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AI

SECURING ARTIFICIAL INTELLIGENCE



AI is now part of our digital lives.

We have come far from the early concepts of Artificial Intelligence that date back to the 50s, and AI is now part of our digital lives. Going through its various definitions would take many more pages than what this edition of Enjoy! allows. We have therefore focused on what ETSI is involved in and the groups working on specific constituents of AI.

Securing AI is the main **Spotlight** article as systems need to be secure by design with all risks, both traditional and AI-specific, adequately mitigated. Securing AI was a key issue never addressed in any standards organization before ETSI SAI group was created in 2019 and they have already released several Reports, the latest one being featured in our **Just Released** section.

At European car manufacturer Audi, we have asked Dr.-Ing. Gero Kempf, Senior Vice President Audi Engineering, in an exclusive **Interview** to give us an insight into the future mobility landscape with AI-powered vehicles. In another sector, our **New Member Interview** features Jean-Marc Coïc, deputy CEO of INTERSEC. The company has been selected by the French government to deploy the French public warning system by 21 June 2022, based on an ETSI standard, as required by the new Directive on European Electronic Communications Code.

On the EU regulatory aspects, our **Tech Highlights** section outlines the ETSI groups involved in AI and the upcoming European AI Act. As for our **Research & Innovation** section, it gives a deep dive into the main enablers and barriers to bringing research into standardization while **Working Together** with Queens University Belfast tells us how academia helps lead ETSI's activities on cyber and AI.

You will also read about our 2022 ETSI Fellows, our new marketing team and our new communication collaterals.

Enjoy reading!

Luis Jorge Romero,
Director-General ETSI



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Enjoy! The ETSI Mag

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Face-to-face events back in ETSI!



After more than 2 years of online events and postponements due to the Covid-19 pandemic, face-to-face meetings and events are finally back on ETSI premises.

October 2022 will be a particularly busy month.

It will start with the ETSI Security conference, ETSI's

flagship annual cybersecurity event, running from 3 to 5 October. This will be a new opportunity for the security community to debate important aspects of cybersecurity.

On 6 October, ETSI will hold its first seminar on teaching standardization: *"Forming the Next Generation of ICT Standards People: A Day of Teaching Standardization"* with the aim of training the next generation of the ICT Standards community. In addition, ETSI collaborates with ILNAS and the University of Luxembourg to support their Master degree on ICT standardization. The first students will graduate in this course in 2023.

ETSI IoT Week will be back in ETSI from 10 to 14 October. This edition of the event will focus on *"Pursuing Digital and Green Transformation"*. It is a must-attend event for anyone involved in IoT and an excellent opportunity to network with all stakeholders.



UCAAT, our renowned testing event in Munich

UCAAT 2022 will be hosted from 13 to 15 September by Siemens Munich.

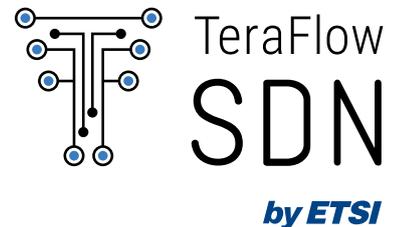
This will be the 9th edition of the well-established event, dedicated to all aspects of test automation.

As our society is becoming increasingly dependent on complex software systems and widely interconnected systems of systems, discussions at UCAAT 2022 will centre around all aspects of testing needed to tackle best the various facets of trustworthiness of these systems.

More information at etsi.org/ucaat

New open-source group! TeraFlowSDN

ETSI is delighted to announce the creation of a new open-source group called TeraFlowSDN. Based on the results of the European Union-funded TeraFlow 5G PPP research project, this new group will provide a toolbox for rapid prototyping and experimentation with innovative network technologies and usage case studies. TeraFlowSDN will develop an open-source cloud-native SDN controller for high-capacity IP and optical networks and will support usage case studies such as autonomous networks and cybersecurity, helping service providers and telecommunication operators to tackle and overcome the challenges of future networks. The group's kick-off meeting was held remotely on 20 June 2022.



More information at: <https://tfs.etsi.org/>

ETSI Secretariat supports the Ukrainian people

ETSI has decided to show its solidarity with Ukraine by making two donations of €10k each to French humanitarian organizations: *"Un enfant par la main"* and *"Fondation de France"*. These donations will help to provide and fund water, sanitary products, civilian evacuation, psychological support, online schooling, and sustainable support for housing, health care and legal support.

Homage to Olly Wheaton



Oliver Wheaton, known by all as Olly Wheaton, sadly passed away on 19 April. He was the founder of TC ERM, which he chaired from 1997 until 2005. He was also instrumental in setting up OCG RTTED (later OCG RED-EMCD). Olly was the Deputy Director for Mobile Services within the UK Radiocommunications Agency (RA). He took the lead for ETSI in the Global Radio Standards Collaboration (GRSC) and was UK Head of Delegation in ETSI's Technical Assembly and General Assembly. He was always a great supporter of ETSI and will be greatly missed by all those who knew him.



In an exclusive interview the Senior Vice President at Audi Engineering gives us an insight into the future mobility landscape with AI powered vehicles.

Back in 2017, Audi cars embarked the world's first system that enabled SAE level 3 conditional automation. Was it the first path toward AI powered vehicles with a higher degree of automatization?

We believe in the technology of automated driving. We were the first to develop this kind of function for a series introduction.

Dr.-Ing. Gero Kempf

Senior Vice President at Audi Engineering

Dr Kempf is a graduate of Technical University Munich (TUM) and holds both an Engineering Doctorate in Computer Science, from the faculty of electrical engineering, and a Dipl. Phys. in Technical Physics including electrical and mechanical engineering. Gero worked in a number of positions in various functional areas at BMW before becoming Vice President Lightweight Innovation in 2014. In 2015, Gero joined Jaguar Land Rover,

where he became Chief Engineer on Project Vector, an autonomous platform covering Taas, MaaS and privately owned Autonomous Vehicles, entering the area of future mobility. In addition, in 2016 he was appointed Industrial Professor at the Warwick Manufacturing Group of Warwick University, supporting the development of expertise in battery production as Co-Founder of the UK Battery Industrialisation Centre,

pushing boundaries in lightweight body construction in aluminium and composites, and, last but not least, highly automated driving. In 2020 he was called to join VW Groups Project Artemis subsidiary as one of the early hires, and moved on to Audi in 2021 as EVP in engineering, continuing his efforts to bring disruptive technology to the market, at scale.

"Our focus is to bring Level 4 fully automated driving into series production in the second half of the decade."

Audi A8 research vehicles already demonstrated its technical feasibility – conditionally automated driving up to 60 km/h in 2017. We have gained considerable knowledge about the decisive technical stumbling blocks ("unknown unknowns"). We are now building on this experience and knowledge by working with our colleagues from CARIAD to further accelerate the development of automated driving. Our focus is to bring Level 4 (High Driving Automation) fully automated driving into series production in the second half of the decade. We are convinced that the automated driving experience is at its best when not interrupted by foreseeable conditions. When this is the case, it is very important that our customers are enabled to do other things during fully automated driving.

5 years later, your vehicles embed ETSI C-V2X standardized technology and 3GPP 5G mobile communications - what are the benefits for drivers and society?

Higher degrees of automation require higher degrees of safety monitoring and reliable sources of additional traffic information from outside of the car. From our point of view, there is a very clear

"A standardized technology brings a very clear benefit: increasing safety for all road users."

benefit: increasing safety for all road users, whether inside or outside the

vehicle. Thus, the number of accidents will decrease. I think this is a first-rate goal.

It seems that automated driving will be an evolution in Europe and a revolution in other regions of the world; why?

Assisted and automated driving functions will continue to develop in parallel. There is also great potential in assisted driving, especially in the expansion of situational availability and the individualization of Level 2 (Partial Driving Automation) functions. For us, regardless of SAE levels, the customer

"Assisted and automated driving functions will continue to develop in parallel."

benefit in a specific situation is crucial. We want to give our customers the best possible support in every traffic situation.

Will there be changes in the design of automated cars?

Designers gain new freedom with automated driving. Up to now, new projects have always started with the platform and the technical masterpiece: the combustion engine. The interior design followed only once the external form had been set.

Moving forward, the interior is freed from the constraints of body design. Audi designers will prioritize the interior as the heart of the full vehicle. Our customers will win back time and space: the interior of an automated Audi is the third place to be – the new addition to living and working spaces and a mobile living room.

What benefits does the customer gain from this approach?

Driving is no longer a must. We are creating new leeway and the power to choose how to use your time. As a lounge, the interior becomes a personal space. Audi is giving customers time back for the things that really matter.

Prioritizing the interior will allow us to develop display control concepts that focus on safety and comfort. The architecture of the interior as well as the display and operating concepts need to be understood as one. Intelligent

"Operating interfaces will become even more intelligent than today."

display tech allows for a wealth of content but without overwhelming users. Operating interfaces will become even more intelligent than today. Interaction intelligence is the key: depending on the seating position, they will always be accessible from an ergonomic point of view.

In my opinion, this will radically change the way we use and experience cars.

How do you foresee the mobility landscape in 2030?

Digitalization and automatization are the game changers of the automotive industry. I am sure that by 2030 we will have a certain proportion of vehicles in road traffic that will have a higher degree of automated driving functions than we know about today. Audi is set to be a pioneer. In addition to the purely technical vehicle development, the further expansion of the associated infrastructure will be crucial. I am looking forward to this exciting future in the vehicle sector.

"By 2030 we will have a certain proportion of vehicles in road traffic that will have a higher degree of automated driving functions than we know about today."

