3GPP** and **oneM2M**
- ✓ Over 900 members from 63 countries over 5 continents
- Diverse community: private companies, research and academia, governments, public bodies, societal stakeholders
- ✓ Over **51 000** standards published to date, **2 400** annually
- All standards are <u>free of charge</u> and may be downloaded from here <u>https://www.etsi.org/standards</u>
- V Over 130 technical groups holding more than 4 000 (e)-meetings per year
- More than **50 (e)**-conferences and interop events per year

Public / Private Research organizations and Universities make up for over **14%** of our ETSI membership and are present both in Europe and globally



Source: Jan 2022 edition of the ETSI Enjoy! magazine https://www.etsi.org/newsroom/magazine

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The ETSI ISG – A pre-normative incubator for Research

ISGs (industry Specification Groups) are the perfect tool for developing 'early' standardization work resulting from research projects.

This tool has been used for many successful standards efforts on technologies such as **mWT**, **NFV**, **Edge**, **Artificial Intelligence**, **AR/VR/XR**, **Quantum Safe**, **Quantum Key** and many more.

An ISG may be established on the initiative of any group of, at least four (4), ETSI members (or applicant members) making a request to the ETSI Director-General and meeting the criteria for new ISGs in ETSI.

The streamlined ISG process can enable a group to be set up and operational very quickly and initial deliverables may be published in only a matter of months making it the ideal mechanism for early stage standardization.

ETSI ISGs are open to both ETSI members and non-members.





ETSI ISG Building Blocks for 5G and 5G Advanced

All ICT systems are a collection of distinct technologies linked together to provide the requisite solutions and services.

5G is a good example as it assembles several technologies including (but not limited to):

- (Radio) mWT / Massive MIMO / Beam forming ...
- **(Network)** Slicing / Edge computing / Cloudification / Zero Touch ...
- (Transport/Optical) PONs / ARNs / ...
- ... to name but a few

Several of the technologies listed above have been examined in ETSI ISGs before being offered to 3GPP via member contribution, including (*but not limited to*):

- ISG NFV / OSM
- ISG mWT
- ISG MEC
- ISGs ZSM / ENI / SAI / IPE / NIN
- ISGs SAI / PDL / ARF / F5G

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Potential Building Blocks for BY5G / 6G



Beyond 5G research is in the early stages, and the corresponding European Funding programmes are just beginning (see Horizon Europe, SNS- JU, 6G-IA and others).

However it is 'never too early' to consider the impact research could have on standards. On the contrary the requisite standards resulting from research can often be considered 'too late'.

Today, there is no consensus of what the 6G technologies will include, but an early estimate could be:-

... and much more

- sub/full-THz Comms (THz)
- Smart Surfaces / Reconfigurable intelligent surfaces (NOTE: ISG RIS created Sept 2021)
- Energy harvesting / energy transfer / efficiency (EFF)
- Non Terrestrial Networks (NTN)
- Sensing and Communication Networks (SCN)
- Compute, Communications, Convergence (CCC)
- Optical Wireless Communications (OWC)





What is the ETSI Technology Radar (ETR)?

The *first addition* of the ETR has been developed by ETSI Board TREND and ETSI secretariat representatives during the year 2020-2021 using the following methodology;

- A thorough analysis considering over <u>15 publicly available technology reports</u>, as well as <u>questionnaires the to Board</u> and to many <u>ETSI Technical Groups</u>,
- 2. Consensus agreement in TREND on the top ten (10) most relevant (to ETSI) technology trends,
- 3. For the selected (10) technology trends, the identification of affinities or eventual gaps with respect to current ETSI activities (as documented in ETSI work programme), the definition of a time frame of maturity for standardization, and recommendations for future more detailed analysis at OCG and/or Board level on the eventual way forward to fill the identified gaps,

The ETR was published as an ETSI Whitepaper in April 2021 after approval by the ETSI Board. It is planned for revision end 2022.

The ETR has been promoted via press releases, Liaison and requests for feedback from partner organizations and European Research platforms. Their feedback will be included in the revision.

ETSI Technology Radar https://www.etsi.org/images/files/ETSIWhitePapers/etsi_wp45_ETSI_technology_radar.pdf





ETSI White Paper No. 45

ETSI Technology Radar





The 10 Technology Trends in the ETR 2021 Edition



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NEW Technology Trends *selected* for the ETR 2022 Edition



NEW Technology Trend <u>USE CASES</u> for the ETR 2022 Edition

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Example of research to pre-standards, new ISG RIS (Sept. 2021)

Provide an opportunity for ETSI members to collect their pre-standards research efforts on *RIS technology across various EU/UK collaborative projects, extended with relevant global initiatives, towards paving the way for future standardization of the RIS technology.







More information on https://www.etsi.org/committee/RIS



ETSI Approach to B5G / 6G

Operators are currently deploying **5G** networks across the globe. **170** commercial 5G networks have already (Source: GSMA November 2021) (Source: GSMA November 2021)

It is important to use caution when using the term 6G to avoid diluting the impact of present day 5G rollouts.

In ETSI we speak only of "RESEARCH and pre-standards work" for candidate B5G / 6G technologies.

Current assumption is the first **6G** services *may* be deployed as of 2030... but of course expectations can and often do change due to global / market pressure.

6G is currently at the <u>Vision & Research</u> phase.

Initial study items for **6G** are not expected to be seen in 3GPP (SA1) until > 2025/2026.

5G evolution and **6G** developments will run as <u>parallel tracks</u> for several years.





ETSI Technology Radar provides a <u>high level</u> description of potential ICT Trends. It is open for consultation and feedback is welcome / encouraged.

Early 6G expected 'around' 2030, alongside an evolved 5G. Now is the time to share 6G visions, research and standards roadmaps.

ETSI has an important roll to play in linking the **research** into **pre-standards** in order to feed the **global 6G standards** activities in 3GPP.