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TRAINING ACADEMY

The ETSI Approach to Research & Innovation

Aim: How to bring the work of the European Standardisation Organisations closer to researchers and European Funded research projects.

Presented by: **David Boswarthick**
ETSI Director NET (New Technologies)



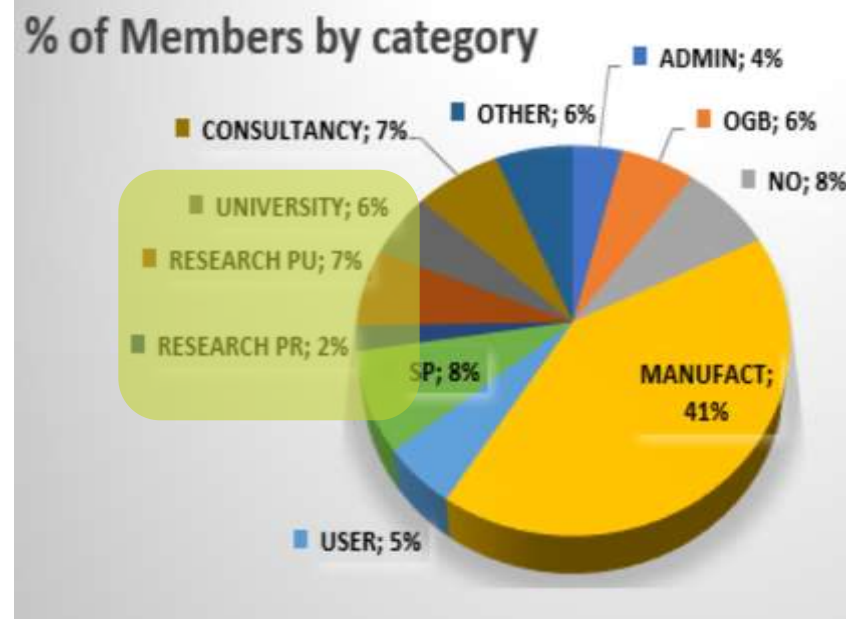
15/06/2023



ETSI in a nutshell

- ✔ Independent, non-profit standards organization
- ✔ Officially recognized by the European Union to support EU regulation
- ✔ **35+** year track record of technical excellence in the ICT sector
- ✔ Founding Partner of both **3GPP** and **oneM2M**
- ✔ Over **900+** members from more than **60+** countries
- ✔ Diverse community: private companies, **research and academia**, governments, public bodies, societal stakeholders

Public / Private Research organizations and Universities make up for over **15%** of our ETSI membership and are present both in Europe and globally



ETSI Approach to Research and Innovation



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- ETSI encourages a constant flow of research and innovation output into our standards work.
- **ETSI Board RISE group:** Strong links between Researchers, Innovators & Standardization expertise in ETSI

- Working with EU platforms (such as Horizon Europe, SNS JU, 6G-IA, NetworldEurope)

