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READY, STEADY, GO!



Dear Readers,

2018 has been marked by numerous important milestones for ETSI. First of all, our organization celebrates its 30th anniversary. Without the active participation of our members and the deep and loyal involvement of its staff, ETSI would never be where it is today. I would sincerely like to thank all members and all employees for driving our 30 years of lasting success!

Additionally, 2018 is also the 30th anniversary of the SIM card, of which ETSI feels very proud. The first meeting of the SIM Expert Group took place in 1988 under the CEPT mandate. The group moved to ETSI later that year, allowing direct participation of industry experts from all sectors. This allowed ETSI to become a leading standards organization with a recognized expert community in this field.

Finally, 3GPP is blowing out its 20th candle in December, reminding us of a time when ETSI, along with a select group of SDOs from Asia and North America, decided that we had to make the evolution of GSM (aka UMTS in our terminology) a global standard. Today, 3GPP has become the place to be for anyone that wants to influence or learn about the evolution of global mobile communications, a proof of which is

"I would sincerely like to thank all our members and all our employees for driving ETSI to 30 years of lasting success!"

the recent release of the 5G standalone specifications. 3GPP's work and ETSI's technology enablers make 5G the natural candidate to be under the spotlight in the first edition of our brand-new magazine.

Inside it you will also discover the companies who have recently become ETSI members, find out more about our latest specifications, learn about the importance of the ETSI brand, hear the voice of our members and much more...

With this, I'm very pleased to introduce you to ETSI's new magazine, which comes under the name ENJOY, a promise to offer you interesting information about ETSI and what is going on in our community.

Enjoy reading!



Luis-Jorge ROMERO
ETSI Director General

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Enjoy! The ETSI Mag

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Director of Publications: Nadja Rachow
Editor-in-Chief: Claire Boyer
Design: Le Principe de Stappler

Editorial office: ETSI,
650 route des Lucioles,
06921 Sophia Antipolis Cedex
Tel.: +33 (0)4 92 94 43 35
enjoy@etsi.org

30 years of success stories

In April, our General Assembly gathered over 150 participants from 33 countries for two days of intensive work, networking and a tribute to our 30 year anniversary. ETSI and the SIM card, an ETSI standard, were born 30 years ago.

Several speakers who recalled those times reminded us that making standards is hard work during the day and fun in the evening. And even though meetings can get animated, people respect each other and they often solve issues during coffee breaks! Talking about the future of ETSI, our Honorary Director General, Mr. Rosenbrock advised: "try to think the impossible".

Well, we will certainly try!



ETSI Security Week, has just ended

The ETSI Security Week attracted more than 300 attendees in June at ETSI. Prominent speakers came from national security agencies, IT leaders, cybersecurity experts, global standards organizations, developers, researchers, universities and policy makers.

Sessions covered future-proof IoT security and privacy, middlebox security, eIDAS remote signature creation services, 5G security and privacy, ICT standards for the European Digital Single Market and Distributed Ledger Technologies. The 5G security session attracted a lot of attention and comments around the future of the integrated UICC, the next generation of the IoT/5G SIM card. A hackathon offered a concrete example of ETSI TC CYBER middlebox security protocol specifications and their implementations.

See you next year!

New officials in our cybersecurity group

In June, ETSI's Technical Committee CYBER elected Alex Leadbeater, BT, as a chair, Jean Pierre Quemard, KAT and Charles Brookson, Zeata Security as vice chairs.

The new chairman's goal is to continue to grow TC CYBER as a globally recognized centre of excellence for cybersecurity standards.

The committee will keep strong links with relevant ETSI's groups and external bodies developing security standards.

Collaboration with the European institutions is also key for the group to enhance the visibility of ETSI's activities in this area. The wide range of cybersecurity topics to be addressed includes consumer IoT security, consumers' privacy protection, middleboxes and EU linked areas such as GDPR implementation guides.

5G is ready!

At the 80th Plenary of the project, 3GPP has approved the completion of the 'standalone' version of the 5G NR specifications, following up on the 'non-standalone' completion in December 2017, for combined LTE and NR operation.

The 5G standalone system has great significance, promising a broad expansion of services based on the new radio and on 5G core network capabilities, which are sure to attract new industries in 3GPP into this technology stream.

Release 16 priorities are still evolving, but the focus will now turn to massive machine type communications and the delivery of ultra-reliable and low latency communications (URLLC), which - combined with the enhanced broadband speeds provided by the 5G radio - will deliver full-blown 5G.

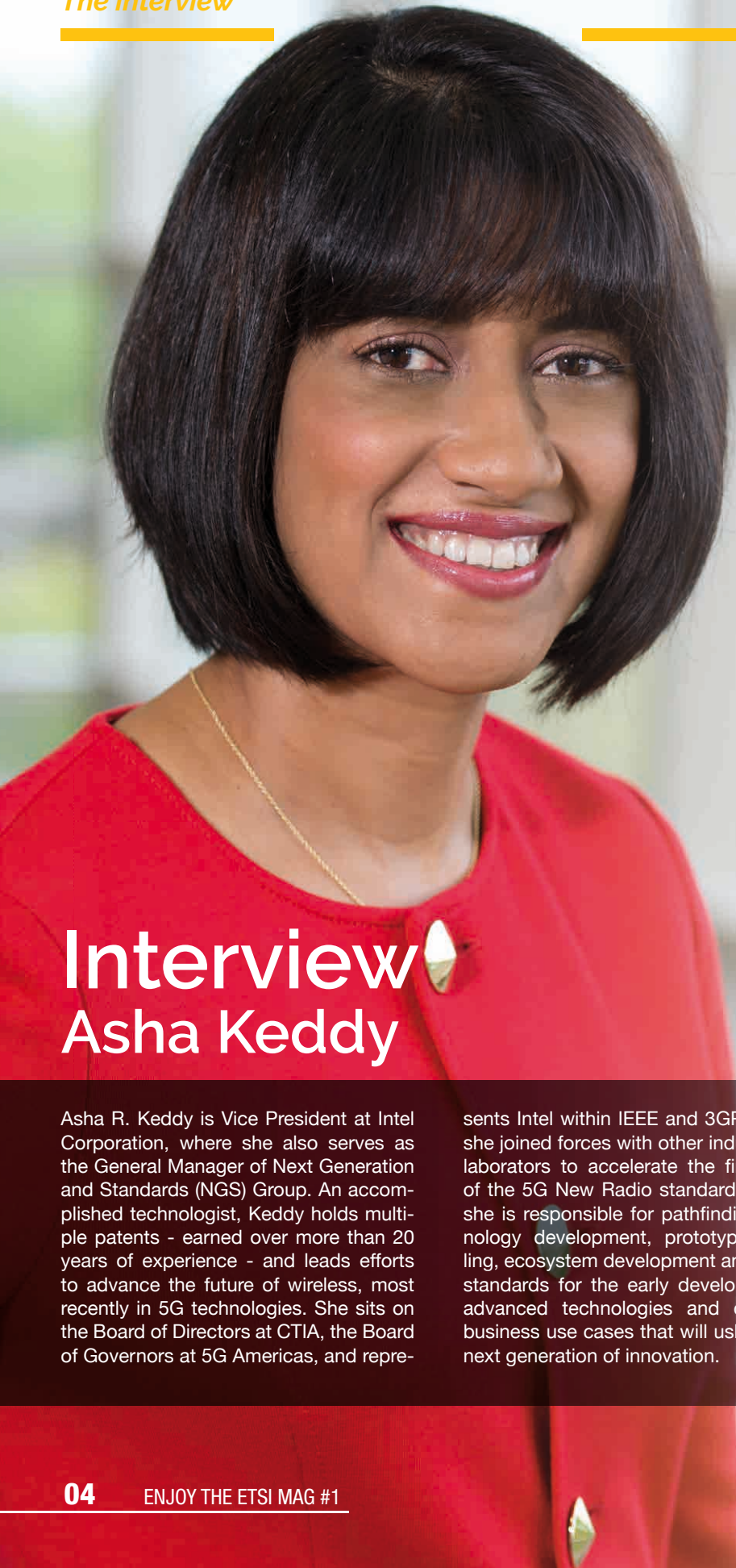


ETSI's first Director General HOMAGE

The first ETSI Director General, Professor Diodato Gagliardi, passed away on 16 April 2018.

