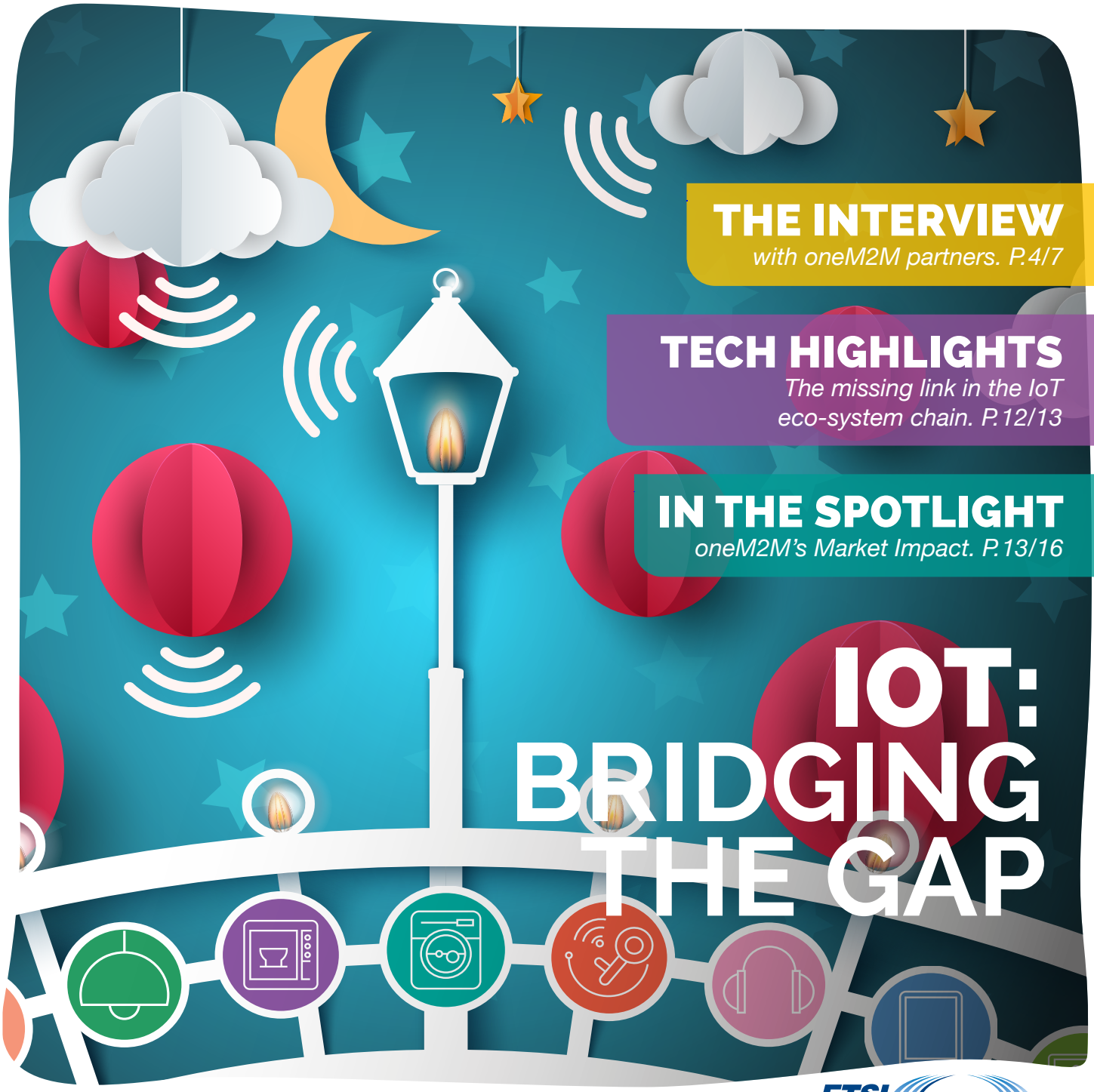
Enjoy!

THE ETSI MAG

OCTOBER 2022



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IOT: BRIDGING THE GAP

ETSI

Editorial

oneM2M has bridged the gaps that might have limited the scale of the emerging Internet of Things.

Today the number of connected things is rapidly outstripping mobile phone users. The world will see a burst of innovative products and services and connected things will interact more and more with one another.