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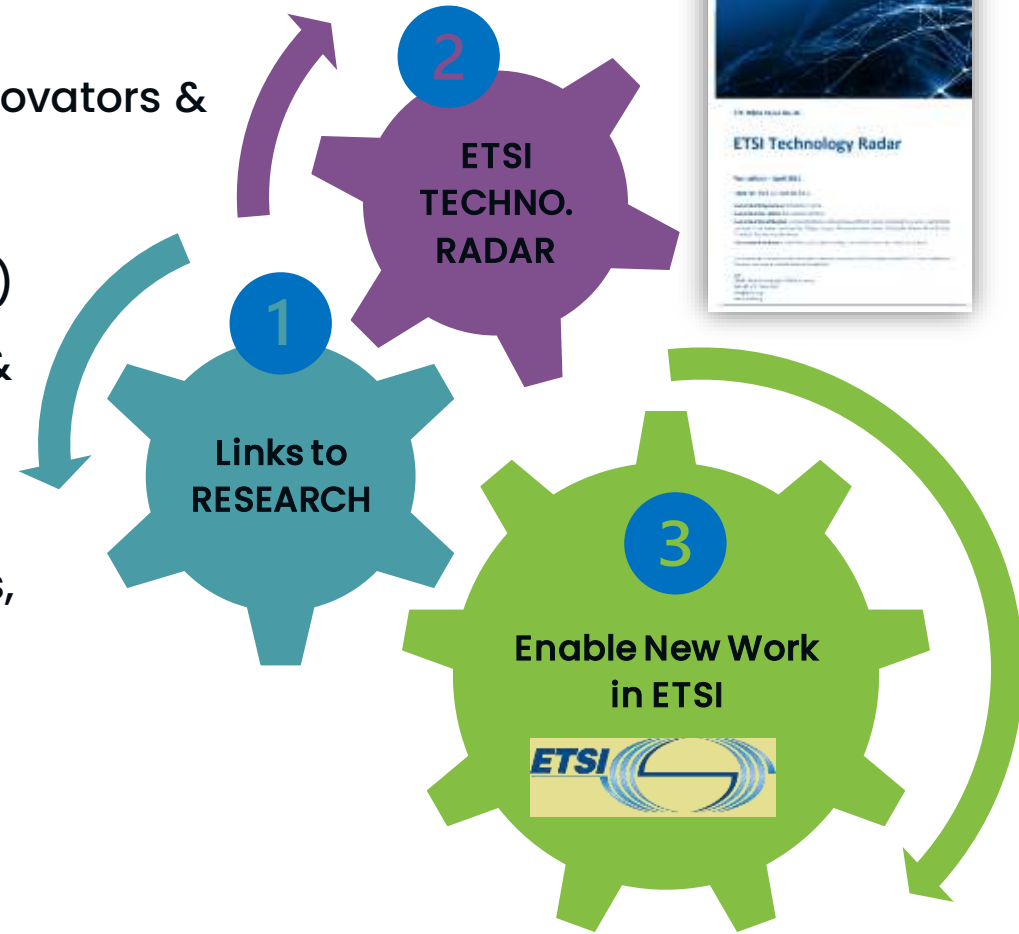
- Working with national / EU / global research platforms & projects (e.g. HEXA-X / Next G Alliance / one6G / IOWN)
- Outreach to universities and research labs worldwide

- **ETSI Board TREND group:** Examines Future Technology Trends,
 - Produces the ETSI Technology Radar (ETR)

- **ETSI NET (New Technology) Team:** responsible for,
 - Building the tools and enablers for R&I into Standards,

3

- Tracking Future Technology Evolutions & outreach,
- Enable the creation of new technical groups, areas of work in ETSI