He was appointed in May 1988 for two years and helped install the Secretariat at Sophia Antipolis, negotiate with external bodies such as the EEC, EFTA and CEN/CENELEC, transfer CEPT activities into ETSI and select experts for Project Teams. We offer our sincere condolences to his family and friends.





Interview Asha Keddy

Asha R. Keddy is Vice President at Intel Corporation, where she also serves as the General Manager of Next Generation and Standards (NGS) Group. An accomplished technologist, Keddy holds multiple patents - earned over more than 20 years of experience - and leads efforts to advance the future of wireless, most recently in 5G technologies. She sits on the Board of Directors at CTIA, the Board of Governors at 5G Americas, and repre-

sents Intel within IEEE and 3GPP, where she joined forces with other industry collaborators to accelerate the finalization of the 5G New Radio standard. At Intel, she is responsible for pathfinding, technology development, prototyping, trialing, ecosystem development and driving standards for the early development of advanced technologies and delivering business use cases that will usher in the next generation of innovation.

In our interview, Asha Keddy addresses the importance of collaboration, and the work her company, Intel, is doing to advance the future of wireless technologies, including 5G.

How does Intel see 5G today?

We see 5G as more than just another “G.” With 4G, we worked to connect everyone. Now, through 5G, we are working to connect everyone and everything.

5G will be fast but it will also take us beyond phones into an era of ubiquitous computing, enabled by intelligent, transformed networks, designed to support billions of devices and “things.”

5G networks will provide the foundation for innovation within industries including media, finance, transportation, automation, manufacturing, healthcare, as well as smart cities- it’s really a key enabler for the 4th Industrial Revolution.

Beyond the devices, how do you see infrastructure evolving?

We think at Intel that 5G experiences and services will only be as capable as the networks that support them—driving the transformation of core networks. This transformation will bring the power and flexibility of the cloud closer to the edge by delivering a software driven, virtualized network infrastructure.

Once limited to the data center, cloud computing capabilities will expand to the network and the edge to support efficiency, latency, and requirements of new experiences.

Have you already tested 5G in specific areas?

Intel is collaborating with partners on technologies that will enable the future of 5G. We're very proud of the "firsts" we've achieved in these trials.

Intel's first commercial 5G modem, XMM™ 8060, is expected to be available in devices in mid-2019.

For example, we recently completed the first 5G golf broadcast at the U.S. Open, streaming video over 5G mmWave spectrum using two 4K HDR cameras connected to AT&T's network via our Intel® 5G Mobile Trial Platform.

This follows a trial in Japan, where a passenger bus was outfitted with 5G connectivity using our Intel® GO™ Development Platform for Automated Driving.

And do you have any product roadmap?

Building on Intel leadership in standardization groups, namely ETSI and 3GPP,

Intel's wireless roadmap includes the recently announced Intel® XMM™ 8000 series, Intel's family of commercial 5G multi-mode modems, operating in both sub-6 GHz and millimeter wave global spectrum bands.

This product line is capable of delivering multi-mode support for the full 5G NR standard (including non-standalone and standalone) as well as 3G, 3G and 4G legacy modes. Intel's first commercial 5G modem, XMM™ 8060, is expected to be available in devices in mid-2019.

How would Intel define ETSI's role in this development?

As you know, the work the industry does to establish standards is critical in the design, development, and definition of the necessary technologies and systems that will support 5G commercial deployment at scale.

We have a long tenure within ETSI, and my colleague, Markus Mueck of Intel's Next Generation & Standards Group was recently elected as a vice-chairman to the ETSI board, as well as to the ETSI Delegation to 3GPP PCG/OP.

Intel sees ETSI having a critical role in developing the key building blocks that will complement 3GPP standards. As examples, technologies such as Multi-access Edge Computing (MEC), Network Function Virtualization (NFV) and zero touch network and service management are three major components of the 5G ecosystem.

And after 5G... 6G and beyond? How does Intel see the evolution?

An absolute truth is that technology development is never finished within our industry. The vital work in standardization helps the industry in moving quickly towards commercialization. But, progress and capability do not end there.

A specific evolution path for 5G lays in intelligence capability within the network and this will only continue as analytics, machine learning and artificial intelligence competencies keep developing.

With AI, we already see that every new algorithmic innovation and use case opens more eyes to the power of this exciting technology.

"Intel sees ETSI having a critical role in developing the key building blocks that will complement 3GPP standards."

To foresee intelligence advances, we require a new kind of network architecture. One that utilizes low latency, high performance and compute as current 5G network architecture does, but goes a step further by creating a holistic approach to systems design.

The future architecture will not perceive the endpoint, or the device, as separate from the network and does not accept the limitations of a device or application.

This new architecture will be built on the work being done on 5G today and will take that innovation towards further expansion and enablement of the cloud and the edge.

"The vital work in standardization helps the industry in moving quickly towards commercialization."

Welcome to our **NEW** members



Accanto Systems Oy - Finland

Accanto Systems provides software to help customers simplify and automate the production of NFV services. In providing tools that unify engineering and operations, Accanto simplifies the production process, and improves diagnostics, leading to smarter operations.

DEKRA EXAM GmbH - Germany

DEKRA EXAM GmbH offers independent technology services such as testing and certifying with a focus on safe components, machines and systems in the field of explosion protection. They are also active in engineering and systems technology as well as personal protective equipment and gas detectors.

DTU - Denmark

DTU is recognized internationally as a leading university in the areas of the technical and the natural sciences. The university focuses its researches in all aspects of information technology, including data analysis, system and data security and ITC.

European Disability Forum - Belgium

The European Disability Forum is an independent NGO that ensure persons with disabilities' full inclusion in society and access to their human rights through their active involvement in policy development, implementation and monitoring of the UN Convention on the Rights of Persons with Disabilities in Europe.

Facebook - United States

Founded in 2004, Facebook is the world's most popular social networking web site. Its mission is to enable users to connect with friends and family, to discover what's going on in the world, and to share and express what matters to them.

FREQUENTIS - Austria

With deep cross-industry experience in civil aviation, defence, public safety, maritime and public transportation markets, the company has built upon its initial control centre voice communications focus to develop deep expertise in these five areas of core competence.

Gilat - Israel

Gilat Satellite Networks is a leading global provider of satellite-based broadband communications. They design and manufacture cutting-edge ground segment equipment, and provide comprehensive solutions and end-to-end services, powered by their innovative technology.

TURKCELL - Turkey

Turkcell is a converged telecommunication and technology services provider. It serves its customers with voice, data, TV and value-added consumer and enterprise services on mobile and fixed networks.

EDF Recherche et Développement - France

EDF Recherche et Développement aims at developing and testing new energy services for customers, preparing the electrical systems and grids of tomorrow, consolidating and developing competitive, low-carbon energy generation mix and supporting EDF's Group international development.

IP*SEVA - United States

IP*SEVA (Intellectual Property for Sustainable Energy Ventures) are committed to using their skills and contacts to help sustainable energy and environmental companies succeed. Their focus is how IP can be used to increase profits, enhance bargaining power in negotiations, and penetrate international markets.