Welcome to our **NEW** members

CITC, Saudi Arabia

Established in 2001 as the Saudi Communications Commission, it was later renamed as Communications and Information Technology Commission (CITC), when it was entrusted with new tasks related to information technology.

CITC is responsible for regulating the ICT and postal sector in the Kingdom of Saudi Arabia.

Its mission is to enable an innovative communications infrastructure, whilst ensuring that the services provided within Saudi Arabia are effective and accessible to all.

The vision statement of the Commission is “Universally available, high-quality and affordable communications and information technology services”.

CSA-IoT, USA

Established in 2002 as the Zigbee Alliance and rebranded as the Connectivity Standards Alliance (CSA-IoT) in 2021, the CSA brings together over 3,000 member representatives from more than 400 global member companies, collaborating to develop open, global standards for the Internet of Things (IoT), and certifying products that will ensure interoperability, enabling all objects to securely connect and interact.

CSA maintains and publishes the Zigbee and Matter standards and is focused on building an inclusive community, enabling market growth for the industry, and accelerating value delivery to members, customers and consumers alike.

EFORT, France

EFORT (Etudes et FORMations en Télécommunication) is a training institute specialising in network and telecommunication services. It was created in 1998 and is based in Melun, in the Ile-de-France region. EFORT training staff are all experts in their individual field, at the helm of leading-edge projects for big companies. EFORT delivers courses on all technical subjects related to 4G, 5G and IoT.

eFutura, France

Created in 2015, eFutura is a professional association with the aim of supporting sectors involved in the digital transformation of the economy. eFutura is the first French association to bring together a representative panel of all of the stakeholders involved in the dematerialisation of content, as well as its security, preservation, storage and hosting. They are divided into distinct bodies that gather service providers, users, institutes, education and research. As a new ETSI member, eFutura is now engaged in the definition and certification of French, European and international standards.

Erik Sunell Consulting, France

Kai-Erik Sunell is an experienced telecom standardization engineer with expertise in 3G/4G/5G radio interfaces. Originally from Finland, he settled in Sophia Antipolis technology park in 2017, but has been contributing to 3GPP standardization committees since 2006. He has experience in international EU research projects and is also the inventor and co-inventor of several patents. He founded his own consulting company “Erik Sunell Consulting” which specialises in standardization and which helps companies with 3GPP contributions, processes and specifications.

KEEQuant, Germany

KEEQuant GmbH is based in central Fürth, Germany. It was founded in 2020 with the aim of securing communications and network infrastructure using cutting-edge technology. With an impressive background in quantum technologies, engineering, and entrepreneurship, the company develops and commercialises the paradigm-shifting Continuous Variable Quantum Key Distribution (CV-QKD) technology, which secures critical European infrastructure. KEEQuant aims to bring QKD to the mass-market by using the latest scientific breakthroughs in telecommunications, high-frequency electronics, photonic integration, and digital post-processing.



NTPU, Taiwan

Established in 1949, National Taipei University (NTPU) was originally preceded by several distinct colleges and institutes. In 2000, the institution made the transition into becoming the National Taipei University, which includes both Taipei (Mingsheng and Chienkuo campuses) and Sanxia campuses. In Taiwan, NTPU has become one of the top universities for law, business, public affairs, social science, electrical engineering and computer science. It has spread its influence globally, forming partnerships with 110 universities all over the world to launch international collaborative research projects. Created in 2004 to promote industrial communication technology upgrades, it was the Department of Communication Engineering that initiated the university's ETSI membership.

ORS, Austria

Founded in 2005, the ORS group consists of Österreichische Rundfunksender GmbH & Co KG - Austrian Broadcasting Services (ORS) and its subsidiary ORS comm GmbH & Co KG (ORS comm).

Its headquarters are located in Vienna, but ORS has technical bases in Linz, Salzburg, Innsbruck, Dornbirn, Graz and Klagenfurt. In recent years, the ORS group has evolved from a transmitter network operator into a "Digital Content Gateway". ORS's service portfolio includes the technical program distribution of radio and television programs via terrestrial broadcasting systems and satellite, the provision of transmitter sites as part of co-location offers, advice on official procedures and communication measures for product launches, and the implementation of streaming solutions.

ORS is also leading research in Europe on the new 5G Broadcast transmission standard.

RED Technologies, France

Founded in 2012, RED Technologies has been a pioneer in spectrum sharing technologies and actively contributed to the CBRS regulatory and standard developments. RED Technologies is now a leading provider of cutting-edge technologies and services, offering

scalable Cloud-based CBRS and TVWS spectrum-sharing solutions for operators of all sizes and from all sectors. RED Technologies is currently participating in 6GHz standardization while developing the necessary AFC (Automatic Frequency Controller) to support 6GHz WLAN and 5G.

RED Technologies actively contributes to the necessary standardization and regulatory works in all potential bands to further consolidate the position of the company as a unique and innovative dynamic spectrum-sharing specialist.

UNE, Spain

The Spanish Association for Standardization and Certification (UNE) was established in 1986 to develop standardization work.

In January 2017, the Spanish Association for Standardization became a private, multi-sectoral, non-profit entity appointed by the Ministry of the Economy, Industry and Competitiveness as the national standardization body.

UNE is the only Standardization Body in Spain. It was already an observer member before applying for full ETSI membership. As an ETSI member, UNE aims to support the digital transformation of the Spanish industry.

UNIPI, Greece

Based in Athens and founded in 1938, the University of Piraeus (UNIPI) includes a total of ten academic departments focused mainly on Business Management, Computer Science, Economics, Finance and Maritime Studies. Its ETSI membership was initiated by the Department of Digital Systems, founded in 1999. The department covers two important sectors of the Digital Economy, the network-centric systems and services sector, and the sector of Telecommunication Systems and Networks. Its mission is to educate and train specialist scientists who can contribute to the development, implementation and management of modern digital technology systems.

In his interview with Enjoy!, Jean-Marc tells us how citizens can benefit from AI and how ETSI standards can help.

You started the company with mobile operators' big data, supplemented by fast data and AI. How has it evolved?

When we founded the company in 2004, our first mission was to develop software to deliver high performance using the technical capacities that existed at the time to enable new use cases. We started processing data from SMS, MMS and e-mail, and we quickly evolved to collect the massive amount of data that was exchanged on networks to deliver high volumes of data at speed for the telecoms sector. The idea was to use real-time geolocation of all active mobile phones on the network in order to turn geodata into business use cases. The most obvious cases were, for instance, geolocated advertising or public alerts, a very timely topic right now.

Jean-Marc Coïc

INTERSEC

Jean-Marc was recruited by Accenture right after graduating from the École Polytechnique and Telecom Paris Tech. He participated in software integration projects for major accounts and still is an important contributor to several open-source projects.

Highly-skilled in very advanced programming techniques, Jean-Marc has been part of Intersec from the very beginning.

Jean-Marc's incredible leadership and technical skills naturally singled him out as the CTO of the company in 2006. In January 2007, he became the deputy CEO.

Jean-Marc plays the French horn in a symphonic orchestra and gives concerts for French horn, piano and voice with two of his fellow musicians.

“When you want to locate multiple cell phones in a specific zone, you need to use a passive geolocation service.”

3GPP has standardized what we call active geolocation, when you can identify the location of one cell phone at a time and perform triangulation on the radio, which is useful for someone in an emergency situation, for instance. But when you want to locate multiple cell phones in a specific zone and analyse mobility behaviour, big data analytics in other words, you need to use a passive geolocation service. In cities, you face various challenges, for instance, you may have as little as a 200 m location accuracy, and have a mobile phone connect to different antennas without moving.

AI-enhanced geo-analytics proves useful for smart cities. Can you elaborate?

We have worked on algorithms that will process raw data into meaningful insights, by extracting the value that counts for citizens from the mobility data stream. It can be the directions of people, whether

“Smart cities services rely on the fast data analytics, mass communication, and AI-based decisions that our platform provides.”

they travel by car or train, allowing for future-proof urban planning.

Transport means analytics, such as the ratio of people taking their car or riding a bike, and can enable us to personalize and adapt the customer service. The average time you take to park in a certain zone is also a good KPI to manage city parking lots. And of course, real-time traffic data can originate from mobile operators. Smart city services rely on the fast data analytics, mass communication, and AI-based decisions that our platform provides.

These use cases led us to join ETSI and 3GPP.

Why was it interesting for you to join ETSI, and which standards are missing to grow your business?

First, it was for geolocation to address emergency calls and public safety alerts, but we also offer cell broadcast services. The demand for data privacy is increasing, and access to mobile data is increasingly regulated to protect citizens, with the GDPR as one example in Europe. At the same time, public authorities can utilize mobile operators' activity and mobility data improves public safety and develops value-added services for their citizens. They may

“There are still missing standards for smart cities, transport and events where operators play a key role as data owners.”

not have the expertise in the whole value chain and need companies like Intersec to process and orchestrate this data. This is where standards for relevant APIs are needed, and other sectors, such as tourism, could benefit from specific standardized APIs. Standards are still missing for these vertical sectors, smart cities, transport and events, for example, where operators play a key role as data owners. For instance, an event organizer would be interested to know how long it took their visitors to come to the show. We need to onboard these types of API consumers in ETSI and in the standardization ecosystem, as they know which information is relevant to them, and for which functionalities.

You have been selected by the French Ministry of the Interior for the new public warning solution. What was your competitive advantage?

Indeed, under the new Directive on European Electronic Communications Code, the 27 member states had to set up a public warning system to protect citizens by 21 June 2022. France has launched its alert system, called FR-Alert. After a tough international competition, we were selected by the French Ministry of

the Interior and three operators in France to deploy the foundation of the FR-Alert system. Developing our software platform with privacy by design, to respect data

“We have been selected by the French Ministry of the Interior to deploy the foundation of the FR-Alert system.”

privacy and be interoperable, thanks to a solution based on existing standards, were also key factors in our selection.