ETSI Technical Groups

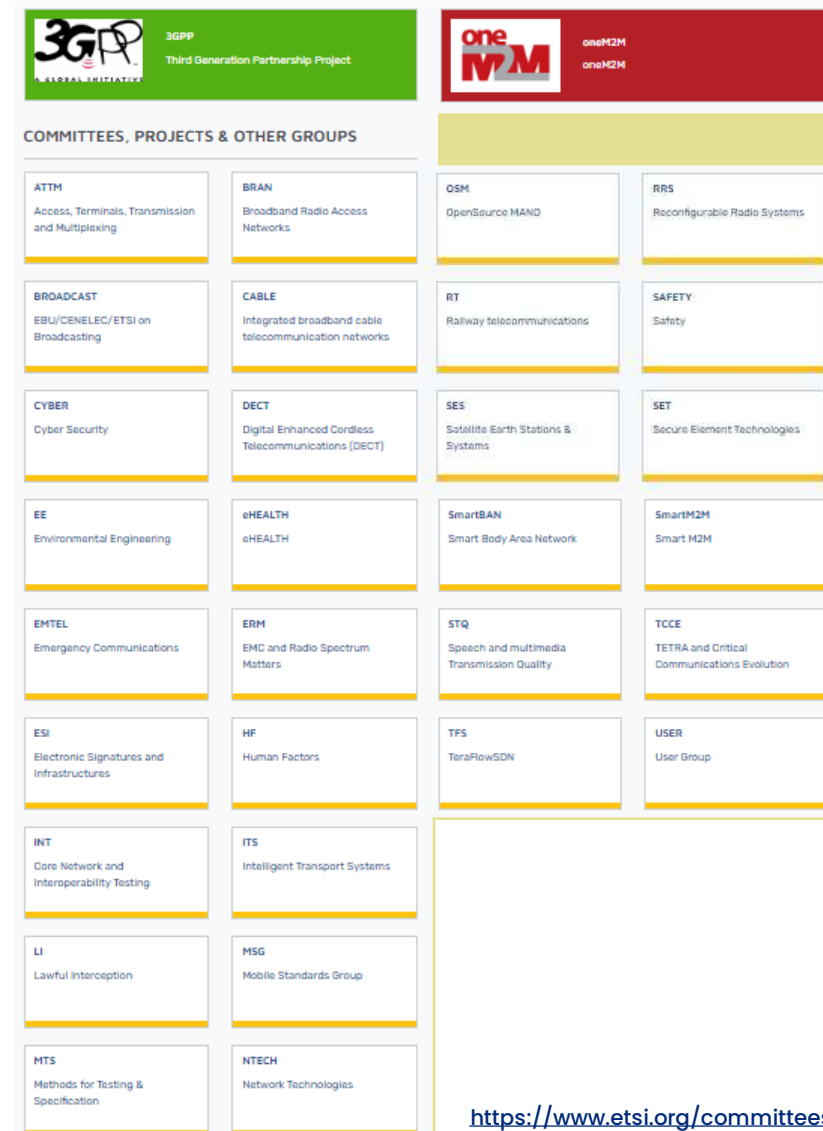
Our standardization work is carried out in different technical groups:

- Technical Committee (TC)
- ETSI Project (EP)
- ETSI Partnership Project (EPP)
- Industry Specification Group (ISG)
- Special Committee (SC)
- Technical Committees (TC)

Our committees are coordinated by our **Operational Coordination Group (OCG)**, which includes the chairs of all our technical committees.

Each committee establishes and maintains a **work programme**, which is made up of individual **items of work**.

Collectively, the work programmes of all our committees constitute the **ETSI Work Programme**. [Work-Programme 2022-2023](#)



The screenshot displays the ETSI website's 'COMMITTEES, PROJECTS & OTHER GROUPS' section. It features two main banners at the top: a green one for '3GPP Third Generation Partnership Project' and a red one for 'oneM2M'. Below these, a grid of 20 boxes lists various technical groups and committees, each with a name and a brief description. The groups include ATTM, BRAN, BROADCAST, CABLE, CYBER, DECT, EE, eHEALTH, EMTEL, ERM, ESI, HF, INT, LI, MTS, OSN, RRS, RT, SAFETY, SES, SET, SmartBAN, SmartM2M, STQ, TCCE, TFS, and USER. A large yellow box at the bottom right contains the URL <https://www.etsi.org/committees>.

COMMITTEES, PROJECTS & OTHER GROUPS	
ATTM Access, Terminals, Transmission and Multiplexing	BRAN Broadband Radio Access Networks
BROADCAST EBU/CENELEC/ETSI on Broadcasting	CABLE Integrated broadband cable telecommunication networks
CYBER Cyber Security	DECT Digital Enhanced Cordless Telecommunications (DECT)
EE Environmental Engineering	eHEALTH eHEALTH
EMTEL Emergency Communications	ERM EMC and Radio Spectrum Matters
ESI Electronic Signatures and Infrastructures	HF Human Factors
INT Core Network and Interoperability Testing	ITS Intelligent Transport Systems
LI Lawful Interception	MSG Mobile Standards Group
MTS Methods for Testing & Specification	NTECH Network Technologies
OSN OpenSource MAND	RRS Reconfigurable Radio Systems
RT Railway telecommunications	SAFETY Safety
SES Satellite Earth Stations & Systems	SET Secure Element Technologies
SmartBAN Smart Body Area Network	SmartM2M Smart M2M
STQ Speech and multimedia Transmission Quality	TCCE TETRA and Critical Communications Evolution
TFS TeraFlowSDN	USER User Group