NPL - United Kingdom

The National Physical Laboratory (NPL) is the UK's National Measurement Institute, and is a world-leading centre of excellence in developing and applying the most accurate measurement standards, science and technology available.

NTH S.R.L. - Italy

With a deep knowledge of all Mobile and Fixed network protocols from SS7 to 4G/LTE, including the latest technologies like Voice Over LTE and Core IMS, NTH S.R.L. extracts valuable and useful information by correlating different protocols for better network analysis, service optimization and troubleshooting.

REDCA - European Union

The Radio Equipment Directive Compliance Association (REDCA) provides a forum for people concerned with the compliance of radio equipment with regulations and technical standards in the European Economic Area, as well as in the Countries that have a Mutual Recognition Agreement with the EU.



Sapcorda - Germany

Sapcorda is the developer of the world's first GNSS positioning service that is built to enable the future of autonomous vehicles. Sapcorda's team is focused exclusively on delivering open corrections services. These are available to all positioning system developers, without the need for any bundled hardware.

SecureRF Corporation - United States

SecureRF Corporation develops and licenses quantum-resistant, public-key security tools for the low-resource processors powering the Internet of Things (IoT). SecureRF delivers ultra-low-energy, fast, and small footprint solutions ideally suited for 8-bit, 16-bit, and even 32-bit devices.

Skyworks Solutions Inc. - United States

Skyworks Solutions, Inc. is a global company with engineering, marketing, operations, sales and support facilities. It is empowering the wireless networking revolution within the automotive, broadband, cellular infrastructure, connected home, industrial, medical, military, smartphone, tablet and wearable markets.

ENICONS - Spain

ENICONS (Electronic Certification Services), offers certification solutions as a trusted third party in digital management environments and provides certification solutions with electronic traceability, maximizing time and reducing costs.

UNIVLEEDS - United Kingdom

The University, established in 1904, is one of the largest higher education institutions in the UK. Their researches are focused on multiple topics including data analytics, future energy systems, cities and virtual reality.

WABCO GmbH - Belgium

WABCO is a global supplier of technologies and services that improve the safety, efficiency and connectivity of commercial vehicles. From concepts to finished products and beyond, they have been developing innovative systems to make vehicles safer and easier to control since 1869.

Our 4 new 2018 fellows



Enrico Tosato is the "champion" of Short Range Devices at ETSI – low power radio devices which are now used in a myriad of different applications.

Some say he invented the term Short Range Devices! He has been credited with bringing this industry seen as "gadgets manufacturers" in the old days to a very professional and structured representation at ETSI and the CEPT.



The late **François Courau** was one of the few who participated in the early work on GSM, before ETSI was founded, and continued to help define our current 3G and 4G networks. He played a key role in the development of GSM, UMTS and LTE, in CEPT, ETSI and 3GPP.

His name is universally associated with 3GPP RAN, although he had many roles, of Delegate, Editor, Convenor, Rapporteur, and of course Chairman, in many committees.



Mike Walker has managed to have three, almost parallel careers, a 'corporate' career in Vodafone where he rose to Group R&D Director, an academic career as a professor and Head of a School in Kings College (University of London)!

And an ETSI career of course, where he chaired a number of technical bodies, leading the development of mobile security standardization for GSM, UMTS and LTE.



Klaus Vedder has driven the standardization of the SIM, USIM and UICC. He is a highly recognized and respected chair. After joining the CEPT SIM Expert Group in 1988, he was elected Chairman in 1993 and became one of ETSI's longest serving chairs and has since then led all the SIM related committees in ETSI.

He also led the ISO/IEC committee JTC1/SC27 «Information technology - Security techniques» from 1992 to 1996 and the 3GPP T3 group from 1998 to 2002. He has chaired the ETSI Smart Card Platform technical committee in ETSI since 2000.

1988-2018: the ETSI SIM card success story

The first meeting of the Subscriber Identity Module (SIM) Expert Group took place in 1988 under CEPT rule. The group moved to ETSI later that year, allowing direct participation of industry experts from all sectors, a diversity required to start the SIM standardization journey.

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The first GSM call in 1991 used a credit card-sized SIM card. At the time, SIM cards were usually produced with a signature strip at the back and mobile network operators were considering combining GSM and credit card functionalities.

However, tests unveiled incompatibility between the plastic required for SIM cards and credit card embossing. Despite this initial setback, SIM standardization

has been driving smart card technology and functionality ever since.

The separation of the subscription from the mobile device had a significant impact on the huge rise of GSM as the sale of handsets became, in most instances, independent from the Mobile Network Operators.

One of the key milestones was the separation of the SIM application from the underlying hardware and functionality. This gave birth to the UICC, a multi-application platform able to host other applications next to the SIM.

Over the years, the UICC kept shrinking to meet the requirements of device manufacturers. A solderable SIM was

specified for M2M applications, leading to specifications for remote UICC management, required namely to change the subscription in a non-removable card.

Today, ETSI Smart Card Platform committee (TC SCP) is working on a high-level platform, independent of low-level protocols and form factors. Called Smart Secure Platform, it is also designed to be integrated into a System-on-Chip solution, a critical feature in reducing size and cost of the secure element used for mobile communications and IoT applications in a 5G world.

■ Klaus Vedder, Chairman of the ETSI Smart Card Platform Technical Committee

Zero Touch network and Service Management: Gaining Momentum

The ETSI ISG Zero Touch network and Service Management (ZSM), which started in January 2018, already includes nearly 60 organizations.

The target of the ISG ZSM is to have all operational processes and tasks – that is delivery, deployment, configuration, assurance, and optimization – executed automatically, ideally with 100% automation.

Hence, the ETSI group is working on new topics including architecture, network slicing and use cases. These are key for the new 5G mobile networks. The group has also defined a Proof of Concept Framework, with a first PoC already finalized.

During its third face-to-face meeting in Shenzhen in June, ZSM agreed on an initial service based architectural framework.

This is a major step forward as today each domain, such as the radio access or the core network, has its own architecture, and this is one of the biggest obstacles to achieve Zero Touch.

■ Klaus Martiny, chairman of ETSI ISG ZSM

Cybersecurity: middlebox security protocol on its way

ETSI TC CYBER has just made publicly available draft specifications on middlebox security protocol to get feedback from stakeholders. They will be formally finalized by the end of this year.

While new encryption protocols meet most users' needs on public networks, their use creates difficulties for some enterprise networks and data centre operators.

Their ability to manage their networks and maintain required security and auditing of traffic on their facilities is diminished. This introduces potential vulnerabilities and risks for private enterprises, regulated industries, and government agencies.

ETSI, as one of the world's major ICT standards organizations, has brought together global experts in its Cybersecurity Technical Committee to develop a set of middlebox security protocol specifications. With the encryption protocols challenges in mind, ETSI developed these draft standards to meet the stakeholders' needs for practical solutions.

With 24 specifications published already, including those from the Quantum Safe Cryptography working group, the committee is helping all stakeholders to implement cybersecurity within their organizations.

■ Charles Brookson, Vice Chair of the ETSI CYBER Technical Committee



Open Source MANO: Release FOUR is out



First open source group to incorporate ETSI NFV APIs, ETSI OSM unveiled Release FOUR on 23 May.

This version is the most ambitious and innovative OSM Release to date and constitutes a huge leap forward in terms of functionality, user experience and maturity.

This new Release brings substantial progress thanks to a number of architectural improvements, which result in more efficient behaviour and a much leaner footprint - up to 75% less RAM consumption.