Our partnership project oneM2M, founded 10 years ago, has bridged the gaps that might have limited the scale of the emerging Internet of Things (IoT) industry, avoiding a geographic and technological fragmentation. onM2M standards have led to successful deployments of IoT solutions around the world. To celebrate oneM2M's 10th anniversary, we have dedicated this edition of Enjoy! to the IoT. The heads of the eight standards development organizations who lead this project share their thoughts on its challenging but exciting journey in our exclusive ***Interview****, and our* ***Spotlight*** *section outlines some of the success stories of oneM2M deployments.*

In our ***Working together*** *pages we explain how the Edge for Smart Secondary Substation Systems (E4S) association helps develop semantic interoperability in the Smart Grid Domain, with an extension of the ETSI Smart Appliances REFerence (SAREF) standards. And the* ***Zoom on Europe*** *elaborates on how the SAREF standard ontology can describe a data model and be a key enabler for industry. Semantic interoperability and the role of ontologies in providing interoperability is a strong area of expertise in ETSI. SAREF can facilitate IoT deployment across different vertical domains, a subject promoted by the European Commission and one of high interest to them.*

Discover in our ***Tech Highlights*** *why the usability of IoT-related data and services will have a strong impact on big data and AI technologies. We also point out how onboarding all stakeholders in ETSI SmartM2M helped accelerate the development of the latest smart escalators and smart moving walks standards, which complete the existing smart lift standard. And this leads to our* ***new member interview*** *with Luca Pezzini, the Secretary General of the European Lift Association and the European Elevator Association, who gives us some insight into the key European industry of lifts and elevators and its transformation.*

And of course, there is much more to discover in this edition so,

Enjoy reading!

Luis Jorge Romero,
Director-General ETSI

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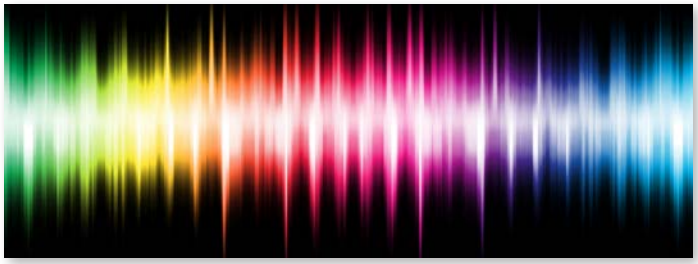
New ETSI group on Terahertz

The new use cases that will emerge over the next decade will require extreme communication performance, as well as functionalities that cannot be provided by the current wireless systems alone. As an example, applications providing users with an immersive and multi-sensory experience, such as holographic telepresence, will require data rates in the order of Tbps and need to include sensing information from the surrounding environment.

Terahertz communications (0.1 – 10 THz) have been widely recognized as one of the technologies that can help bridge the gap, opening the door to a vast amount of radio resources and enabling both communications and sensing. The newly created ETSI Industry Specification Group Terahertz Modelling (ISG THz) will identify the channel models, scenarios, and evaluation assumptions, filling gaps of technical specifications, when necessary, for the evaluation of THz communication systems. More than 25 global stakeholders have already joined the group. To join them contact: *ISGsupport@etsi.org*



ETSI ETI group extends term

ETSI has recently extended the term of its Industry Specification Group Encrypted Traffic Integration *(ISG ETI)* for a two-year period to mid-2024 to work on specific cryptographic and key management models.

As it prepares for the new term, the group has adopted a new work item issuing guidance on the implementation of the EU Council Resolution on "Encryption: Security through encryption and security despite encryption" and will finalize the report for publication in Q3 of 2022. This will be followed up by direct support from the group for the ETSI CYBER technical committee on aspects of encryption for the NIS2 directive.

Join us at the **ETSI IoT Week!**

The ETSI IoT Week is back physically on the ETSI premises, Sophia Antipolis, France, on 10-14 October.

By joining this event, organizations and stakeholders interested in the service and operational areas of IoT will benefit from an up-to-date overview of the major European and global trends in IoT services. Technology innovations, deployments, and the relevant standardization work, highlights of new initiatives and directions of IoT in the context of green and digital transformation will also be part of the agenda.