This system will result in sending each person, in Metropolitan France and French overseas territories, a message on their mobile phone in the event of a crisis. In terms of technologies, the Minister wanted to use cell broadcast and location-based SMS messages, based on the [ETSI standard](#) for the EU-Alert system, as complementary solutions. Cell broadcasts have been fully standardized for 4G, but SMS messages can be sent to any mobile phone from previous generations, increasing the coverage of the safety alerts.

Our solution complements existing alerts channels (sirens, social media, TVs and radios, e-mails, etc.), as we believe that a multi-channel approach can maximize the chances of disseminating information to as many people as possible. Of course, you do not use the same technology for a tsunami, flash floods or a dirty bomb. The choice to combine certain technologies depends on various factors, including the nature of the event, the number of people to be reached, the required speed to communicate and the state of the mobile networks. And this is typically where AI comes in, because it recommends the most appropriate solution, depending on the situation.

We hope France and Intersec will be a benchmark for the European market on alert systems.

“AI recommends the most appropriate solution depending on the situation.”

AI in ETSI and the European AI Act

Artificial Intelligence (AI) is a complex and powerful tool to identify patterns buried in masses of information. ETSI focuses on AI as a means of improving applications using information and communications technologies (ICT), and in identifying technical means to constrain various lapses or misuses of AI. We are therefore in a strong position to support the European Commission in the implementation of the AI Act.

AI enhances all things digital

Artificial Intelligence (AI) is a complex and powerful tool to identify patterns buried in masses of information, however the meaning and usage of those patterns needs to be confirmed by human beings. Patterns can point to many kinds of improvements to optimize capacity of communication networks, to diagnose cancers from protein fragments in blood samples, to extract semantic meaning from spoken sounds, to detect and deflect virus attacks on computer networks, to identify a safe route for driving along the street, and a thousand other applications. ETSI focuses on using AI to improve applications using information and communications technologies (ICT), and in identifying technical means to constrain various lapses or misuses of AI.

An array of AI activities in ETSI

AI is a horizontal activity which encompasses almost every aspect of future ICT systems. It is thus impossible to define “the single AI solution” – rather, ETSI Technical Committees and Industry Specification Groups consider the technology for their specific purposes in a less harmonized way. The big picture is held together and coordinated through ETSI’s Operational Co-ordination Group on AI (OCG-AI) across the entire organization. ETSI won’t stop here – the ETSI Summit on 4 April 2019 reviewed the current and future applications of Artificial Intelligence, as well as the challenges and opportunities of deploying AI

massively across the industry. Based on this strategic thinking, projects are under way.

Currently ongoing AI-related activities involve no less than 14 of ETSI’s technical bodies.

- ISG SAI (Securing Artificial Intelligence) considers errors in, or misuses of, AI algorithms and how to minimize those
- TC CYBER works with ISG SAI to respond to Standardization Requests (SRs) from the European Commission on topics related to AI Security
- ISG ENI (Experiential Networked Intelligence) applies AI techniques to the optimization and adaptive management, including fault-management, of communication networks
- ISG PDL (Permissioned Distributed Ledger) considers the synergies between AI algorithms and Blockchain technology
- ISG CIM (Context Information Management) considers protocols for labelling of information from all kinds of sources so as to ensure the provenance, quality and integrity (reliability) of information for AI systems, particularly for so-called training data
- ISG ZSM (Zero-touch network and Service Management) applies AI to the efficient management of networks, particularly for edge device connectivity
- TC MSG (Mobile Standards Group) considers how AI impacts aspects specific to networks in 3GPP, 5G and further extensions
- TC ERM/MSG have experience in Standardization Requests for public radio networks, which are likely to be mission-critical infrastructure for society and will be highly impacted by AI
- TC ATTM and ISG mWT may need to work on point-to-point radio interfaces optimized with AI, although it may yet be possible to consider AI components as simply external tools
- TC INT develops GANA (Generic Autonomous Networking Architecture, see the [whitepaper](#)) which allows interoperability of networks using autonomous optimization
- TC SmartM2M has initiated work related to M2M (IoT) and AI, since it is obvious that data streams from M2M devices will be a source of much of the real-world information pouring into AI systems
- TC ITS (Intelligent Transport Systems) is of course updating its guidelines and specifications for interworking of car-to-X communications to take account of the needs of AI-enabled autonomous vehicles and also city traffic optimization
- TC eHealth (Electronic Health) is focused on ensuring interworking of health and personal health solutions which use AI, and – most importantly – ensuring that the solutions can be designed to comply with European Union requirements for public and personal health, safety and mental health (including privacy)

An upcoming regulatory framework – the European AI Act

It is understood that AI is a technology with immense opportunities giving the potential to offer a wide array of economic and societal benefits to European citizens and industries. On the other hand, care must be taken to avoid potential new risks or negative consequences for individuals or the society. Those may indeed arise if AI is used without any rules or boundaries.

Not surprisingly, the European Commission has indeed proposed a regulatory framework on Artificial Intelligence, currently being discussed

by the European Parliament and Council, with the following **specific objectives**:

- ensure that all new AI systems placed on the Union market and used are safe and respect existing law on fundamental rights and Union values;
- ensure legal certainty to facilitate investment and innovation in AI;
- enhance governance and effective enforcement of existing law on fundamental rights and safety requirements applicable to AI systems;
- facilitate the development of a single market for lawful, safe and trustworthy AI applications and prevent market fragmentation.

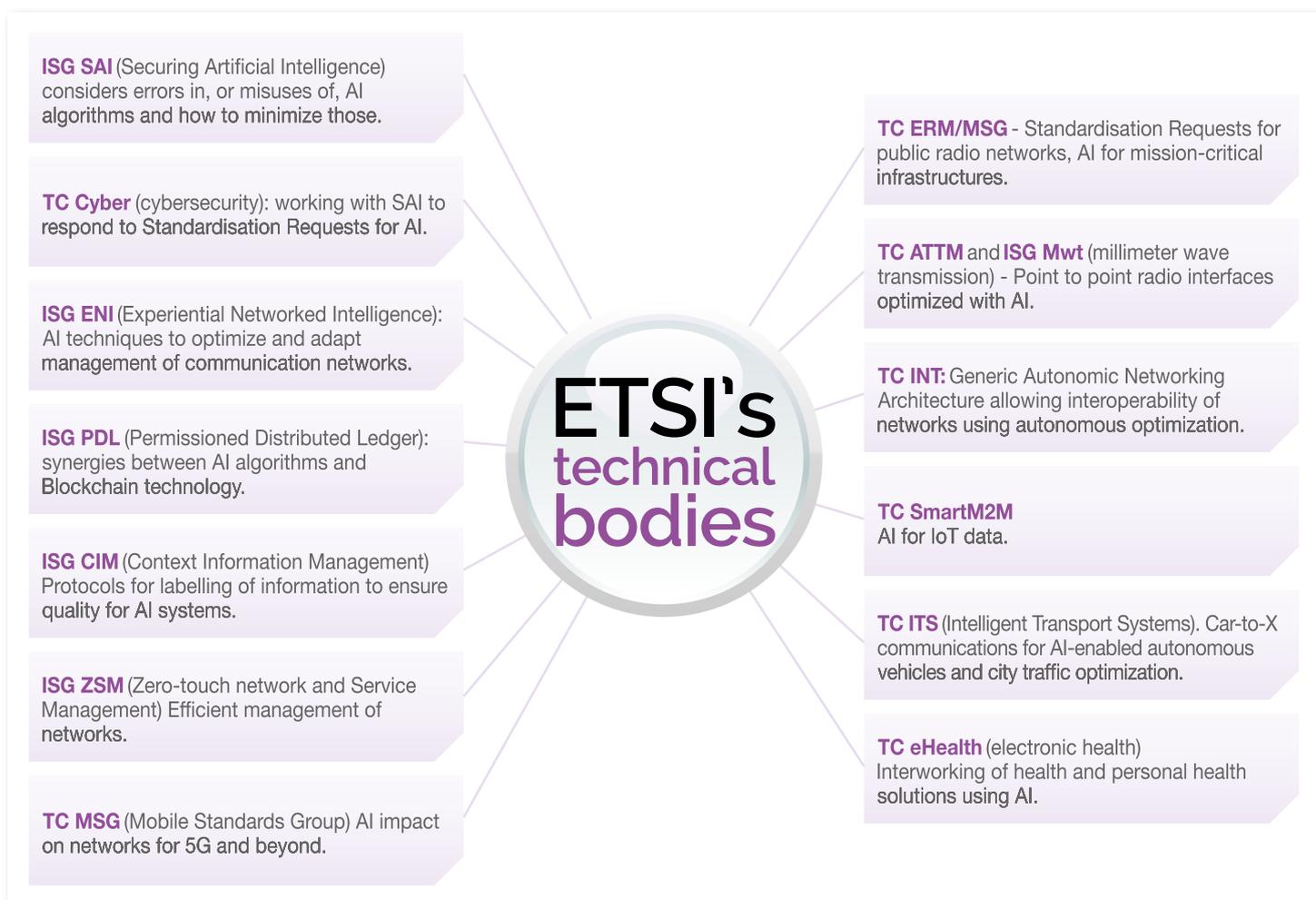
A corresponding draft of the AI Act has been made available publicly in April 2021, which was followed by a draft Standardization Request (SR) sent to all

European Standardization Organizations (ESOs: ETSI, CEN, CENELEC) on 20 May 2022.