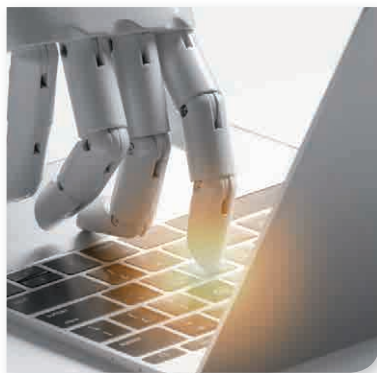
Additionally, its new northbound interface, aligned with ETSI NFV work, and the brand-new cloud-native setup, facilitate OSM's installation and operation, while making OSM more open and simpler to integrate with pluggable modules and external systems, such as the existing OSS.

New features also include extension of monitoring and closed-loop capabilities, and modelling and networking logic.

Experiential Networked Intelligence AI for operators

The ETSI ENI GR001 released 5 specifications in June on use case requirements, Context Aware Policy Management, terminology and a Proof of Concept (PoC) Framework. ENI, with Artificial Intelligence mechanisms, aims to facilitate network deployment for 5G.

ETSI ENI GR001 specifies a set of use cases for the fixed network, the mobile network, or both, and defines the expected benefits using an ENI system. ETSI GS ENI 002 captures the requirements of how intelligence is applied to the network to improve operators' experience of service provision and network operation. ETSI ENI GR003 analyses the work done in various standards bodies on policy management.



ETSI ENI GR004 covers terminology while ENI GR006 defines a Proof of Concept framework to help assert the technical feasibility of ENI within the industry.

Context Information Management: first specification for smart cities

The ETSI Industry Specification Group for cross-cutting Context Information Management (ISG CIM) has released its first specification GS CIM 004 in April.

It specifies a simple way to send or request data and its context such as the meaning, related information, source or licensing of that data. Smart cities will be the first ones to benefit from this specification but e.g. digital workflows across manufacturing also have strong needs to exchange multiple data. CIM 004 defines a standard Application Programming Interface (API) to enable access to information coming from many different sources.

Sources include open data, proprietary data, Internet of Things, mobile application inputs, service usage information and artificial intelligence or machine analysis of data.

The API specification (called NGSi-LD) is already being trialled and offers the open and sustainable smart city information system architecture users are looking for.



5G

The successful completion of 3GPP Release 15 in June paves the way for all future 5G mobile communications implementation.

Ready, steady, GO!

The standalone specification means that full 5G architectures can be created without the need to rely on previous technology generations.

With a rapidly growing number of devices – and things – being connected to mobile networks and many activities becoming more data intensive, 5G is not a luxury - it is a necessity. From the very beginning, this technology has had well-defined operational objectives.

These were enhanced mobile broadband, massive machine-type communication, and ultra-reliable, low latency communication. Each of these will allow key use cases to be realized, but also presents serious technical challenges. Inside we look at the various aspects of 5G - the demands driving particular functions and the engineering innovations they require. And Orange gives us an insight into one use case that was successfully trialed at Roland-Garros 2018 French Open tennis tournament.

5G: Ready, Steady, Go!

5G network deployments will predominantly build on the existing communications infrastructure to offer new levels of throughput, latency and flexibility for a plethora of emerging use cases.

Network Function Virtualization: main enabler

One of its principal enablers will be network functions virtualization (NFV) technology which, by implementing functions in software, will allow resources to be allocated to different tasks in a process called network slicing. In this way, network assets can be optimized to fit the needs of particular services.

Bandwidth multiplies

Through more effective and flexible carrier aggregation, extra spectrum availability and better spectrum use it will be possible to support much higher bandwidth levels (maintaining above 1Gbps even in unfavourable conditions). The multiple-input multiple-output (MIMO) technology employed in previous mobile generations is being extended to become massive MIMO. Rather than just a small number of antennas, every base station will have a far larger number of antennas at its disposal.

Furthermore, by opening up unutilized spectrum within the millimetre wave band (which lies between 30GHz and 300GHz) a wealth of new bandwidth will become accessible to mobile networks. This means that all the increased data traffic won't be dependent upon the existing overcrowded mobile spectrum.

While millimetre wave transmission can be substantially impeded by buildings, trees and even rain, high-density deployments of small cells will be able to compensate for this.

Minimizing interference

Unlike current base stations, the transceivers used in 5G communications will support full duplex operation with the ability to simultaneously receive and transmit data on the same frequency. In order to minimize interference between users as network traffic scales dramatically, advanced beamforming will be deployed. This applies signal processing to focus communication on individual users and will be especially valuable in improving user experience where concentrations are high, such as in crowded sport stadiums or large music venues.

The latency goals set for 5G will have implications in terms of where the network's processing and data resources are situated. Keeping everything centralized will no longer be feasible. Here multi-access edge computing (MEC) will come into play, providing processing close to users and hence delivering ultrafast responsiveness.

ETSI has industry specification groups (ISGs) addressing all of the fundamental issues relating to 5G, to ensure that the completed standard is ready for final approval by the 2020 deadline. These ISGs include those dedicated to MEC, mWT, NFV and next generation protocol (NGP) development.

Reaping the rewards of 5G

The figures that 5G will be able to deliver, in comparison to 4G, are quite staggering. It represents a step change in performance, rather than a mere incremental improvement, with 1 million device connections supported per square kilometre and an average data rate of

ETSI ISGs are addressing all fundamentals of 5G



100Mbps per connected device. Boasting 100x greater capacity than 4G offers, it will be possible to download an entire HD-quality movie within just 3.6s, compared to 6mins via 4G.

5G's greater energy efficiency will also prove pivotal. Users will be able to do more with the same smartphone battery life. The low power consumption capabilities will be highly advantageous elsewhere too. Remotely located IoT sensor nodes employed in industrial, agricultural or environmental monitoring will draw less electrical current when interfacing with the network - and consequently run for considerably longer periods (at least 10 years) without the need for battery replacement.