The 2022 edition will focus on "Pursuing Digital and Green Transformation" and will open with a tutorial on ontologies and semantic interoperability for IoT on 10 October, followed by a 4-day IoT Conference along with demonstrations. More information at: *https://www.etsi.org/iotweek*

ETSI booth and speakers **at *Network X event***

ETSI is a partner of the Network X event on 18-20 October in Amsterdam. This is a brand-new genre of event in response to the convergence of fixed and mobile networks. It combines 5G World, Broadband World Forum and the newly launched Telco Cloud to bring together fixed and mobile markets in one place.

With over 350 expert speakers and 300 exhibitors, attendees will be able to network with telco and tech giants, start-ups and innovators.

Besides the ETSI/3GPP exhibition stand in the 5G World area (G22), ETSI will actively contribute to the conference programme, with speakers in the main conference, sessions on network automation, ETSI Fifth Generation Fixed Network (ETSI ISG F5G), and more.

The OpenSourceMANO MR 13 (18-19 October) and 1st TeraFlowSDN (20 October) Hacfests willl be co-located with the event.

A networking cocktail, upon invitation, will allow the community to meet and exchange.

oneM2M 10th year anniversary

On July 24, 2012, seven leading standards bodies from across the world – ARIB (Japan), ATIS (North America), CCSA (China), ETSI (Europe), TIA (North America), TTA (South Korea) and TTC (Japan), came together to launch oneM2M - a global partnership initiative to develop a global standard for interoperable and scalable Internet of Things (IoT) systems. TSDSI (India) joined the initiative in 2015. 10 years later, they share their thoughts on this challenging but exciting journey.

JAPAN

Seiji Nishioka

Executive Director

ARIB

1. What made you join oneM2M and what did you expect from that collaboration?

ARIB joined oneM2M because we believe that for the diffusion and development of IoT, it is necessary to respond to the needs of various industries and markets, and that it is important to formulate standards that are internationally coordinated while at the same time taking into account the balance of requirements for each region.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

In the past, IoT systems were often vertically integrated and closed to each industry, but as Digital Transformation (DX) expands, the need for cross-industry, interoperable, and open platforms will become increasingly important.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

We understand that the underlying mission has not changed significantly. Naturally, with each release, oneM2M has added features to make it easier to use and has improved interoperability with mobile systems based on the 3GPP specifications and other IoT standards such as OMA LWM2M, OCF, OPC-UA and so on.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

Currently, I think the manufacturing industry is driving the IoT market in Japan. However, we expect that the IoT in the consumer sector, such as smart homes, will also grow significantly in the future, and we expect that the cross-industry open platform that oneM2M is aiming for will become increasingly important.

NORTH AMERICA

Tom McGarry

Vice President, Standards

TIA

1. What made you join oneM2M and what did you expect from that collaboration?

TIA helped to form oneM2M, as a founding member, when the need for a global standard that addresses the interoperability and scalability of IoT systems became apparent. Given the long history of partnership projects, forming a similar entity with this goal in mind was the logical choice.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

Standards establish universal protocols that ensure the compatibility and interoperability of technology that is essential to daily life. IoT devices and services must interact in pre-defined and known ways, even though they may be designed and developed at different times by different groups of people. Known interactions are achieved through the use of standards. What's more, they benefit public health, safety and the environment.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

The nature of a partnership allows for flexibility and quick adjustments to its working methodologies, as the market demands and forecasts change. We've seen this evolution in oneM2M through the restructuring and streamlining of its work programs, allowing for more focused working groups and consolidation of SMEs.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

The medical, home and industrial automation, and automotive industries are at the top of the list for the North America IoT market drivers.

EUROPE

Luis Jorge Romero

Director-General
ETSI

1. What made you join oneM2M and what did you expect from that collaboration?

Actually, we are a founding partner of oneM2M. At the time ETSI already had a technical Committee working on Machine-to-Machine communications (TC SmartM2M) and we realized that the IoT market was going to be global. Companies that have global manufacturing in different locations want to benefit from similar IT systems in each site. Having multiple standards would not make sense.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

IoT device technologies are constantly evolving. It is difficult to invest in IoT systems: the right technology today might be obsolete tomorrow. The oneM2M standard provides a layer between the connectivity part of IoT systems (sensors, actuators, batteries etc.) and the 'business logic' or enterprise applications. This allows you to update or evolve the connectivity part of your system without changing your applications or automation, preserving your investment.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