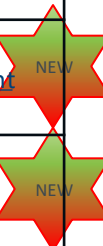
<https://www.etsi.org/committees>

The ETSI ISG (Industry Specification Group) A pre-normative incubator for Research



- ❖ ETSI ISGs are the perfect tool for developing ‘early’ standardization work resulting from research projects / other sources of innovation.
- ❖ 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.
- ❖ Any group of at least **four** ETSI members can a request to the ETSI Director-General the creation of new ISGs in ETSI as long the relevant criteria are met.
- ❖ Streamlined ISG process enables **deliverables (GSs and GRs)** to be published in matter of months, an ideal mechanism for **early stage (pre)standardization**.
- ❖ ETSI ISGs are open to both ETSI members and non-members.
- ❖ New ISGs can be initiated by ETSI both members and non-members, potentially opening up new domains / areas of work for ETSI.
- ❖ **Researchers and academics can take up official positions (Chair / Vice-Chair), become rapporteurs for ETSI deliverables and actively drive the current and future standards work of ETSI.**

ARF <u>Augmented Reality Framework</u>	CDM <u>european Common information sharing environment service and Data Model</u>
CIM <u>cross-cutting Context Information Management</u>	ENI <u>Experiential Networked Intelligence</u>
ETI <u>Encrypted Traffic Integration</u>	F5G <u>5th Generation Fixed Network</u>
MEC <u>Multi-access Edge Computing</u>	mWT <u>millimetre Wave Transmission</u>
NFV <u>Network Functions Virtualisation</u>	NIN <u>Non-IP Networking</u>
OEU <u>Operational energy Efficiency for Users</u>	PDL <u>Permissioned Distributed Ledger</u>
QKD <u>Quantum Key Distribution</u>	RIS <u>Reconfigurable Intelligent Surfaces</u>
SAI <u>Securing Artificial Intelligence</u>	THz <u>Terahertz Modelling</u>
ZSM <u>Zero-touch network and Service Management</u>	17 ISGs currently



The ETSI SDG (Software Development Group)

A toolbox for Research and Standardization

- ❖ ETSI SDGs are the perfect tool for developing 'early' implementation work resulting from research projects / other sources of innovation.
- ❖ This tool has been designed for collaborative software development at ETSI based on the successful experience with **Open Source MANO** and **TeraFlowSDN**.
- ❖ SDGs allow for early experimentation, prototyping, validation and testing of concepts defined by ETSI Technical Groups, and provide them with **early and regular feedback**. It's an ideal mechanism for **optimizing the quality of standards and reducing their time to market**
- ❖ Any group of at least **four** ETSI members, can request to the ETSI Director-General the creation of new SDG in ETSI, as long the relevant criteria are met. Various licence types are allowed, including Open Source
- ❖ ETSI SDGs are open to **ETSI members, non-members and individuals**.
- ❖ **Researchers and academics can take up official positions** (Chair / Vice-Chair), apply for technical leadership positions (TSC, MDL), lead the alignment and feedback to ETSI Technical Groups, and take an active role in driving the current and future work of ETSI.