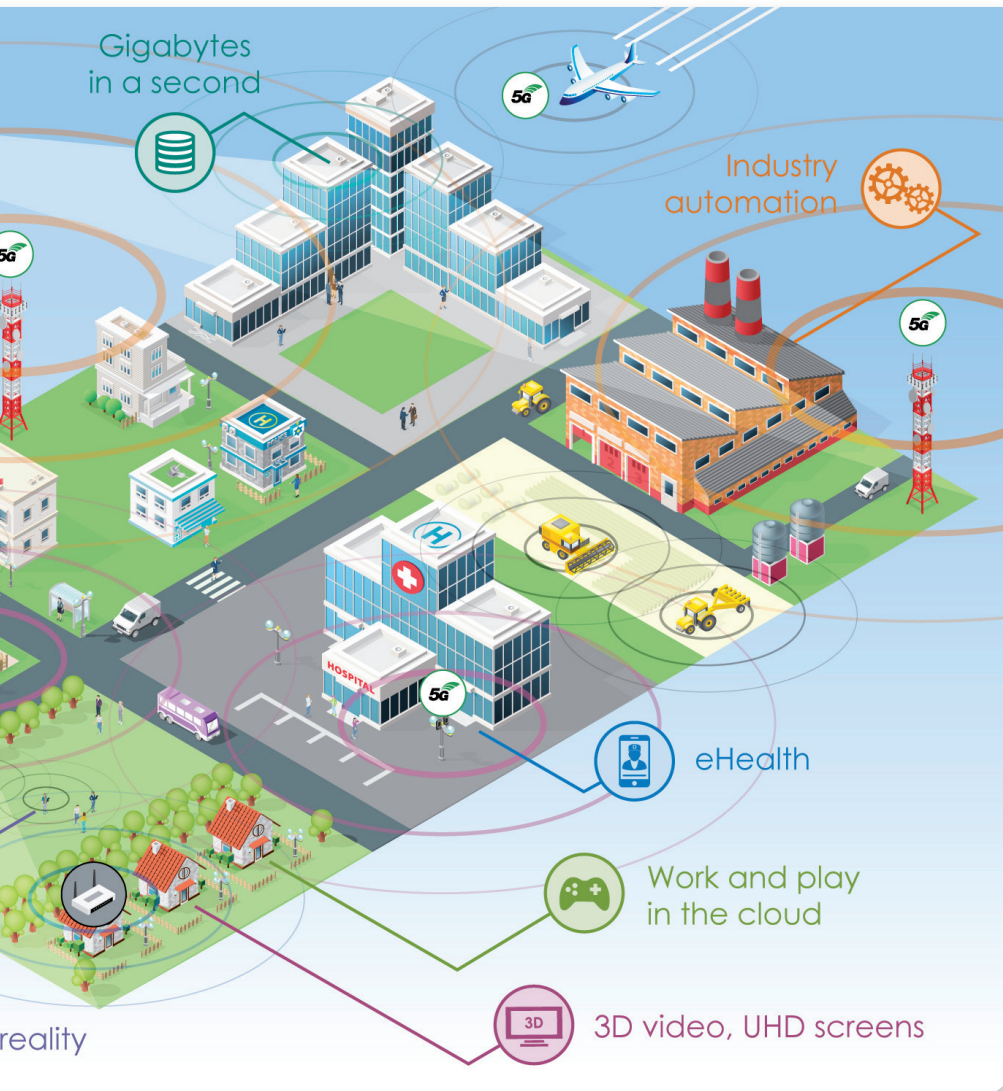
1 million device connections supported per km²

Low latency drives new applications

The low latency operation (1ms end-to-end) that 5G will eventually deliver is certain to be of value to many applications.

In the consumer domain, this will enable interactive gaming using virtual reality (VR) headsets without any lag to impede the players' enjoyment. Its scope will go way beyond this though, playing a key role in allowing 'connected cars' to communicate with one another and the surrounding infrastructure, so that accidents can be avoided and the safety of road users assured. On the factory floor, it will lead to the implementation of highly sophisticated automation processes, making production lines more efficient and safer too. There will also be the possibility for tele-surgery, with medical specialists located long distances away (even on a different continent) able to carry out critical operations on patients using remote-controlled equipment.

5G will provide 100x greater capacity than 4G



A collaborative effort

The broad base of organisations now involved in the 5G standards process gives a clear indication of the wide application scope that this next generation mobile communication technology will address and the vast array of industry sectors poised to benefit from it.

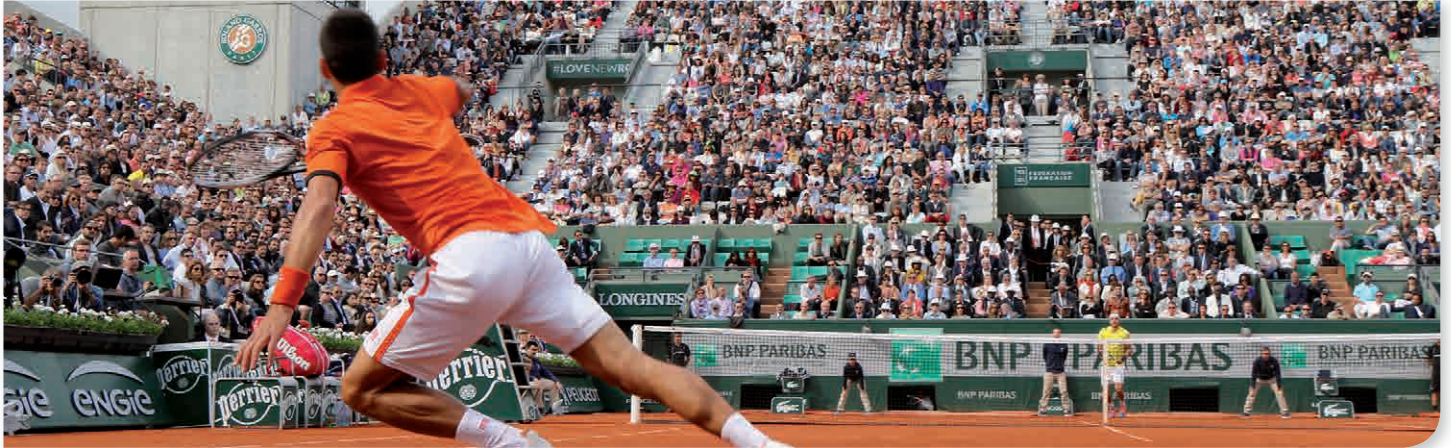
No longer comprising only telecommunications companies, 3GPP's membership now includes representatives from the automotive, utilities, retail, agriculture, aerospace, factory automation, satellite technology and broadcasting sectors - all of whom are directly involved in formulating the 5G standard.

Completion of Release 15 and the 5G standalone specification ends one chapter and opens another.

It's now truly '5G: ready, steady, go!'

Orange trials potential 5G Use Case for vertical markets

Beyond the classical and critical Mobile Broadband, a lot of new use cases linked to the vertical markets are emerging. These applications are end-to-end and each is characterized by a set of specific requirements, which can vary greatly between the different use cases.



To prepare for this market evolution, Orange, in collaboration with customers and partners, is prototyping some of these use cases in various projects focused, for example, on the Industry 4.0 and V2X. When the prototypes are mature enough, they can be tested live in customer premises; the French Open at Roland-Garros 2018 provides one example with edge-based video analytics.

During the tournament, the French Federation of Tennis needed to know in real time the number of people in each part of the stadium, with guarantees of confidentiality and reliability.

This use case was successfully implemented during Roland-Garros 2018, in Suzanne-Lenglen, the second biggest court, with two pairs of HD cameras connected to the network through two LTE modems. The MEC server was installed in a technical room of the court, sending statistics to an Orange application running in the cloud.

The MEC server, as specified by ETSI, is based on a virtualized infrastructure, and easily hosts applications like the video

Based on the requirements from the French Federation of Tennis, Orange and its partners (Nokia for the MEC server and Evitech for the video analytics) designed a solution based on:

- wireless video cameras for installation flexibility;
.....
- Multi-Access Edge Computing (MEC, defined by ETSI) for real time information and confidentiality, as the MEC server was installed in the stadium;
.....
- a video analytic application;
.....
- a dedicated 4G carrier for the reliability due to the amount of traffic in such event – this pre-empt the evolution toward 5G network slicing by allowing network resources to be dedicated to a particular service.

analytics of our use case, illustrating the flexibility of a virtualized network.

On their device, smartphone or tablet, the spectators were able to visualize, in real time, the occupation of each part of the stadium with different filter levels, such as the stadium stand or seat category.

Thanks to this type of project, Orange can demonstrate its capability to implement complex use cases dedicated to vertical markets, meeting their end-to-end requirements, in collaboration with partners.

5G evolutions, for example massive MIMO increasing the spectral efficiency and thus the network capacity, and network slicing in coordination with the network functions virtualization, characterized by a dynamic management and an end-to-end guarantee of services, will allow the development and the industrialization of such use cases.

■ Arnaud de Lannoy, Wireless Architect, Orange
■ Nick Sampson, Director, Wireless Access and Core Network Standardization, Orange and Vice chair of the ETSI Board

Ukrainian National Standardization

Organisation joins ETSI's NSOs.