A big achievement is oneM2M's work on semantic interoperability. Collecting data from different devices means handling different formats. But combining data is not sufficient, you need to understand it to take relevant actions. When the market matures and industry faces massive IoT deployments, understanding data will be key. This is where oneM2M's support for ontologies makes it unique among IoT standards.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

They are many but a market which is in huge expansion is the automotive market. Every single new car today has a 4G or 3G modem inside coming with over the air software updates. You need to manage the connectivity between all devices, the status of each car, position tracking, maintenance issues and car manufacturers have to build their own IT platforms to handle those data. This is where oneM2M could be a real asset.

JAPAN

Hideyuki Iwata

Ph.D, CEO & S.V.P.
TTC

1. What made you join oneM2M and what did you expect from that collaboration?

Participation in "oneM2M" is open, and we believe it is important to flexibly respond to opinions from all market and industry stakeholders. In addition, it is necessary to build a simple and efficient operation system that can respond to the needs of industries and markets related to M2M. We consider it important to develop standards that take into consideration the balance of regional requirements and differences, while promoting international cooperation and integration.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

Through the standardization of IoT devices and services, cooperation between IoT systems in different industrial fields will advance, and information will become available for mutual use. For business operators who utilize it, it is expected that the cost of connecting IoT devices and systems will decrease, and as a result, manufacturing costs will be reduced, which will invigorate collaborative development between companies. In addition, it will be possible to organically operate various information provided by multiple infrastructure systems that have been operated independently until now, and it is expected to contribute to the realization of smart cities.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

On the technical side, I expect more service-specific implementation and enhancement of reliability. For example, in environmental monitoring related to climate change, which is a global issue, the stability and reliability of networks connecting IoT devices and data centres to be sustainable in harsh environments are required. We believe that the reliability of data captured from IoT devices is the basis for the reliability of the entire system.

I also think it is important to expand IoT solutions and spread them to many industries through collaboration with other IoT technologies and standards bodies.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

According to the Ministry of Internal Affairs and Communications, 23% of all companies in Japan are using IoT. The most frequently cited purpose of utilization is to improve operational efficiency (reduce the burden on employees). The number is expected to increase significantly for industrial use and consumer use with the global commercial launch of IoT, AI, and 5G, and it is thought that this trend will be the same in Japan.

Looking at social trends, there are growing expectations for the use of IoT in the manufacturing, agriculture, and medical industries to resolve pressing issues, improve operations, and promote efforts to reform work styles.

INDIA

Pamela Kumar

Director-General
TSDSI

1. What made you join oneM2M and what did you expect from that collaboration?

Joining the oneM2M partnership project presented a good opportunity for interacting with the global experts, exchanging views on the IoT/M2M landscape, addressing the local requirements of the partners, and the challenges faced by players globally. Such experiences are critical when working to build standards which are truly secure, interoperable and scalable at global level. These also provide economies of scale.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

There are a lot of proprietary solutions available in the market, on individual verticals. But they may lack in interoperability across domains. A Common Service Layer (CSL) approach of oneM2M enables cross-domain use cases that open up a whole new set of applications – especially in smart cities, public services, etc. Further, as the IoT industry is not regulated today, these available solutions are prone to security and data privacy risks. When applied on grand scale such as Smart cities, etc., the scalability related issues will occur. The consumer should not be locked on a single vendor. A standardized solution solves all these problems.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

The technology world is ever-changing. oneM2M is committed to improving its standards, adding more features and capabilities, through progressive releases so it does not become obsolete. The scope of M2M has included many advanced functionalities like semantics, 3GPP Interworking, Fog/Edge Computing, Service Provisioning, etc.

oneM2M with its Conformance Test Suite has also provided a means of testing the conformance to those standards.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

The mission mode adoption of digital technologies to serve national initiatives, such as Digital India, Smart Cities, Smart Agriculture, Utilities, etc., is expected to drive the IoT market. The Indian Government has adopted oneM2M as a national standard for Indian smart cities.