ETSI has identified available competences and dozens of existing work items of relevance to the Draft AI Act and Draft AI SR across the groups listed above.

ETSI is in a strong position to support the European Commission in the implementation of the AI Act and is, under the leadership of OCG-AI, in the process of coordinating, with the other ESOs, the creation of related European Norms in answer to the Draft SR. All ETSI members are invited to join forces and contribute to this activity which will shape the future of AI in Europe!

For more information on AI in ETSI, look at our technology page: <https://www.etsi.org/technologies/artificial-intelligence>



First Report on hardware to secure AI



ETSI recently released a Group Report, [ETSI GR SAI 006](#), outlining the role of hardware in the security of artificial intelligence (AI).

AI hardware provides the platform that supports and accelerates AI-related operations. Aside from general security requirements, the hardware used in artificial intelligence and machine learning (AI/ML) applications features additional security requirements to protect hardware in AI/ML specific use cases, including those in which AI/ML is used to attack generic, or specific, computing, storage, and communication hardware.

“AI is expected to revolutionize our wireless ecosystems, and the increased integration of AI throughout our technologies and solutions makes AI security all the more important,” says Alec Brusilovsky, the ETSI SAI Industry Specification Group Rapporteur. *“It’s been suggested that the best way to safeguard AI is to constantly improve its security. The research featured throughout the ETSI GR SAI 006 report reveals that our coveted level of security depends on and stems from hardware security for AI”.*

New standard to secure Home Gateways

ETSI has released a new cyber security specification for Home Gateways, called [ETSI TS 103 848](#) and developed by the CYBER Technical Committee. Adapted from the provisions of the world-first standard to secure consumer IoT devices, EN 303 645, this technical specification will secure physical devices between the in-home network and the public network, as well as the traffic between these networks. *“Home Gateways are the first line of security defence for connected IoT and other home devices. While a secure home gateway does not remove the need for strong security of local devices connected to the gateway, it can provide protection against vulnerability for legacy devices or for those devices that cannot otherwise be secured. A secure HG is therefore a key security layer of the connected home”*, says Alex Leadbeater, Chair of the ETSI CYBER TC.

To help manufacturers and other stakeholders, the ETSI CYBER technical committee has also released a Technical Report, [ETSI TR 103 621](#), to provide guidance to implement the provisions in ETSI EN 303 645.



First specification on F5G architecture

ETSI’s 5th Generation Fixed Network group (ISG F5G) has released its first specification for F5G Network Architecture [ETSI GS F5G 004](#). This architecture will enable a variety of services for residential and enterprise customers over one physical network with guaranteed SLAs (service level agreement).

“This specification represents a foundation in F5G work, as it is the basis for future evolution. Fibre and fibre-based optical networks are the key technical enablers of our society’s twin transitions (green and digital), providing sustainable and cost-effective communications with high bandwidth, stability, reliability and improved latency. Based on the innovative design with dual plane and E2E full-stack slicing across all the network segments, reachability is greatly improved” says Luca Pesando, Chair of ETSI ISG F5.



SECURING ARTIFICIAL INTELLIGENCE

Society and critical national infrastructure have now become more reliant on AI. While many of the basic security risks and attack vectors apply to communications or data processing systems in general, they also apply to AI. AI introduces new security risks. Find out more with Alex Leadbeater, the Chair of our groups on cybersecurity and Securing AI in our Spotlight article. In our use case, NTT explains how ETSI standards are used for AI to improve cloud management for virtual desktop infrastructure and how building AI models from cloud telemetry data can achieve a reduction of OPEX including human resources costs, operating time costs and cloud resource costs.

Securing AI

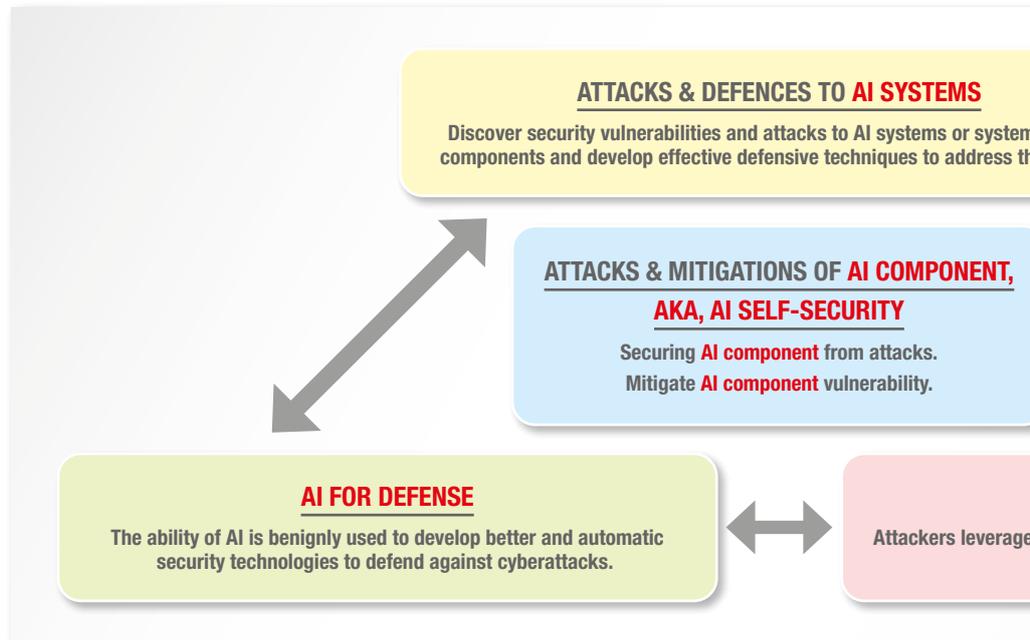
AI is now a key part in nearly every business and societal service of the European or global citizen. Either by design or by retro-fit to legacy systems, AI is increasingly responsible for all data onboarding, processing and other life cycle events that until recently were handled largely by fixed non-adaptive legacy rulesets system designs. Especially for legacy systems not originally developed with AI components within their security risk and threat models, understanding the full security risks posed by AI within a system is complex. However, in all cases systems need to be **secure by design** with all risks both traditional and AI specific, adequately mitigated.

ETSI first on Securing AI

Starting work in 2019, ETSI **ISG Securing Artificial Intelligence** (SAI) was the first standardization group in an European standards organization (ESO) and a global standards development organization (SDO), specifically created to study the challenges of securing AI. With a membership from service operators, academia, government institutions and manufacturers, ISG SAI is able to draw on a wide range of cross industry AI experience.

ISG SAI focuses on the fundamental challenges of securing all systems which included AI components. While ISG SAI considers a large range of AI use cases, it currently does not develop recommendations specific to individual AI applications or algorithms.

ETSI ISG Securing Artificial Intelligence (SAI) was the first standardization group specifically created to study the challenges of securing AI.



AI: an increased interest to regulators

As discussed in the Tech Highlight section of this edition, as society and critical national infrastructure have become more reliant on AI, AI is becoming of increased interest to regulators. Regulators and civil society groups wish to ensure that applications using AI are ethical, secure and offer necessary transparency to respect fundamental rights such as EU GDPR. The **EU AI Act** will regulate AI design and operation within Europe

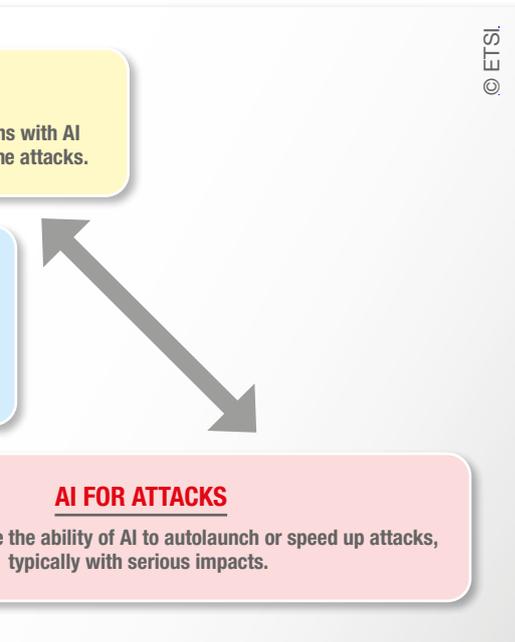
including security aspects. With a focus on high-risk critical systems, this will drive an increasing need for AI security standards. In conjunction with ETSI TC CYBER, development of AI security standards in support of the AI Act will

As society and critical national infrastructure have become more reliant on AI, AI is becoming of increased interest to regulators.

need to draw on the expertise of many ETSI technical committees and Industry Specification Groups across ETSI including ISG SAI.

AI introducing new security risks

While many of the basic security risks and attack vectors that apply to communications or data processing systems in general also apply to AI, AI introduces new security risks. Some AI attacks are well publicised and include simple data input manipulation attacks that would not confuse a human, while others are more complex such as AI



supply chain attacks, model poisoning and evasion. Similarly, the potential theft and re-use of Intellectual property of the AI itself in terms of the models and training data sets results in completely new risks for AI system developers or owners.

In all cases, it is necessary to identify the actual threats that specifically result from AI inclusion within a system in order to develop appropriate mitigation strategies, not just reuse generic mitigation applied to legacy non-AI systems. It cannot simply be assumed that legacy ICT security techniques will be sufficient to fully mitigate related or equivalent attacks applied to AI systems.

it is necessary to identify the actual threats that specifically result from AI inclusion within a system to develop appropriate mitigation strategies.

As ever, AI cyber security is risk based and no single or multi-layer AI security threat mitigation strategy will achieve 100% security or 100% legal certainty, 100% of the time.