UAS, the Ukrainian National Standardization Organisation (NSO) has recently signed the NSO Memorandum of Understanding, which allows Ukraine, as a member of the European Conference of Post and Telecommunication (CEPT), to be formally part of the group of NSOs in ETSI.

It can now adopt the ETSI European standards (ENs) as national standards, and review and comment ENs before their ratification.

This is another step towards CEPT-wide harmonization of standards. It opens new possibilities for Ukrainian citizens, manufacturers and trade partners. To support UAS reaching out to its stakeholders in ETSI's domains of activities as well as to assist UAS staff in getting to know ETSI procedures and tools, our Director General, Luis Jorge Romero visited UAS at the end of March with two members of his staff.

The visit was the opportunity for the ETSI team to meet with Mrs. Hanna Lisina, Director General UAS and her staff.

The meeting was followed by a dedicated training session for UAS employees and by a workshop about ETSI. Attendees included representatives of the Department of Technical Regulation within the Ministry of Economic Development and Trade of Ukraine, the Ukrainian State Centre of Radio Frequencies, and representatives of the IT Department, Ministry of Defense of Ukraine.

The workshop was the first opportunity to connect Ukrainian stakeholders to the world of ETSI, explaining the practice of direct participation in standardization work and exploring the range of activities hosted by ETSI.

These events and exchanges were a first step towards the future engagement of UAS in ETSI's activities, starting with participation of its experts in the ETSI NSO meetings and the ETSI seminar.

Welcome! ласкаво просимо!

Open Banking Europe

working on financial services

OPEN
BANKING
EUROPE

At its 71st General Assembly, ETSI approved a Memorandum of Understanding with PRETA, a subsidiary of EBA Clearing, which hosts the Open Banking Europe initiative.

The latter aims to develop innovative market competitive services in digital payment and identity solutions while ETSI's technical committee on Electronic Signature and Infrastructure works on the Electronic Identity and Signature (eIDAS) regulation.

The two organizations intend to collaborate on the topics of Qualified Certificates, their purpose and the processes around issuing them, with a view to standardize the elements of the

Qualified Certificates required for the updated European Payment and Service Directive (PSD2).

A first joint event was organized on 20 March 2018 at ETSI Headquarters, where both organizations teamed up to explain the PSD2 Qualified Certificates as specified by ETSI in TS 119 495.

They also discussed their usage with eIDAS trust service providers and PSD2 payment service providers. The

workshop welcomed a multi-national community of associations, regulators, banks, third party payment providers and service providers for PSD2.

The workshop paved the way for future work in ETSI and in Open Banking Europe, as ETSI shows once again that working with partners is a sensible and effective approach to standardization

■ *Xavier Piednoir, ETSI's Head of External Relations.*

3GPP at 20, looking to the new Generation

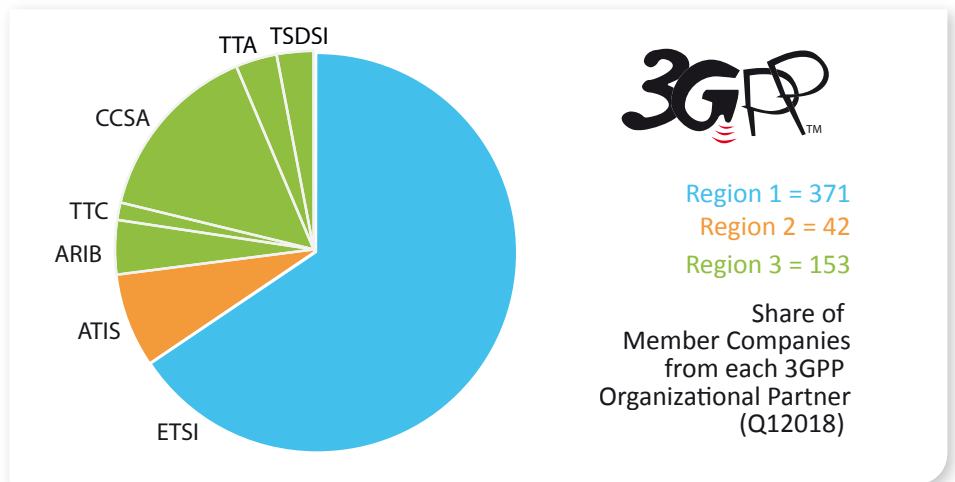
When some organizations are changing name and their identity, to keep up in the generation game, 3GPP has steadfastly stayed the same.

Having '3G' in our name shows the origins of the project - keeping us tethered to a time when the ETSI community, along with a select group of SDOs from North America and Asia, decided that we must make GSM evolution a Global standard.

Growth through partnership

For near-on 20 years, 3GPP has gone from strength-to-strength thanks to the original ETSI approach - to create a partnership of equals to produce Technical Specifications and Technical Reports.

Back in 1998, that decision meant that ETSI had to open up and share the Copyright of the GSM standards with the Organizational Partners. By doing that, the GSM evolution path was assured. The original 3GPP Agreement, with the basic principles and ideas on which the project is based, still remains valid and has served us well for 3G, 4G and 5G work plans.



Moving with the times

Today, we are seeing the fruits of 20 years of the partnership approach. Last year, in 2017, the number of delegates traveling from Asia to 3GPP meetings outnumbered those coming from Europe; demonstrating the evolving balance of people in the groups.

That said, ETSI still holds a significant majority of the Member companies attending 3GPP, revealing the International nature of the European partners' membership these days. (see graphic)

The average number of delegate days spent per month on 3GPP has followed these peaks, with a market increase in participation since 2015, for Release 14.

5G challenges

In 3GPP's 20th year the focus is now on the 5th Generation of Mobile standards. Release 15 completes 3GPP 5G Phase1, including the specification of the NR access and a 5G system architecture.

Release 16 will meet the requirements of the fully functional 5G system. This includes work to meet use cases that need massive M2M infrastructure, the need for Ultra-Reliable and Low Latency Communications (URLLC) speeds and resilience as well as the enhanced Mobile Broadband (eMBB) prioritized in Release 15.

Growth through the Releases

Further growth becomes apparent with a look at the peaks in the number of documents dealt and change requests within the meetings, over time. A Change Request (CR) is the meeting document used to create revised versions of 3GPP specifications, after their initial approval.

As 3GPP blows out the candles on our 20th birthday cake - in December 2018 - the delegates, the partners and the companies who are 'the standards people' can celebrate a job well done...so far.

■ Kevin Flynn, 3GPP Marketing Officer





An introduction to oneM2M

oneM2M is the global standards initiative created in 2012 to consolidate standardization of M2M/IoT functions. Let's take a closer look.



*The spirit of Hackathons,
January 2018, Toulouse, France*

discovered can be addressed very quickly. This is a key element to the stability of the oneM2M platform. The next event will be held in July in Washington DC.

oneM2M focus on the young developer community

oneM2M has always believed that the developer community is an important part of the IoT world and has concentrated efforts in reaching out to this community. In Q1 of 2018, four major events were held.

The first one was the 'Hackathon - Smart city with oneM2M standard', which took place in France, followed by a tutorial on 'How to start application development using IoT service platform oneM2M' in Japan. A very ambitious, and successful, multi city series of developer events was held in India in four different locations. A tutorial and hackathon was also held in the USA.

The spirit of these initiatives was to create an interactive and stimulating exchange platform for developers, allowing many opportunities for hands-on exercises. The incentive to attend was the spirit of competition and the attractive prizes to be won.

What's next for oneM2M?

In September, oneM2M will be attending the IoT week Korea. Come and join us there on 14 September for our Industry Day!