CHINA

Wen Ku

Board Chair
CCSA

1. What made you join oneM2M and what did you expect from that collaboration?

It is obvious that we are entering an era of Internet of everything based on the fast evolution of technologies and increasing capacity of networks. There is an urgent need for an international organization to develop unified IoT specifications that ensure the most efficient deployment of Machine-to-Machine (M2M) communications systems and the Internet of Things (IoT). Learning from the successful experience of 3GPP, we were a founding member of oneM2M in 2012. Our goal is to develop technical specifications for a common M2M service layer that can be readily embedded within various hardware and software, and relied upon to connect the myriad of devices in the field with M2M application servers worldwide.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

The real value will only come when different proprietary IoT devices and services around the world are networked together through common interfaces. The unified service-layer standards will facilitate the intercommunication of various devices and services, thereby realizing the true interconnection of everything and generating greater value. The unified standards are conducive to the large-scale production of equipment, thereby promoting the reduction of equipment costs, expanding the scale of applications, and thus promoting the improvement and development of the entire IoT industry chain.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

I am pleased to see that, in the past 10 years, oneM2M has paid more attention to cooperation with the vertical industries, to the development of standards meeting the needs of the industries, and to the promotion of the oneM2M brand. Through events such as Showcase, Industry Days and International Hackathon, the links between oneM2M and the industries are strengthened and more solutions are fostered to help solve societal issues using a oneM2M platform.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

The IoT market is being driven mainly by enterprises in the sectors of municipal construction and operation, industrial and agricultural production, and personal consumption in China. I would like for oneM2M to share more best practices and strengthen the R&D of standards in intelligent public utilities, intelligent manufacturing and intelligent transportation, for instance.

SOUTH KOREA

Kyoung-Cheol Koo

Vice President
TTA

1. What made you join oneM2M and what did you expect from that collaboration?

As the IoT industry grows, it is essential to implement interoperability of different systems and platforms and oneM2M is expected to play a key role in this.

With oneM2M partners, TTA can create trusted IoT standards which make it compatible with increasingly fragmented IoT technologies, and it is expected that oneM2M will expand as the IoT market grows.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

The IoT platform based on the oneM2M standard can secure a scalable ecosystem by providing wider interoperability among proprietary devices and services in the long term. This will be a great competitive advantage.

When it comes to the IoT value chain, it will be critical that oneM2M provides an environment where developers can implement robust and interoperable IoT products easily and that products are also easy and simple to use for customers at affordable prices.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

Since the inception of the oneM2M partnership in 2012, TTA transposed oneM2M Technical specifications release 1 in 2015, release 2 in 2016 and release 3 in 2018, and oneM2M designated TTA as the world's first oneM2M global certification body in 2016.

On the other hand, AI is now playing an increasingly important role in IoT devices and platforms due to its ability to quickly extract desired meanings or patterns from vast amounts of data from IoT devices. This complementary relationship with IoT and AI is now opening up a new realm of possibilities in all industries and services.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

oneM2M has to deploy across industries from energy, healthcare, factory, transportation, city, etc. And it should go further in the direction of utilizing Smart Convergence with advanced capabilities like AI and Blockchain.

We need to focus on expanding the deployment of oneM2M use cases in a wide range of industries by promoting developers' use of oneM2M platforms such as OCEAN, ACME, OS-IoT, OASIS SI and others.

NORTH AMERICA

Susan Miller

President & CEO
ATIS

1. What made you join oneM2M and what did you expect from that collaboration?

When we launched oneM2M, the growth in IoT was poised to be one of the most transformative advancements in the ICT industry globally. Where there are common goals and requirements across geographies, collaborating with other SDOs on a single standard brings efficiencies into the ecosystem. oneM2M is an ideal environment for this collaboration.

2. There are a lot of different proprietary IoT devices and services around the world; what is the added value of a standard?

In the early adoption of any technology, we see proprietary implementation deployed to meet market demands before standards are agreed upon. Standards are critical for customers, vendors and service providers to ensure that IoT systems provide compatibility, interoperability and trusted security when deploying applications and services.

3. Over the last 10 years, what was the evolution of the mission and the scope of oneM2M?

oneM2M has evolved the scope and mission of its standards to meet the ICT industry's challenging and ever-evolving demands, specifically in light of IoT cyber threats and the need to increase IoT security requirements. Most recently, oneM2M has launched a sustainability working group to deal with climate change and the market demands for IoT systems and services to be more energy-efficient. This work will promote a more environmentally sustainable ecosystem.