Many AI security mitigation strategy approaches introduce filtering, throttling or data qualification of live data, AI models or training data sets. While it is possible to achieve an optimum level of mitigation for a specific AI application deployment, the mitigations may introduce some level of bias, exclusion or other diversity reduction, in order to prevent attacks. Therefore, mitigations need to be optimised between different use cases and for different AI models.

Three ETSI key publications were cited by EC researchers during development of the EU draft AI Act.

Real-time adaptive mitigation strategies may be required for some high security or privacy sensitive applications.

Securing AI in ETSI: where we are

Since 2019, ISG SAI has published several technical reports covering a number of AI security building blocks. SAI-004 Problem Statement sets out the overall landscape and challenges of securing AI systems. SAI-004 identifies the fundamental areas which make securing AI different from non-AI ICT systems.

Linked to the problem statement, SAI 001 AI Threat Ontology considers the nature and differences of attacks on AI systems compared to traditional non-AI legacy systems. Building on SAI-004 & 001, SAI-005 sets out mitigation strategies that can be adopted in different AI use cases based on associated threats. Together these three key publications form a start point for any detailed consideration of AI security and were cited by European Commission researchers during initial development of the EU draft AI Act.

Given the increased attack surface of AI systems and recent security incidents such as Log4J, whole lifecycle Software Bill of Materials (SBOM) security is even more important for AI systems. SAI-002 published in mid-2021, considers AI specific aspects of data supply chain security.

Looking forward from mid-2022 onwards, the ISG SAI work programme is addressing further areas of AI security. These include; AI computing Platform Security (extending SAI-006 on AI hardware security); Transparency; and Traceability. ISG SAI is also working on analysis of the key differences between data handling from a privacy perspective in AI systems compared to non-AI applications and identifying the key principles required to maintain privacy.

Neither the global security threat landscape or exact evolution path of AI systems towards a possible future Artificial General Intelligence (AGI) is constant or always predictable. Therefore ISG SAI will continue to evolve the work of the ISG to address both current and evolving AI security challenges.

Alex Leadbeater Chair of ETSI ISG SAI & TC CYBER.

Neither the global security threat landscape or exact evolution path of AI systems towards a possible future Artificial General Intelligence (AGI) is constant or always predictable.

AI to improve cloud management for virtual desktop infrastructure

An increasing number of organizations are using cloud for various tasks and services such as web services and machine learning in the cloud environment. To provide a prompt cloud service and improve customer satisfaction, a cloud service provider needs to efficiently design the resources that will fit the service requirements. NTT labs has developed a solution, based on ETSI ENI specifications, to tackle this challenge.

The challenge

Whether cloud service providers (CSPs) use private clouds, public clouds, or combinations thereof, making wise use of cloud resources is key for cost-and energy-efficiency, but at the same time poses great challenges.

Indeed, there is a significant gap between the needs of the cloud user and the cloud provider. When requesting a cloud service, the cloud user needs to declare their “intent” in terms of performance, security, or reliability requirements. On the other hand, the cloud provider needs to select the specific cloud resource configurations that meet the cloud user’s intent, such as the number of virtual machines (VMs), vCPU, and memory to be allocated. In other words, the cloud provider needs to translate the user’s intent, the “what” into “how” the service is implemented. Today, the transfer from service requirements to resource requirements relies heavily on an individual human’s decision-making process.

The solution with AI intent-based cloud management

In response to these issues, NTT labs has worked on an intent-based service management framework that uses AI to analyze the service requirements expressed. It can be used to assist in the consultation, design, and operation phases in cloud service delivery.

This framework has been demonstrated in a [Proof of Concept](#) based on ETSI ENI specifications (ETSI GS ENI 001, ETSI GR ENI 008 and ETSI GS ENI 005).

By building AI models from cloud telemetry data, a reduction of OPEX including human resources costs, operating time costs and cloud resource costs can be expected.

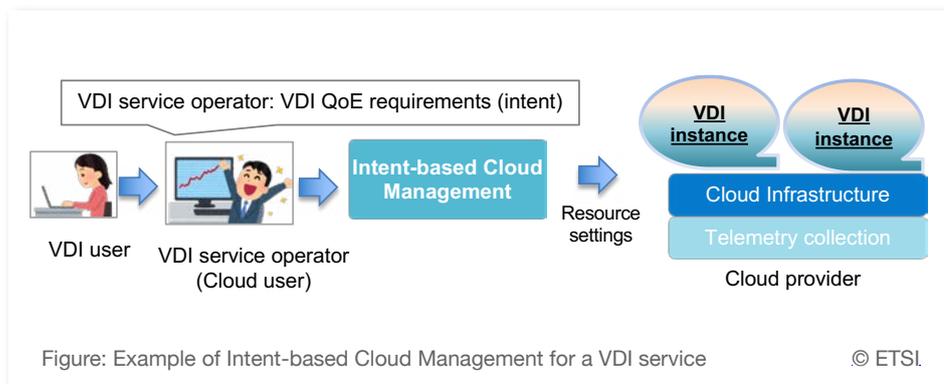
Applied to virtual desktop infrastructure

The PoC has also validated Intent-based cloud management in a virtual desktop infrastructure (VDI) service.

In a VDI service, virtual desktop environments are implemented as VM instances on cloud hosts. VDI users conduct their daily work in the virtual desktop instances. To maintain users’ quality of experience (QoE), VDI service operators need to determine and adjust appropriately the number of VMs to be placed on each host. However, this decision requires a high level of skill and experience. An improper decision can lead to poor user experience or low resource efficiency.

Intent-based cloud management takes the VDI administrator’s intent with regard to QoE requirements as input and automatically decides on the optimum number of VMs on each host to meet the intent. It increases VDI user satisfaction and, reduces cloud resource cost and the decision-making assistance for the VDI administrator.

In the future, NTT labs aim to apply Intent-based Cloud Management to more use cases, and explore the complex business scenarios for Intent-based management.



■ Chao Wu, Research Engineer, NTT Laboratories.

How academia helps lead ETSI's activities on cyber and AI

The Centre for Secure Information Technologies (CSIT) at Queen's University Belfast has been an ETSI Member for almost ten years with the involvement of both technical and business staff. In recent years, with the advances of Artificial Intelligence (AI), the engagement has grown with a greater number of staff playing more active roles.



A UK National Centre

CSIT is the UK's National Innovation and Knowledge Centre (IKC) for cybersecurity research. As an IKC, CSIT is focussed on bringing together academia and industry to advance research in emerging technologies in order to address market challenges. Specific topics of interest include post-quantum cryptography and Artificial Intelligence (AI) where researchers are exploring the use of AI in the cybersecurity domain, and the security challenges unique to AI systems.

An evolving engagement

Philip Mills (CSIT Head of Business Development) was one of the early

participants in ETSI TC CYBER following its creation in 2014, and was able to advise research colleagues on how they might engage with specific technical groups at ETSI. This resulted in Dr Ciara Rafferty and Dr Sarah McCarthy playing active roles in the Industry Specification Group for Quantum Safe Cryptography (ISG QSC), drawing on their significant experience of EU research in the field (www.safecrypto.eu) and their participation in the NIST competition in Post-Quantum Cryptography.

More recently, CSIT was an early participant in the Securing AI group (SAI ISG), with Philip Mills and Dr Paul Miller (CSIT Deputy Director) taking the lead on the first deliverable of the group, Securing AI Problem Statement. Some of the topics set out in that report (e.g. fundamental security challenges of AI systems, threats

and attacks to AI systems, fairness, ethics and explainability) align perfectly with CSIT's research programmes.

Stakeholder engagement – the driver for involvement

CSIT's engagement with ETSI is invaluable in supporting our understanding of the current challenges faced within industry, and in making sure that our research is well-informed by market need. Discussion with industry colleagues in the ETSI groups allows our researchers to gather perspectives on problem areas from a broad range of industry stakeholders to supplement their own academic perspective. These discussions are invaluable in helping researchers to understand the potential impacts of new and emerging technologies, and the market opportunities that might emerge for the use of such technologies. Our engagement with ETSI has also given us the opportunity to disseminate information about our research programmes through events like the ETSI Security Week, where we have presented on a number of occasions. As the scope of our work grows into areas such as Health and Agri-food, we see the opportunity to become involved in other ETSI groups like eHealth, and engage with an ever-growing group of stakeholders.

■ Philip Mills, CSIT Head of Business Development.

An operator perspective on joining the dots between innovation and standardization

Diego Lopez, Senior Technology Expert at Telefonica I+D, does a deep dive into the main enablers and barriers to bringing research into standardization with David Boswarthick, ETSI Director New Technologies.



- **Network as a platform**, exploring new ways of providing and consuming network services.
- **New operational models**, including such aspects as data-driven management towards autonomous networks.

We are also following fundamental matters, such as security or modelling, and also disruptive technologies such as Quantum Networks and Distributed Ledgers.

What are the hot research topics your team is focussing on these days?

The Technology Exploration Unit I lead focuses on the broadest part of the “innovation funnel”, trying to identify and evaluate the applicability of new technology approaches to network infrastructures, and working to shape their evolution towards what we believe is best aligned with our strategy. One good example is the decision we took some time ago to focus our research and standardization activities on NFV.

Currently, we are working on three main notions:

- **Open architectures**, addressing disaggregation and programmability features.

What are the main challenges faced in connecting research and standards, and how does your team tackle them?

Standardization is still perceived by many researchers as a final stage of technology development, not to be attempted until a reasonably wide adoption is achieved, and specific interoperability issues arise.