Example: ISG Building Blocks used for 5G Technologies

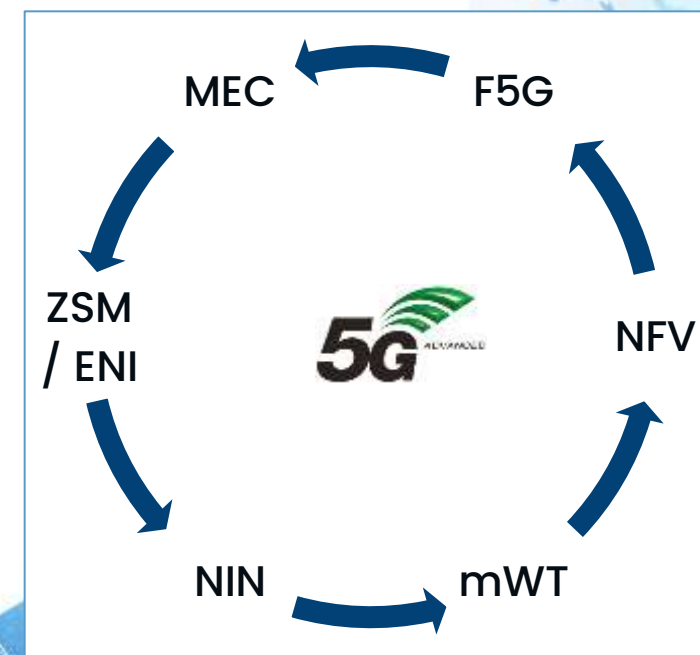
All ICT systems are a collection of distinct technologies linked together to provide the requisite solutions and services.

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

- (Radio) mWT / Massive MIMO / Beam forming ...
- (Network) Slicing / Edge / 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 direct member contribution, including topics relating *(but not limited)* to:

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



Potential 6G pre-standards Groups, What next 'may' be enabled in ETSI ISGs/TBs ?



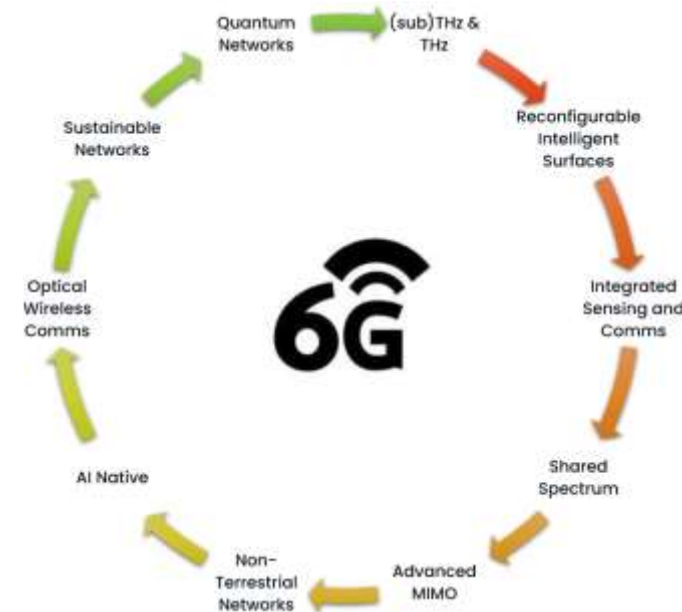
ETSI is always considering potential new areas of work.

The topics identified in the ETSI Technology Radar (ETR) are a good starting point but not only.