4. Which industries or sectors drive the IoT market in your geographical area and what should oneM2M do for them?

oneM2M has grown and evolved to meet the future and address the needs of vertical sectors, while staying focused on its overarching mission to provide open IoT standards. Across different verticals, deployments of oneM2M's horizontal architecture framework are increasing globally. Growing demand for 5G's increases in speed and ultra-low latency capabilities will allow IoT devices to communicate and share data faster than ever before. The integration of oneM2M with 5G public and private networks will provide extremely secure connectivity across several mission-critical applications such as public safety and smart infrastructures.

Welcome to our NEW members

BeammWave, Sweden

BeammWave was founded in 2017 and is headquartered in Lund, Sweden. BeammWave delivers unique ready-to-integrate single-chip solutions that unlock the promises of 5G and aim at delivering a solution with higher performance at a lower cost.

BeammWave's approach to mmWave and beamforming delivers inexpensive radio-frequency integrated circuits (RFIC), sporting efficient digital beamforming and antenna arrays, to be used in any connected application. The chips provide substantial size and cost reduction but also increase flexibility in the circuit board (PCB) design for any connected product.

BSI, Germany

The BSI (Bundesamt für Sicherheit in der Informationstechnik) is the German Federal Office for Information Security. BSI is the national cyber security authority and the chief architect of secure digitization in charge of securing the use of information and communication technology in government, business and society. Founded in 1991 and located in Bonn, its areas of expertise and responsibility include the security of computer applications, critical infrastructure protection, Internet security, cryptography, counter eavesdropping, certification of security products, the accreditation of security test laboratories and standardization.

DAEGU University, South Korea

Daegu University is a private university located a short distance outside Daegu in North Gyeongsang province, South Korea. It was originally founded as the Daegu School for the Blind in 1946. The University provides undergraduate and graduate training.

Originally focused on social work, Daegu University now consists of 13 colleges and covers most major fields of study: Humanities, Law, Public Administration, Economics & Business Administration, Social Sciences, Natural Sciences, Health Sciences, Engineering, Information and Communication Engineering, Natural Resources, Arts and Design, and Education.

Devise Futures, Portugal

Founded in 2015 and located in Braga and Porto, Devise Futures' mission is to "Devise trustable and innovative IT solutions". Devise Futures combines industry and academic expertise with innovative technology to deliver trustable IT solutions that are fully integrable, professionally supported and cost-effective. Its R&D team works closely with national and international partners. Domains of expertise cover PKI (Public-Key Infrastructure) solutions, eSignature services and solutions in line with European legal framework as well as secure electronic identification solutions.

IMDA, Singapore

The IMDA is a statutory board of the Singapore government whose mission is to develop and regulate the converging infocomm and media sectors, safeguarding the interests of consumers and fostering pro-enterprise regulations.

IMDA aims to build a competitive and sustainable infocomm media industry, developing Singapore as a nucleus for quality media content, services and applications, while growing the seed of technological innovation and fostering collaboration between local and multinational corporations in the sectors.

As the regulator of the telecom industry, IMDA promotes a competitive market, while encouraging innovation that brings benefits to companies and consumers.

Jember, Germany

Based in Munich, Jember GmbH offers superior engineering services in the areas of consulting, development and research. It provides innovative solutions for mobility and connectivity in the aviation, aerospace and automobile industries. The company's experiences and competencies cover a broad range of technologies: E-Mobility, XIL / Simulation, Diagnosis, Connectivity, Software-Engineering and Functional Chain / Signal Network Analysis.

Lear, U.S.A

Lear is a global automotive technology leader in Seating and E-Systems whose goal is to align industry and consumer demands for new intelligent and environmentally friendly technologies to be applied to smart manufacturing, a safer driving experience, a better user experience, and seamless connectivity with measurable, commercial results. With over 250 facilities in 38 countries, Lear is driven by a commitment to innovation, operational excellence, and sustainability in order to provide personalized user experiences through the deployment of advanced technologies.