Standardization is often considered as a means to solve deployment problems, rather than a tool for the development or early adoption of new technologies.

This isn't helped by the fact that many researchers focus on purely academic goals related to publication in high-impact and influential journals, with links to the academic accreditation systems in many countries, especially in Europe. Academic authorities and accreditors should be aware that **the level of scrutiny and deep peer review is much stronger in an average standards committee than in any journal**. Plus, what we could call “practical citation”, through implementation, testing and actual interoperability, implies a profound impact that is difficult to achieve through usual publication patterns.

Also, research conducted in smaller companies, such as start-ups and spin-offs, is strongly product-oriented and often standardization is perceived as an extra expense, that requires long and fruitless debates and may lead to Intellectual Property leakages. Small businesses must be advised that significant contributions to standards can be made without dedicating a huge number of resources or risking total knowledge disclosure.

Finally, within big industrial stakeholders, the temptation to follow one-headed solutions is very popular right now. This is accentuated by the perceived success of the Hyperscalers, either directly or by means of a mistaken way to apply open-source principles. These Hyperscalers have existed since computing and networking convergence began, and have been defeated time and time again by the application of the open, consensual solutions provided by standards.

However, when correctly applied, open sourcing converges towards a different means to produce standards.

Can we do more to shorten the innovation and standards lifecycles?

First we must bridge the gap between the innovation and standardization teams,

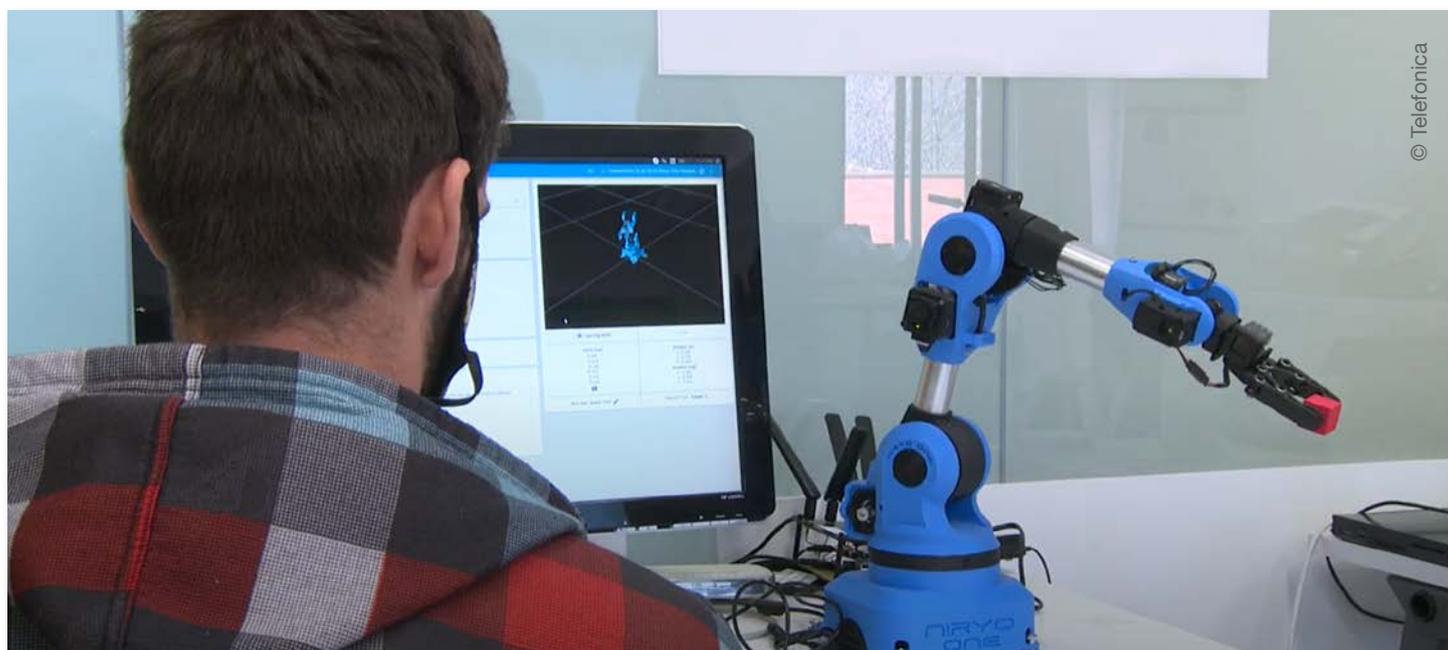
interoperability: Interfaces and models, moving away from the rigid architectural scaffoldings that have become so commonplace in modern standardization.

What else can ETSI do to help researchers and innovators?

ETSI has already started a fascinating journey along the lines I mentioned before, especially by establishing

Given the closer collaboration among researchers and standards-leads, I can see a growing interaction with joint research projects, especially those funded by collaborative efforts like the Horizon Europe EC program. The commitment to experimental validation of early standardization proposals, as part of these new paths to standards is another promising lead to be encouraged by Industry and the Commission.

On top of this, a deeper change is needed to achieve the **right level of standardization**, avoiding the temptation to make **design decisions**



allowing them to collaborate together, ideally in joint units. Through appropriate funding and collaboration agreements, all possible academic and industrial stakeholders would be involved in this ideal scenario.

A second action is to examine how standardization is performed, reducing the length of development cycles, facilitating the early engagement of potential user communities (at all levels, from solution developers to end users), and seeking practical feedback from interoperability trials and pilot assessment at the earliest possible stages.

Another change should be to refocus standards activities on matters related to

multiple new mechanisms to create a closer connection between research and standards. Starting with what I am proud to say was the pioneering approaches of ISG NFV, ETSI has taken relevant steps, including the public availability of early drafts, the promotion of feasibility and interoperability demonstrations via proofs-of-concepts and Plugtests™ events for interoperability assessment, as well as the use of more agile processes and tools, and the direct collaboration with open-source communities. The further development of these new areas and communities under the auspices of ETSI is an extremely pertinent path to explore.

part of the norm, and therefore reducing the hyperinflation of specifications we currently suffer in certain areas.

While standards proliferation can be perceived as a positive for facilitating strong commitment and even attract innovators, in the medium and long term, it translates into **a level of ossification that can limit innovation** and be perceived by researchers and innovators to be a natural consequence of standardization.

We need to lead by example and demonstrate that the **right level of standardization is a key enabler for technology innovation**.

■ *Diego Lopez, Senior Technology Expert at Telefonica I+D.*

Meet our new Fellows for 2022!

The ETSI Fellowship programme rewards individuals who have made an outstanding personal contribution to ETSI, towards building the work of ETSI, or towards growing its reputation in specific sectors of standardization. Candidates for an ETSI Fellowship must have been proposed by representatives of at least two ETSI members. Fellowships are awarded each year by an Award Committee composed of the ETSI General Assembly Chair and Vice-Chairs, the ETSI Board Chair and the ETSI Director-General. Our new fellows will receive their awards at the November General Assembly at ETSI.

More information: <https://www.etsi.org/membership/fellows>





Diego López

Head of Technology Exploration and Standards, GCTIO Unit of Telefonica, Spain.

Diego has been especially active in the ETSI Network Transformation initiatives, being among the original proponents of the seminal ISG NFV, and since then

taking part in its leadership: he has acted as Working Group Chair and as Chair of the Technical Steering Committee, and he chaired the ISG for four years.

In addition to this, Diego took an active part in the inception and foundation of ISG ZSM (Zero-touch network and Service Management), of which he has recently been appointed Chair, and is active in other related groups such as ISG ENI (Experiential Networked Intelligence) and ISG MEC Multi-access Edge Computing.

Finally, he is active as well in other initiatives related to network transformation, especially as main promoter and current chair of ISG PDL (Permissioned Distributed Ledger), part of the founding groups for ISG SAI (Securing AI) and ISG ETI (Encrypted Traffic Integration), and contributor to TC CYBER, ISG NIN (Non-IP Networking) and ISG QKD (Quantum Key Distribution).



Dr Günter Kleindl

Standardization Manager, OVE, Austria.

Dr. Günter Kleindl has been a key member of the DECT standards community since 1987, when he joined ECTEL TCS and started to participate in CEPT RES3, which then became ETSI RES3 after the

foundation of ETSI. In 1989 Günter moved to France for two years to lead the ETSI Project Team 10, which developed the DECT base standard that was first published in 1992.

Günter has spent over 35 years of his career in wireless communications and has supported the development of ETSI standards and the needs of the industry in other standards bodies and industry fora. As TC Chair and technical expert, he played the key role in the submissions to ITU-R.

In the year 2000 he managed the approval of DECT as a member of the IMT-2000 family and in the year 2022 he achieved the ITU-R approval of the new DECT-2020 standard as an IMT-2020 technology. A well-respected member of the wireless communications community globally, he is probably the person who has contributed the most to the continuing worldwide success of the DECT standards.



Larry Taylor

Retired, Former Consultant, Discrete Time Communications, United Kingdom.

Larry has spent much of his career working to obtain spectrum for new or emerging communications technologies, supporting spectrum requests with

industry and international standards, and participating in conferences, workshops and funded R&D programmes to promote the work and associated standards.

The work on HIPERLAN in ETSI RES10 supported the initial designation of 5GHz spectrum on which today's professional WLAN market is built. Work in IEEE and industry standards bodies supported the FCC UWB ruling for spectrum below 10.5 GHz.

Larry has worked on utility networks in IEEE, TIA, industry standards bodies and ETSI-supported European spectrum designations at 870 MHz. He is a keen proponent of technical rigour and testability in standards and a strong supporter of the standards process and cross-fertilization between SDOs. He has led many technical committees in a variety of SDOs while also being a technical contributor and technical editor.