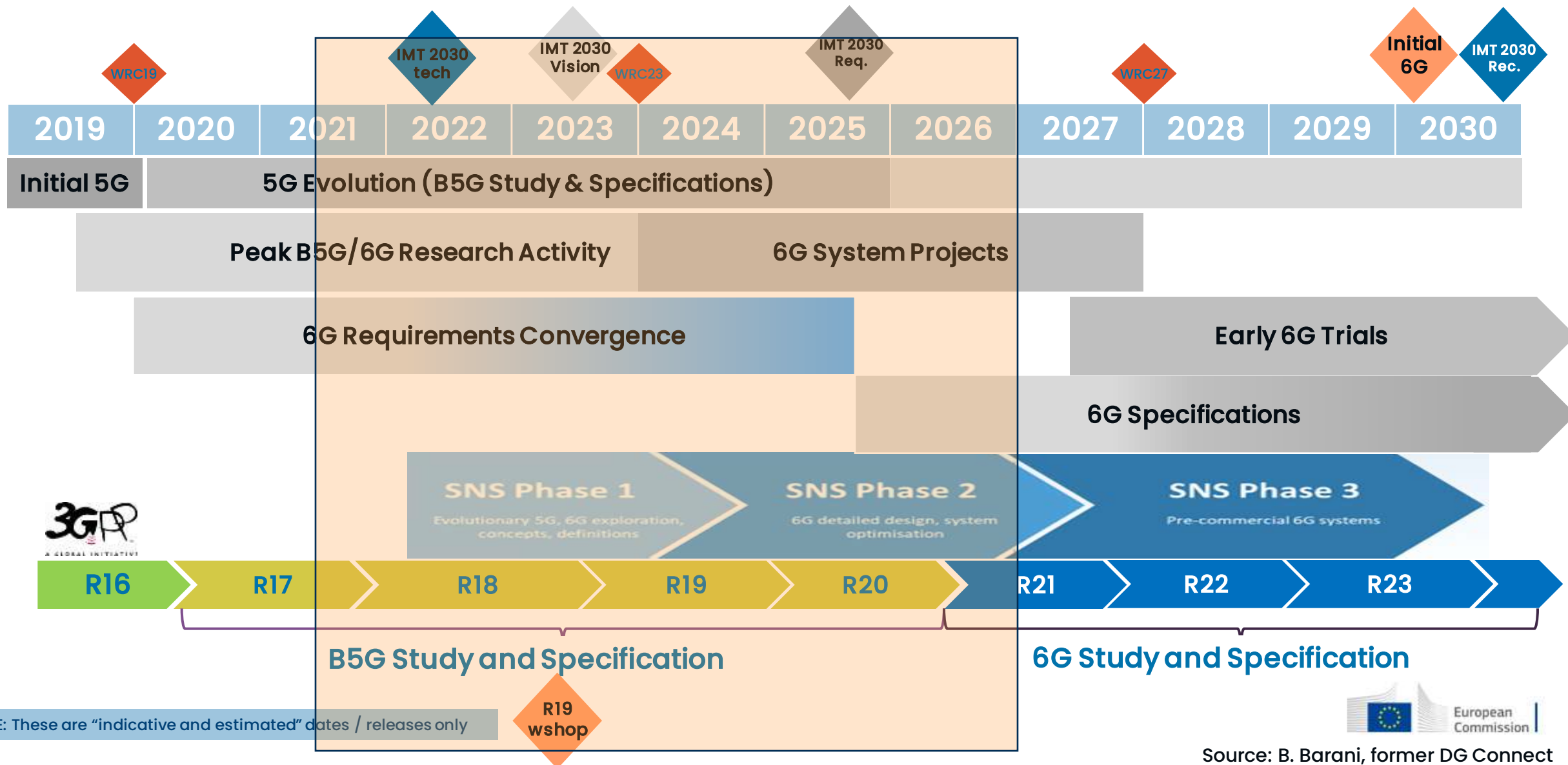
ETSI is 100% member-driven and is interested in suggestions and contributions from our Member organizations (present & future) about potential new areas of work for 2023 and beyond.

Today, there is *no consensus of what the 6G technologies will include*, but they will be a mix of,

- *Evolutionary* technology developments, building on 5G evolutions
- and *Revolutionary* technology leaps, requiring a 'new' Generation



6G, the Window of Opportunity (for pre-standards work)



NOTE: These are "indicative and estimated" dates / releases only

R19 wshop



Source: B. Barani, former DG Connect

How does ETSI provide value to researchers?



- Opportunity to bring research results directly into standardization
- Be instrumental in the development of world class ICT standards that can be applied worldwide
- Benefit from ETSI's fair and effective IPR policy that is designed to protect your intellectual property
- Access to the leading-edge ICT knowledge from the 900+ other members
- Learn what the industry players are thinking and where they need research to be developed
- Opportunities to be visible, build a strong community and network with both industry and governmental standards setters and policy makers
- Opportunity to raise the profile and reputation of researchers as well as of the universities and research institutes, through participating in international standardization
- Gain insight into critical issues such as regulatory & spectrum matters, as well as deep knowledge of the latest European research agendas and policy priorities
- Researchers and academics can take up official positions (Chair / Vice-Chair), become rapporteurs for ETSI deliverables and actively drive the current and future standards work of ETSI.
- Reduced membership fee for universities and researchers allows access all technical aspects in ETSI and participate fully to all of ETSI's technical groups as well as the Partnership projects of oneM2M and 3GPP.