Universität Ulm, Germany

Ulm University was founded in 1967 as the youngest university in Baden-Wuerttemberg and has continued to evolve dynamically ever since. A future-oriented course catalogue, high-quality academic education, international diversity, interdisciplinarity and cutting-edge innovative research have become its trademarks. The university is oriented towards the global challenges of the future with 12 strategic and interdisciplinary research themes that contribute to improvements in the areas of ageing, sustainability, technologies of the future, and human health and well-being.

Ulm University is the centre of and driving force behind the Science City of Ulm, a hub of university and other research institutions, maximum-care hospitals and technology companies.

University of Glasgow, Scotland

The University of Glasgow is a public research university founded in 1451. It is the fourth-oldest university in the English-speaking world and one of Scotland's four ancient universities. The institution is one of the top 100 of the world's universities.

High educational standards, strict entrance requirements and a strong international research reputation have made the university a competitive destination for students worldwide. The University comprises four colleges, each bringing together the research and teaching expertise of a number of high-level schools.

Validated ID, Spain

Validated ID was founded in 2012 and is headquartered in Barcelona. The company brings real identities to the digital world by helping businesses send and sign documents online and identify users and clients with maximum efficiency, security, trust and legal compliance.

Validated ID offers a SaaS multichannel electronic signature platform that combines the security of cryptographic technology, biometrics and easy use. It also provides a Blockchain-based one-click digital identity, implementable in the optimization of user and online customer onboarding as well as digital procedures involving identity verification.

Wiliot, Israel

Wiliot is a service platform based in Israel that aims at bringing connectivity and intelligence to everyday products and packaging, things that were previously disconnected from the Internet of Things. The Wiliot Platform combines cloud services and IoT Pixels, computing elements that can power themselves by harvesting radio frequency energy. This solution comprises integrated silicon and cloud computing technologies enabling battery-free sensing at a fraction of the cost.

Luca Pezzini, ELA Secretary General, gives us some insight into the key European industry of lifts and elevators and its transformation.

Accessibility is at the core of your business—what have been the innovations in that field over the last 10 years?

ELA has always been very attentive to the issue of accessibility. A dedicated Working Group on 'Safety, Accessibility and Energy Efficiency' has the task of providing expertise and information on the synergies achieved in the combined measures related to improve the safety, accessibility and energy efficiency of existing lifts. A White Paper is under preparation to provide guidance to all interested parties. Special attention will be given to the EN standards published in this area, on the basis of which ELA will promote the issues for action by the industry.

Luca Pezzini

Secretary General, *European Lift Association*

Luca Pezzini, currently Secretary General of both ELA (European Lift Association) and EEA (European Elevator Association) was born in Bergamo (1966) and holds a degree in economics. In his more than 30 years of professional experience, he has worked as a businessman as well as a manager within the important Italian entrepreneurial organization (Confindustria) and the European Commission (DG Grow). The European Lift Association (ELA) is the voice of the lift, escalator and moving walk industry in Europe. With 6.5 M lifts in the 30 countries of the European Economic Area, ELA promotes quality, safety and the use of the highest technical standards. It is ELA's mission to move urban mobility and accessibility onwards and upwards into a safe, sustainable future.

"A key innovation is an emergency lift communication for the hearing-impaired."

Constant and continuous is the focus on innovation in this field. As an example, we have developed emergency lift communication for the hearing-impaired. The Induction Loop for Lifts is an inductive loop that delivers audio to the lift-cabin interior, where it transmits the sound to hearing aids with a built-in inductive sensor. The induction loop is an indispensable assistant in resolving emergency communications from inside the lift for hearing aid users. By using dedicated accessible navigation apps, blind or partially sighted persons can navigate independently between elevators and floors, using smartphone voice prompts. Another recent achievement is a new virtual button panel in lifts that guarantees universal accessibility in the lifting environment.

Smart lifts are now part of our urban life; what are their main benefits and what are the challenges you need to tackle?

Innovation in our industry is of fundamental importance. The topics of digitization, cybersecurity, IoT, tele-alarms, artificial intelligence, robotics and much more are all subjects of attention by our Technical Committees. Once again, the value of technical standards emerges, which must provide the framework within which innovation can fully express itself without being compressed and/or inhibited. This requires working in synergy with regulatory bodies, research organizations and the industry. This is an issue that ELA is also discussing with its international partners in order to seize best practices everywhere in the world.

"Technical standards provide the framework within which innovation can fully express itself without being compressed and/or inhibited."