Lindsay Cornell

Principal Systems Architect, BBC Design + Engineering, United Kingdom.

Lindsay has been involved in radio broadcasting throughout his career and is a pioneer of digital broadcasting technologies. He began his involvement in ETSI as Chair of STF-84 in 1997,

developing the standard interfaces for the nascent Digital Audio Broadcasting (DAB) transmission equipment.

Through his careful consensus-building approach, Lindsay has led the work to produce numerous digital radio standards (now approaching 100), taking the role of Rapporteur in JTC Broadcast. Lindsay was instrumental in bringing the standards for Digital Radio Mondiale (DRM) and RadioDNS hybrid radio into ETSI.

Lindsay has also contributed significantly to the development of Harmonized Standards for the Radio Equipment Directive in TC ERM TG17 (PMSE and broadcast). He has chaired TG17 WG2 since 2014, which has created the multipart deliverable for broadcast sound receivers, and adapted and updated the R&TTED standards for broadcast sound transmitters.

Lindsay continues to collaborate and develop deep relationships across industry, with emphasis also on spectrum and regulatory issues as Chair of CEPT FM51.

Finding AI in 3GPP

Work on AI is now well established in 3GPP, with studies and specifications expected in Release 18 that will move standards towards providing processes that make full use of the predictive power of data.



Both TSG RAN and TSG SA groups have drawn up specific descriptions of the features needed to embrace both Artificial Intelligence and its class-mate Machine Learning.

Working Group (WG) RAN3 has completed [TR 37.817](#) – a Study on enhancements for data collection for NR and ENDC (E-UTRAN New Radio – Dual Connectivity), focusing on three main use cases for AI/ML solutions:

- Network Energy Saving (traffic off-loading, coverage modification and cell deactivation).
- Load Balancing, to distribute load effectively among cells or areas of cells in a multi-frequency/multi-RAT deployment to improve network performance based on load predictions.
- Mobility Optimization: where satisfactory network performance during mobility events is preserved while optimal mobility targets are selected based on predictions of how UEs may be served.

NR impacts

WG RAN1 has a Study ([RP-213599](#)) on Artificial Intelligence, Machine Learning

for the NR Air Interface, looking at performance, complexity and potential specification impacts.

The RAN 1 use cases will focus on:

- Channel state information (CSI) feedback enhancement, e.g., overhead reduction, improved accuracy, prediction.
- Beam management, e.g., beam prediction in time, and/or spatial domain for overhead and latency reduction, beam selection accuracy improvement.
- Positioning accuracy enhancements for different scenarios (e.g., those with heavy NLOS- Non-line-of-sight conditions).

This Study, and its resulting Technical Report (TR) in the 38 series, will lay the foundation for future radio air interface use cases leveraging AI/ML techniques.

5GS support

At the system level – WG SA2 is preparing its Study, with a focus on 5GS architectural and functional extensions, to allow providers to offer the 5G System as a platform to support AI/ML-based services over the application layer.

The SA2 study ([TR 23.700-80](#)), follows on from WG SA1's identified requirements (in [TS 22.261](#)) for the support of AI/ML model distribution, transfer, training for various applications (e.g. video/speech recognition, robot control, automotive) for three main types of operations:

- AI/ML operation splitting between AI/ML endpoints.
- AI/ML model/data distribution and sharing over 5G systems.
- Distributed/Federated Learning (FL) over 5G systems.

Media and Management

Both WG SA4 - Multimedia Codecs, Systems and Services and WG SA5 - Management, Orchestration and Charging also have important studies underway:

- Study on Artificial Intelligence and Machine Learning for Media ([SP-220328](#)), to identify relevant interoperability requirements and implementation constraints of AI/ML in 5G media services.
- Study on AI/ML management ([SP-211443](#)), to study the management capabilities and management services to support and coordinate AI/ML in 5GS.

Full details of the 3GPP AI work and all other study/work items are found in the Work Plan at <https://www.3gpp.org/specifications/work-plan>

■ Kevin Flynn, 3GPP Marketing and Communications.

Standards for common IoT service functions to support AI/ML services

Intelligent IoT services analyse IoT data using artificial intelligence (AI) and machine learning (ML) technologies, and also perform various tasks such as performance optimisation, abnormal behaviour detection, and collision avoidance. In terms of AI/ML, securing high-quality training data is key to success.

Developing standards for AI/ML support

Recently, oneM2M, the global standards initiative for IoT, has focused on developing standards for AI/ML support as part of the common functions of the IoT service layer. Previously, AI/ML services analysed, assessed, and issued forecasts based on data stored in local storage. In this case, all AI/ML service functions and logics resided within the application, disadvantaging the efficient development and management of AI/ML models. Many essential steps for AI/ML, such as data collection, management, and training, must be carried out every time a new AI/ML service is developed. However, as part of the new standard developed by oneM2M, AI/ML developers can easily and efficiently manage their prediction models and training data via functions provided by the oneM2M common service layer.

System enforcement to AI capabilities

oneM2M's 50th Technical Plenary, held in August 2021, approved a new work item, WI-0105: "System enforcement to AI capabilities", which was supported by various members such as KETI, Hyundai Motors, Exacta GSS, Deutsch Telecom, SBS, Nokia, Hansung University, Orange, and Convida Wireless. The approved work item is one of the main oneM2M 5 work items released, and the development of the technical report – "TR-0068: AI-enablement to oneM2M" has begun on

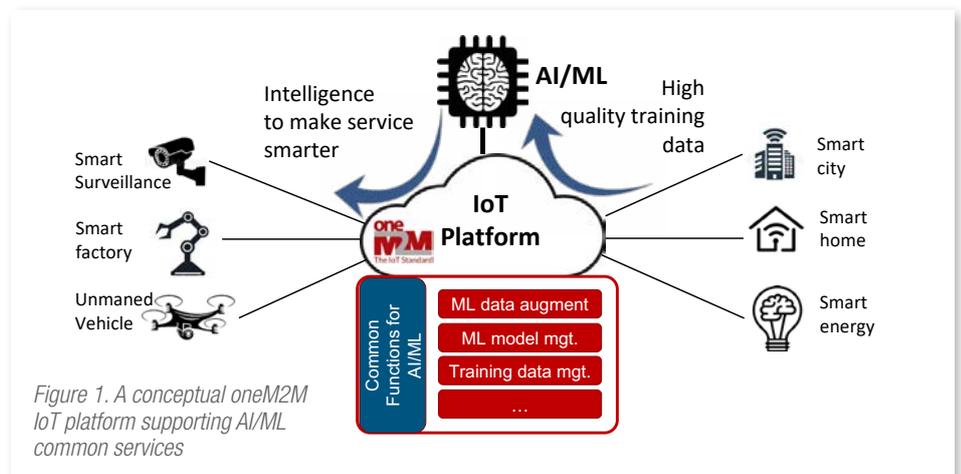


Figure 1. A conceptual oneM2M IoT platform supporting AI/ML common services

collecting AI/ML usage case studies that require IoT platforms and deriving common service functions for AI/ML services (See Figure 1 above).

This new work item for AI/ML enablement to oneM2M addresses many aspects of AI/ML and IoT platforms. That said, it mainly focuses on standard development for the following aspects:

- State-of-the-art AI/ML technologies that use data from IoT systems
- Potential usage case studies and requirements to support AI services and their data management (e.g., autonomous driving, last mile delivery, smart virtual store in metaverse, pattern detection in video streams, autonomous operation, auto calibration using ML)
- Managing and manipulating training data in oneM2M to support AI technologies to build & run a model
- Feasibility study on running AI algorithms in oneM2M as a new common service function

- Supporting various parameters schemes i.e., power consumption, cost for the future etc. in oneM2M to support AI/ML services
- Distributed and federated ML on Edge/Fog oneM2M nodes
- Services to assist with deploying trained machine learning models onto field device nodes so that inferring can be performed by the field device nodes using the models

In addition to this, the work item is considering linking AI/ML and the IoT with various research and standard activities. For example, this would cover the security of AI/ML models with the ETSI Securing AI group (ISG SAI), the development of AI/ML network functionality for the Secondary Cell Group (SGC) in 3GPP SA2, and "AIStar: Open source development and Standardization for AI-enabled IoT platforms and interworking," a research project supported by the Korean government.

■ Prof. Song JaeSeung, oneM2M Technical Plenary Vice Chair, KETI and Sejong University.

New Marketing Division



ETSI is delighted to present its new Marketing Division. The new division of 16 international professionals now includes the existing Communications and Meetings & Events departments, as well as a new Branding team.

It was implemented during the first semester of 2022 in order to create

synergies between the various pools of expertise. This new organization aims to further enhance the visibility of our members' work and to strengthen the ETSI brand worldwide. The Marketing team provides the tools and facilities to support the organization in communicating effectively. It also ensures that our members can meet and

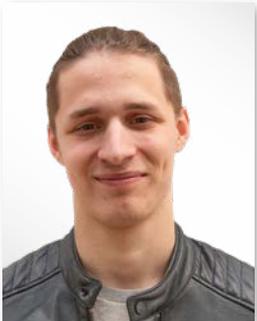
work in optimal conditions. The division's expertise covers branding material and strategy, press & media relations, technical editing, web development & social media, meetings, workshops and Plugtest™ support, video production, and communication support for specific groups like 3GPP, oneM2M, OSM and TeraFlowSDN.