■ Karen Hughes, ETSI, oneM2M Support

What is oneM2M?

oneM2M brings together all major telecom Standards Developing Organizations (SDOs) around the world, ETSI, ARIB, ATIS, CCSA, TTA, TSDSI, TTA and TTC. Currently there are 200 active members in oneM2M.

It provides a horizontal layer of functions commonly needed across different market segments; it is not segment-specific. The specifications provide a framework to support applications and services such as the smart grid, connected car, home automation, public safety, and health. oneM2M also actively encourages industry associations and forums with specific application requirements to participate in oneM2M, to ensure that the solutions developed support their specific needs.

Ongoing and future work

In 2017 oneM2M published Release 2, which is a stable and complete set of specifications. It provides a full IoT Service Layer platform, which is already

being successfully deployed worldwide. oneM2M is currently working on Release 3, concentrating on 3GPP interworking with a focus on cellular IoT. Furthermore, much of the work in Release 3 will be aimed at the industrial domain, security and semantics.

Release 4 also promises to be very interesting with work focusing on 3GPP V2X, edge computing and disaster alert services.

Interoperability testing for shorter time to market

Regular interoperability testing events, held twice per year, are a real asset as well. The 5th event was held in South Korea in December 2017 and it allowed the 23 participating companies to check the interoperability of their implementations and ensure they had interpreted oneM2M's standards correctly.

As these events are always held in the week prior to a Technical Plenary meeting, it allows immediate feedback to the oneM2M working groups where the issues

Brussels matters

Jochen Friedrich, Head of IBM's department on standardization and technical regulation in Europe, member of the ETSI Board and holder of lead roles in other standards bodies and in industry associations, answers our questions on the role of ETSI in Europe.



As an ETSI Board member very involved in policy discussions in Brussels, can you tell us why the relationship between the EC and ETSI is important?

ETSI is a role model in standardization, being both a European Standardization Organization (ESO) and a highly recognized and successful global player.

ETSI deliverables are critical to support EU regulation as well as EU policy objectives. In this respect a close relationship with the European Commission, the European Parliament and the Council is essential and constant interaction between all parties is key to building an efficient collaboration.

Mainly in the context of regulation, the European Commission issues standardization requests and ETSI is one of the three ESOs that can provide comments and can accept a request.

Apart from regulation, standardization is crucial for industrial/innovation policy. Europe promotes the use of standards to avoid vendor lock-in and encourage competition, innovation and growth. The Rolling Plan on ICT Standardization provides concrete actions for standardization to help achieve policy objectives.

This Plan is developed in the ICT Multi-Stakeholder Platform and ETSI, as

a contributor, benefits from it as new projects may result from the plan.

Hence the need to have a regular and trusted relationship with policy makers and others involved in this “Brussels ecosystem”.

Has this relationship evolved since the creation of ETSI and in which ways?

The relation has always been close and stable, but the situation is very different today from what it was some years ago.

Digitization has both a huge policy and standardization dimension. Policy makers focus on digitization to strengthen competitiveness of European industry and the digital transformation of society. Standards can be critical to support the implementation of the respective policy objectives. In this environment, ETSI is not only an effective platform for standards development, but also a strategic partner for policy makers and stakeholders to provide the standardization deliverables that are needed in policy contexts and on the market.

ETSI is playing a key role in supporting the Digital Single Market and EU competitiveness. ETSI's impact has therefore become much broader over the years,

and the relation to policy makers has also broadened. Today it encompasses a wide range of policy units across different Directorate Generals in the Commission but also Parliament and Council. As standardization is high on the political agenda, ETSI's relations to policy makers are crucial, as well.

With a new political cycle coming up in 2019, how will ETSI continue to be a major point of call for ICT standards in EU in that context?

I am sure ETSI's valuable role will also be appreciated by the new Commission and the new parliamentarians, and that standardization will continue to play a strategic role for the Commission.

Yet, it is important to drive things, be agile and be present in the political dialogue. Those of us involved in Brussels' circles are and will be ready to help raise ETSI's profile.

At the end of the day, it's about digitization. Digitization requires standards and ETSI provides many of the standards to build needed technologies.

ETSI's role as an ESO and a global player, together with its member-driven set up, is a real asset for Europe.



White paper: **Microwave and Millimetrewave** for 5G Transport

For over 20 years, microwave has been the primary solution for the rapid and cost-effective roll-out of mobile backhaul infrastructure with over 50% of mobile sites worldwide today connected via Microwave (MW) or Millimetre Wave (mmW) radio links, up to over 90% in some networks.

The evolution from 4G towards 5G presents significant challenges to all transport technologies and wireless ones make no exception. This white paper, written by ETSI mWT ISG, demonstrates how MW and mmW are able to fulfil all 5G requirements, both at transport and at network (end to end) level.

White paper: **MEC** Deployments in 4G and Evolution Towards 5G

Multi-access Edge Computing is a key technology to bring application-oriented capabilities into the heart of a carrier's network, in order to explore a wide range of new use cases, especially those with low latency requirements.

This white paper, written by ETSI MEC ISG, shows the compatibility of an ETSI MEC system with 3GPP 4G and 5G architectures. It describes the potential deployment options available for operational 4G systems, provides a technical insight of MEC operations under such scenarios and shows how the creation of the mobile edge infrastructure in 4G can pave the way for 5G deployment.

White paper: Multi-access Edge Computing in **5G** networks

Edge computing as an evolution of cloud computing brings application hosting from centralized data centres down to the network edge, closer to consumers and the data generated by applications.

This white paper, written by the ETSI MEC ISG, explains ways to deploy and integrate MEC in the 5G system.

It emphasizes opportunities for MEC to benefit from the edge computing enablers of the 5G system specification, and for 3GPP ecosystem to benefit from the MEC system and its APIs as a set of complementary capabilities to enable applications and services environments in the very edge of mobile networks.



White paper: **Experience with NFV architecture,** interfaces, and information models

This white paper, written by the OSM End User Advisory Group, discusses the lessons learnt as an open source community in the implementation and adoption of the NFV specifications developed by the ETSI NFV ISG.

This paper is the first of a number of potential papers that OSM community intend to produce which discuss the experience of the OSM in achieving compatibility with the work of other bodies.

The NFV standards are complex and assessing interoperability according to these standards is also complex. However, the rise of open source implementation projects gives a fresh approach to achieving effective interoperability.



The ETSI Annual report is now available!

The ETSI Annual Report of 2017, published in April 2018, provides an overview of ETSI's activities during the course of the year.

It can be downloaded from the ETSI website at <http://www.etsi.org/about/annual-report>. Hardcopies are available upon request at info@etsi.org



Latest news in the Secretariat

New meeting apps coming soon...

ETSI provides a set of web applications that enable meeting organizers to administer meetings and participants to manage their registrations. These applications, accessible from the Meeting Calendar portlet on the ETSI portal, were developed in the early 2000s.

But over the last few years we have accumulated a number of enhancement requests that are increasingly difficult to implement on ageing software. Therefore, we have improved these applications using modern software technologies.

The new applications will come with an enhanced visual experience. The layout will be made consistent across all pages and it will adapt to the screen size. Page contents will be simplified for making

standard operations, and specific menus or fields will be available for advanced operations.

New features will enable users to customize their list of meetings and to register for multiple meetings at the same time. They will also be able to view the meetings they have registered for and to join an electronic meeting directly from their list of meetings.

We will deploy these new applications starting from summer 2018, both on ETSI and 3GPP portals. Beginning with applications for meeting participants, we will gradually implement new features for meeting organizers and supporting staff.

■ Vincent Depagne, ETSI's CIO

What about GDPR?

The GDPR is in force since 25 May 2018 and ETSI has deployed a GDPR compliance strategy with a dedicated task force and relevant actions implemented.