ETSI Support to Research Projects



General Advice
on
Standardization



Letter of
Support to
Projects



ETSI presence
on Advisory
Committee



Mapping of
research to ETSI
working groups

We are here to help. Contact research@etsi.org

ETSI Support to Research Projects



General Advice on Standardization

Researchers and Projects can seek advice from research@etsi.org on
1) General Standardization topics and 2) ETSI specific questions

Much information, guidance and extensive FAQ are available on the ETSI research website: <https://www.etsi.org/research>

ETSI provides guidance on where and how researchers and research projects may get involved in standardization

ETSI provides support to a number of EC / National funded projects
BUT any project may ask ETSI for advice, with no need for a pre-signed LoS

ETSI Support to Research Projects



Letter of Support to Projects

ETSI is able to provide a Letter of Support (LoS) to project consortia making project proposals <under certain conditions>. For both EC and National projects

If the project 1) is related to ETSI's scope 2) contains at least 2 ETSI members and 3) considers ETSI standards as input and/or output – then we can talk LoS

The ETSI LoS process is simple, and fast,
A LoS can be produced within 2 weeks if all conditions met & info is provided

A LoS from a recognized SDO *may* be considered positively in project proposal reviews as it demonstrates a plan for the project to engage in standardization

ETSI Support to Research Projects



ETSI presence
on Advisory
Committee

Members of ETSI staff and representatives of ETSI Technical Committees may be present on EXTERNAL Advisory Committees of projects where we have a LoS

'TYPICALLY' ETSI is NOT inside the project consortium and does not receive payment from the funding organization – our efforts are free of payment

Being inside the project external advisory committee allows ETSI to provide greater levels of standardization advice and support to the project

As our activities on the advisory committee are not funded **'TYPICALLY'** we only participate to remote meetings with no travel for F2F interactions