No Finish line

No Finish Line is a well-known charity event organized annually to raise money for various projects supporting sick and disadvantaged children. The principle is simple, and the event is accessible to all, as participants run or walk a secure 1-km track located on the famous “Promenade des Anglais” in Nice. The course is open non-stop for 5 days and 4 nights. At the end, a donation of €1 is made for each kilometre covered by each participant. ETSI was a sponsor of the 2022 event in Nice and on Thursday 28 April, 42 staff members volunteered to use their lunch break to put on their trainers and run or walk, or even both, to support children. As a result, in just two hours, over 370 kilometres were covered by all ETSI-sponsored participants, who certainly had fun while taking part! In total, ETSI contributed a donation of €1,075 to the 2022 No Finish Line fund.



Welcome to our new staff members



**Yann
Le Cossec**

IT Support Technician.

After completing a Baccalauréat in Science and Technology (equivalent to A-Levels), Yann studied Networks and Telecommunications at SophiaTech Campus, a technological school located near ETSI, in the heart of the Sophia Antipolis Technopole.

While pursuing his studies, Yann completed a few internships in various companies, including one within the ETSI IT department in 2017. Once graduated, he started leading IT classes and took on jobs in the construction sector while he looked for a permanent IT position.

Yann started to work in ETSI as an IT support technician in February 2022, and he considers ETSI as his first real professional experience. Plus, he is our youngest recruit!

He is now the face of the ETSI Helpdesk, where he provides efficient IT support to colleagues and ETSI members.

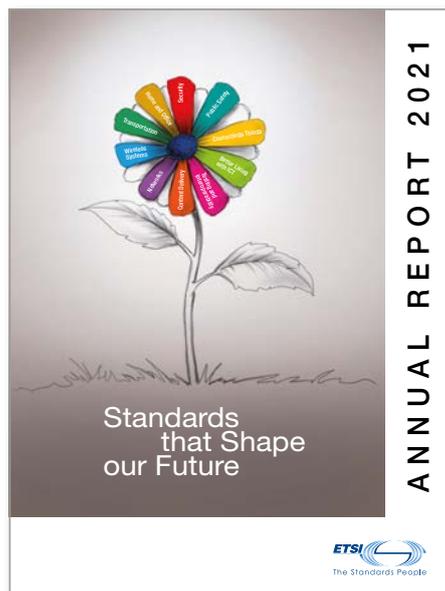


**Anastasiya
Belchankova**

Business Support Analyst.

Anastasiya studied IT and IT Management in Minsk, Belarus. After graduating, she spent a couple of years working at the Belarusian National Technical University in Minsk, where she provided IT support. She later decided to resume her studies and found a programme for a Master's Degree at ESIEE, an engineering school in Paris. Once she had her degree in-hand, Anastasiya received a job offer in the Nice region and moved to the south of France for the first time. She was a contracted business analyst and provided maintenance and production support at Amadeus for around four years. Once her mission was achieved, she decided to set out for new horizons and settled in Montpellier, France, where she worked as a QA engineer at the Crédit Agricole bank. Anastasiya decided to look for new opportunities and was contacted by a head-hunting agency, who recommended her for the position of Business Support Analyst at ETSI. She has now been successfully fulfilling this role since the 1st March 2022.

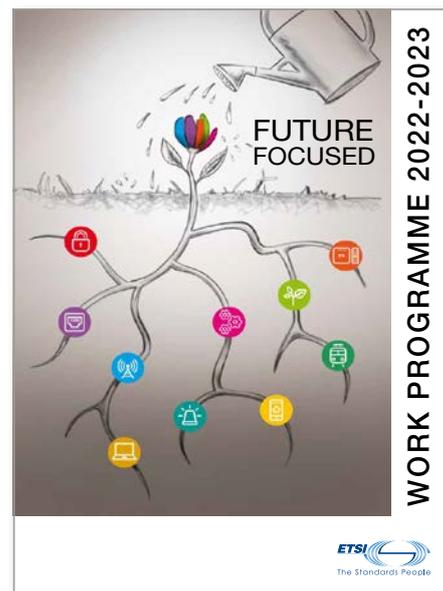
ETSI annual report, work programme and corporate presentation



The ETSI 2021 Annual Report and the ETSI 2022/2023 Work Programme have been published.

They outline the achievements of the past year while also providing details of our current and future technical activities. The Annual Report gives the reader a good overview of ETSI's performance in the previous year both technically and in other aspects of our activities, including the association's financial performance. The Work Programme provides a current overview of our technical work plus an insight into future plans and predictions. We encourage readers to use the electronic versions, especially of the work programme due to the links within it, which take readers to the latest status of the work carried out at any time.

Both documents are available at <https://www.etsi.org/media-library/work-programme-and-annual-reports>



ETSI new presentation template



We are delighted to announce the launch of the new ETSI-branded presentation template.

Having used the same previous template since 2018, it was time for a fresh look with a modern design that can be easily customised by selecting your preferred branding and feel.

You can find the new template (long and short version) and a pre-selection of alternative images by logging into the ETSI Portal: https://docbox.etsi.org/ETSI_presentations/ETSI_presentations/ETSI_Presentation_Templates

The previous templates have been removed, however, as they remain compliant with the ETSI brand, they may still be used during a transition period that will run until September 2022.

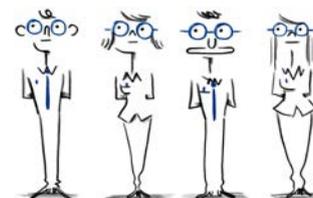
For more information, please contact branding@etsi.org.

Following the introduction of its new presentation template, ETSI has also created an updated corporate presentation which is available to all members who would like to present the principles of ETSI at [/docbox.etsi.org/ETSI_presentations/ETSI_presentations](https://docbox.etsi.org/ETSI_presentations/ETSI_presentations)

New ETSI animation video on AI

Artificial intelligence, commonly referred to as "AI", seems to underpin many aspects of our modern life, to the extent that "AI" has become a buzzword. But what is really AI?

We are developing a new video that will explain, in a fun and simple way, how AI is already improving our daily lives. It also covers the key developments that we can expect to see in future years and why standards and regulations are essential to the safe and successful development and public adoption of AI products and services. It will be available after the summer in the Media Library on the ETSI website: <https://www.etsi.org/media-library>. Stay tuned!



Join us at upcoming events

organized or supported by ETSI.

Find more information and register on our website at: www.etsi.org/events

September 2022

UCAAT, 13-15 September, Munich, Germany.

UCAAT (User Conference on Advanced Automated Testing) is the calendar highlight for ETSI's Technical Committee Methods for Testing and Specification. Hosted by Siemens Munich, UCAAT 2022 will be the 9th edition of the now well-established event, dedicated to all aspects of test automation.

Our society is becoming increasingly dependent on complex software systems and widely interconnected systems of systems. Discussions at UCAAT 2022 will address all aspects related to trustworthiness of systems and how it can be best tackled in testing.

October 2022

ETSI Security Conference, 3-5 October, ETSI, Sophia Antipolis, France.

ETSI's annual flagship event on Cyber Security is scheduled to coincide with Cyber Security Month 2022.

The event provides an exceptional opportunity for the security community to come together to exchange and share with experts, and to network with peers. The conference will offer three days of debates and discussions on EU and Global Cyber Security Regulation, Policy, Security Innovation and Standardization. This face-to-face event is an excellent opportunity for the security community to meet and discuss with experts, network with peers, and share facts and opinions on the subject of cybersecurity standardization.

Forming the next generation of ICT People, 6 October, ETSI, Sophia Antipolis, France.

ETSI is pleased to invite the international teaching community to its first seminar on teaching standardization. The teaching community will have the opportunity to deep-dive into the various aspects of ICT standardization and offer an insight into how to make the best use of the teaching aides developed by ETSI. Hosted in ETSI's headquarters in Sophia Antipolis, the workshop offers participants a unique opportunity to meet the authors of the teaching materials and to give them their comments and feedback.

ETSI IoT Week, 10-14 October, ETSI, Sophia Antipolis, France.

The 2022 edition of the ETSI IoT Week will focus on "Pursuing Digital and Green Transformation". This gathering of IoT experts has become a must-attend event for anyone in the field, as it offers an up-to-date overview of the major European and global trends in IoT services, technology innovations, deployments, and the relevant standardization work. The event is of particular interest to organisations and stakeholders interested in the service and operational areas of IoT: industry, SMEs, R&D and academia, policymakers, users of the IoT standards such as cities, governments, and societal actors.

Network X event, 18-20 October, Amsterdam, Netherlands.

ETSI is pleased to endorse the Network X event and will be actively present at the event jointly with 3GPP. Network X is an event bringing together the telecom and mobile industry, sparking powerful debates and connections. This is the new home of the long-running 5G World and Broadband World Forum, which will be joined by the newly launched Telco Cloud, designed to cover the full spectrum of the telecoms ecosystem.

ETSI SNAPSHOT

902
members

1871
standards
March-May 2022



27%
SMEs

637
standards
under development

+130
technical groups

3.9 M
standards' downloads
March-May 2022



16.100
online participants
March-May 2022



566
eMeetings
March-May 2022

13
conferences
& Plugtests
March-May 2022

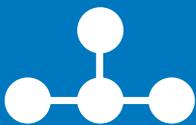
@ETSI
Secretariat

127
people

16
nationalities

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108
partnerships



Members
from
63
countries

About ETSI

ETSI provides members with an open and inclusive environment to support the development, ratification and testing of globally applicable standards for ICT systems and services across all sectors of industry and society. We are a not-for-profit body with about 900 member organizations worldwide, drawn from over 60 countries and five continents. Members comprise a diversified pool of large and small private companies, research entities, academia, government and public organizations. ETSI is officially recognized by the EU as a European Standards Organization (ESO).

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For more information please visit: www.etsi.org



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