Should you wish to know more about how your personal data is handled by ETSI, please read the ETSI Privacy Policy on our website.

ETSI has a new tagline: The Standards People



At the heart of the brand are the organizations that comprise the ETSI Members, and the Secretariat staff that support them.

Members and staff are 'brand ambassadors', representing ETSI with a single voice and promoting the many positive brand attributes.

In spring 2018, ETSI officially revealed its brand strategy; it defines and clarifies what the ETSI brand stands for, what brand promise ETSI stakeholders should expect from the organization, and it forms the basis for future brand evolution. We have created an ETSI Brand Book

and corresponding video that you will find at: www.etsi.org/brand.

The ETSI Brand Book is a single point of reference for all the tools you need to be an effective brand ambassador, including mission, vision and brand 'personality', tone of voice, a new boilerplate and 'elevator pitch', a refreshed version of the clusters, and an explanation of the new ETSI tagline: The Standards People. Should you wish to receive an ETSI

Brand Box containing the Brand Book and video by post, or require the new corporate presentation template for ETSI representation, please contact: brand@etsi.org

For our brand to be successful, it is essential that all our Members adopt and promote it: You are the brand, you are ETSI!

■ *Marion Hagemeier, ETSI's Events and Branding Director*

Welcome to our new staff members



Nadja Rachow,
Communication
Director.

Nadja is German and a communications champion with almost 20 years of strong experience within prominent international groups in automotive, energy, transport and logistics industries.

She worked for Valeo, Areva and her latest position as Communication Director was at Deutsche Bahn (German Railway), in Paris, France. She holds an MBA from EDHEC university and a Masters in communications. Multilingual in French, German and English, Nadja has solid corporate organizational skills and a good commercial understanding. She joined ETSI in January 2018. She has almost become French, enjoying French cuisine and fine wines a lot ...



Nicolas Laborie,
IT Support
Technician.

At 10, Nicolas was already the "geek" who turned computers inside out at home. He graduated at only 17 from a scientist option in high school and entered an Information and Communication university course.

Later on, he created a company for domestic IT services, confirming his service oriented mind and Information Communication skills. This knowledge proved very useful when he applied for the helpdesk position. And how did he know ETSI? He attended the Security Week to keep updated with the latest cybersecurity challenges. Since February 2018, he has been solving IT issues for both ETSI staff and our members.



Emmanuelle
Maussi,
Travel Assistant.

Having graduated in tourism from the well-known international "Ecole Tunon" in Monaco, Emmanuelle worked for several events such as MIDEM in Monaco. She then moved to another path and opened her own sportswear shop where she managed her human and financial resources and organized fashion shoots of the new collections.

After a few years, she decided to go back to being a travel assistant, working in Infoterra, now part of EADS Astrium, and Allergan. She then joined ETSI in 2012 as a contractor at the reception. When in January 2018 a position of travel assistant opened in ETSI, she was happy to be selected.

Hear from us in conferences and meet with us at exhibitions.

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

September 2018



IoT Innovation Conclave

6 Sept., Bangalore, IN

Endorsed by ETSI, this forum on “Innovations, Sustainability, Surveillance and Development for Smart Cities” will address the importance of various aspects of infrastructure that need to be planned, designed, built and operated in order to provide the “Smart” attribute to a city development.



ITS World Congress

17-21 Sept., Copenhagen, DK

Endorsed by ETSI, the ITS World Congress includes congress programme sessions and presentations of the latest developments in ITS, demonstrations of current ITS technology being developed and deployed throughout the world and an exhibition.

Come and visit us on stand C3-002.



Smart Radio Symposium: 5G & Autonomous Vehicles

19 Sept., Seoul, KR

This workshop is co-organized by Hanyang University and ETSI for the first time. With deep common interests in the 5th Generation Mobile Communications and Connected Vehicles among most major Korean and European industries, the workshop this year emphasizes “5G and Autonomous Vehicles”.



Edge Computing Congress & 1st ETSI MEC Hackathon

18-20 Sept., Berlin, DE

ETSI together with its partners is organizing the 1st ETSI MEC Hackathon in Berlin during the Knect365 Edge Computing Congress. Developers will be asked to create Entertainment and/or VR/AR applications as in-car mobile solutions using ETSI MEC technologies for riders.

October 2018

ETSI Workshop: Boosting ICT Business and Innovation

4-5 Oct., ETSI, Sophia Antipolis, FR

Boosting ICT Business and Innovation: A Comprehensive Approach to Standardization Education in Europe, will give you an overview of current practice in standardization education, and a first access to the groundbreaking work done by ETSI in this field.



SDN NFV World Congress

8-12 Oct., The Hague, NL

ETSI is a forum partner of this event. The embraces areas of Network Innovation with the most relevance and urgency for carriers today, such as Networking Technology/Infrastructure, Automation & Operation, SD-WAN, Cloud Optical, 5G CAT, NFV Security and Opening Networking.



UCAAT

16-18 Oct., Paris, FR

UCAAT is ETSI's annual conference dedicated to all aspects of automated testing and is not limited in scope. This year's event is organized by Testing Solutions and Services, with the support of ETSI Technical Committee Method for Testing and Specification (TC MTS).



ETSI IoT Week

22-26 Oct., ETSI, Sophia Antipolis, FR

The ETSI IoT Week, the evolution of our highly successful M2M/IoT Workshop series, has become the must-attend event for anyone involved in IoT and who appreciates the value of standards-enabled technologies and deployments. The event will include a oneM2M Developers' Tutorial, IoT Security and Privacy Pre-event, IoT Workshop and oneM2M Showcases.

November 2018



Joint ETSI / IQC Quantum Safe Workshop

6-8 Nov., Beijing, CN

Organized by ETSI in partnership with IQC and Chongqing University, the event will start with an Executive Track on 6 November and will be followed by an in depth Technical Track on 7-8 November 2018.



NGMN Industry Conference & Exhibition

6-8 Nov., Vancouver, CA

Endorsed by ETSI, this event will be the place for thought leaders of the ICT industry to present their views and visions on 5G business and strategy, 5G architecture and technology as well as 5G experience from first deployments and field trials.



#Berlin5GWeek

12-16 Nov., Berlin, DE

Endorsed by ETSI, this event series discusses the newest network and software enabling technologies such as Software Defined Networks, Network Function Virtualization, Edge Computing, Industrial IoT, and 5G in the context of various industry verticals. This year the #Berlin5GWeek will feature the 2nd Edge Computing Forum, 2nd Industrial IoT Forum, as well as the 9th FOKUS FUSECO Forum.

ETSI at a GLANCE

2017 - YTD: June 2018

830

members

→ **+39 YTD**

2760

standards

→ **+998 YTD**



26%

SMEs

+1211

standards under development

60

technical groups

24

million standards' downloads

→ **+8 million YTD**

574

meetings

3420
participants

99

partnerships



ETSI

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06921 Sophia Antipolis Cedex
France
Tèl: +33 (0)4 92 94 42 00

61

conferences & Plugtests

→ **+35 YTD**

@ETSI
Secretariat

122
people

50%
women

15
nationalities

66

countries



About ETSI

ETSI provides members with an open and inclusive environment to support the timely development, ratification and testing of globally applicable standards for ICT-enabled systems, applications and services across all sectors of industry and society. We are a not-for-profit body with more than 800 member organizations worldwide, drawn from 66 countries and five continents. Members comprise a diversified pool of large and small private companies, research entities, academia, government and public organizations.

ETSI is one of only three bodies officially recognized by the EU as a European Standards Organization (ESO).
For more information please visit: www.etsi.org

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The Standards People

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