ETSI Support to Projects



ETSI has produced a mapping between the Network Europe SDIA & the ETSI

Project Name	Project Long Name	ETSI WS Y/N	Funding Progr	Stream	Stream Type	Typ	email	Project Start	Project End	Map to ETSI Groups	Project General Objectives
5G-STAR DUST	Satellite And Terrestrial Access For Distributed, Ubiquitous, And Smart Telecommunications	Y	SNS	A	[5G] Smart communication components, systems, & networks for 5G Evolution systems.	RIA	tomaso.decola@dlr.de nicolas.chuberre@thalesaleniaspace.com mohamed.el-jaafari@thalesaleniaspace.com			3GPP, TC SES	5G evolution is expected to deliver services to a diverse gamma of verticals and to the overall society according to a anywhere, anytime, anydevice paradigm, hence calling for a polymorphic and flexible architecture. Such an ambitious deployment plan calls for the convergence of terrestrial and non-terrestrial networks, especially for providing connectivity to un(der)served areas, which is the motivation of 5G-STAR5GD-USSTTA.RDUST's ambition is to deliver a fully integrated 5G-NTN autonomous system with novel selfadapting end-to-end connectivity model for enabling ubiquitous radio access. <u>importantly leveraging on 11 new highly flexible multi-constellation (multi-orbit)</u>
6G-BRICKS	Building Reusable Testbed Infrastructures For Validating Cloud-To-Device Breakthrough Technologies	Y	SNS	C	[6G] Enablers and Proof of Concept (PoCs), and experimental infrastructure(s)	RIA	cveri@isi.gr			3GPP, ISG ARF	6G networks, currently only existing as concepts, are envisioned as portals to a fully digitized society, where the physical and virtual world are blended via boundless Extended Reality (XR), and also as an enabler for the Digital and Green transformation of the European Industries. To support this vision, the network capacity must be increased at least by an order of magnitude, while infrastructures must be transformed into a very dense continuum. Thus, academia and industry have shifted their attention to the investigation of a new generation of Smart Networks and infrastructures. It is clear that to win this race towards shaping the next-generation communication ecosystem, a new generation of testbed infrastructures and breakthrough research and technology development is needed, as well as a new generation of testbeds to support future research initiative. <u>To this end, 6G-BRICKS aims to deliver a new 6G</u>
6G-NTN	6G Non Terrestrial Networks	Y	SNS	B	[6G] Radical technology advancement in preparation for 6G, IoT, devices and software	RIA	alessandro.vanelli@unibo.it nicolas.chuberre@thalesaleniaspace.com sandro.scalise@dlr.de mohamed.el-jaafari@thalesaleniaspace.com			3GPP, TC SES	The 6G-NTN project aims at researching and developing innovative technical, business, regulatory, and standardization enablers to achieve full and seamless integration of the Non-Terrestrial Network (NTN) component into the 6G system and establish European leadership in this domain. The vision is to extend coverage, resilience, and sustainability of next-generation mobile networks, meeting the needs and expectations of both vertical and consumer market segments while unleashing new value chains and creating a broad societal impact. <u>The proposed concept of full-fledged integration of the NTN component into 6G leverages</u>
6G-SANDBOX	Supporting Architectural And Technological Network Evolutions Through An Intelligent, Secured And Twinning Enabled Open EXperimentation Facility	Y	SNS	C	[6G] Enablers and Proof of Concept (PoCs), and experimental infrastructure(s)	RIA	salki@motorola.com				The 6G-SANDBOX project brings a complete and modular facility for the European experimentation ecosystem (in line and under the directions set by SNS JU), which is expected to support for the next decade technology and research validation processes needed in the pathway towards 6G. The target is at technologies and research advances, that span over the entire service provisioning chain, and refer to user/data, control and management planes. In this direction, 6G-SANDBOX introduces the concept of Trial Networks, which refers to fully configurable, manageable and controlled end-to-end networks, composed of both digital and physical nodes. <u>The 6G-SANDBOX Trial Networks incorporate infrastructures distributed in EU (namely in Malaga, Athens</u>
6G-SHINE	A Dual-Frequency Distributed MIMO Approach For Future 6G Applications	Y	SNS	B	[6G] Radical technology advancement in preparation for 6G, IoT, devices and software	RIA	gb@es.aau.dk alain.mourad@interdigital.com frank.burkhardt@iis.fraunhofer.de				The 6G-SHINE project will pioneer the main technology components for in-X wireless subnetworks, short range low power radio cells to be installed in a wide set of vertical and consumer entities like robots, vehicles, production modules, classrooms, for the sake of supporting extreme communication requirements in terms of latency, reliability, or data rates. 6G-SHINE will leverage the opportunities offered by the peculiar deployment characteristics of such short-range subnetworks, for a highly performant yet cost-efficient radio design that allows bringing wireless connectivity to a level of pervasiveness which has never been experienced earlier. 6G-SHINE copes with the topics "New IoT components and devices" and "New physical layers and associated

The ETSI **CAT**•ALYST tool



It would be great to talk with the standards experts...

Researcher/Innovator(s)



It would be great to talk more about research topics

Standards Expert(s)



The ETSI “Come-and-Talk” (**CAT**•ALYST) tool is designed to encourage open exchange on research & technology topics.

CAT•ALYST sessions are made available upon demand and help the research community discuss with standards experts on specific topics of common interest.

ETSI Resources for Researchers and Academics



Helpdesk for Researchers



www.etsi.org/research



<https://www.linkedin.com/showcase/etsi-standardization-research-innovation-education>



Helpdesk:
research@etsi.org



Director New Technologies:
David.Boswarthick@etsi.org



Dedicated research Webpages

Dedicated contact email

Guides / Leaflets / Videos

Support to EU Projects

Advice on EU Research

Setting up new Standards Groups

Advice on Standards Activities

... and more

For Further Information:

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