The Machinery Directive is being revised; is the lift industry impacted?

The new Machinery Product Regulation will certainly have a strong impact on the lift sector. First of all, the transformation of a directive into a regulation obviously has a number of implications for everyone. ELA is a member of the Machinery Expert Group promoted by the EC to study the implications of the new legislation for all sectors (including lifts). On several occasions we have conveyed our 'technical' positions to both the Commission and Parliament. Through our national members, we have also tried to bring these positions to the attention of national governments so that the Council of the European Union itself is aware of them.

You're new to ETSI. Why did you choose to join and which current or future standards are the most relevant for your activity?

One of ELA's goals is to promote quality, safety and technical standards for the industry we represent. ELA has always worked closely with CEN and ISO, so it seemed very useful to us to analyse the ETSI 'proposal'. After doing our due diligence, we immediately realized that there were several topics of interest to us on which ELA had already started to work. Today, with great satisfaction, the reasons for collaboration are many and the exchanges very intense.

"Today, with great satisfaction, the reasons for collaboration with ETSI are many and the exchanges very intense."

Do you think your industry has a role to play in the "net zero" goal of the European Commission?

Absolutely. The European Commission has stated that the European building sector is the largest single energy consumer in the EU, responsible for approximately 40 percent of energy consumption and 36 percent of CO2 emissions in the EU. It is estimated that lifts consume between two and five percent of the energy consumption of buildings. The lift industry can therefore contribute towards decarbonizing the built environment by providing energy-efficient solutions and reducing the carbon emitted during the production of materials.

"The lift industry can provide more energy-efficient solutions and reduce the carbon emitted during the production of materials."

Older lifts can consume as much as 10 percent of a building's energy, although this varies depending on the technology with which they operate, the number of lifts in the building, the number of floors they serve and the frequency with which they are used. New lifts are comparatively low consumers of energy thanks to new advances in technology.

But it is also possible to go a step further to achieve net zero lifts. Examples include using solar panels on the roof of the lift shaft, cables that reduce energy waste, regenerative lift drives that recapture energy when the lift is in motion, energy-efficient lighting and sensors that activate lights and fans only when the lift is occupied. Relay switches can also be swapped for more energy-efficient microprocessors within the control panel.

To move the market towards energy-efficient lifts, ELA is also working to help policy makers establish an appropriate framework to support the ecological transition of the lift industry. ELA is currently lobbying the EC for the inclusion of lifts, escalators and moving walks within the Energy Performance of Buildings Directive (EPBD) in order to make a measurable contribution towards the EU's ambitious goals. As part of its Eco Strategy, ELA intends to support EU objectives for energy-efficient technologies and sustainable materials, ensure that lifts contribute to smart building rating systems, and help create favourable conditions for modernizing existing lift stocks.

Data usability as a missing link
in the IoT eco-system chain

Following the publication of two reports related to gaps in standardization, (ETSI TR 103 376 and AIOTI Gaps report) it was found that there is a missing key link in the IoT ecosystem chain. To address this, ETSI set up a Specialist Task Force (STF) with the aim of standardizing the usability of data and services that IoT devices and platforms deliver.

The background

This group operated under the ETSI Technical Committee SmartM2M (STF601 - Cross-domain data usability of IoT devices for humans and machines) and closed in July 2022 after delivering the expected documents. In order not to encroach on the work of other ETSI committees, the focus of STF601 was on data usability across domains.

This task force work also complements other artificial-intelligence (AI) activities in SmartM2M. Standardizing the usability of data and services provided by IoT devices and platforms will have a strong impact on big data and AI technologies. Data usability factors can improve knowledge presentation, in terms of how data are provided to AI systems. Data usability also helps with data management, such as the organization and visualization of IoT data for both machines and humans. In addition, improving configuration and management tasks in IoT devices and platforms increases reliability and therefore the usefulness of data feeding AI systems.

Use cases

The STF was to deliver two documents, the first of which is the published Technical Report (*ETSI TR 103 778*) that collects use cases to highlight the importance of data usability from real life scenarios. The team have researched many different industries and practices to assess how data might be compromised in these different use cases. Thirty-three use cases have been highlighted and cover a wide span including healthcare covering disabilities, the environment, elderly users, and the pandemic.

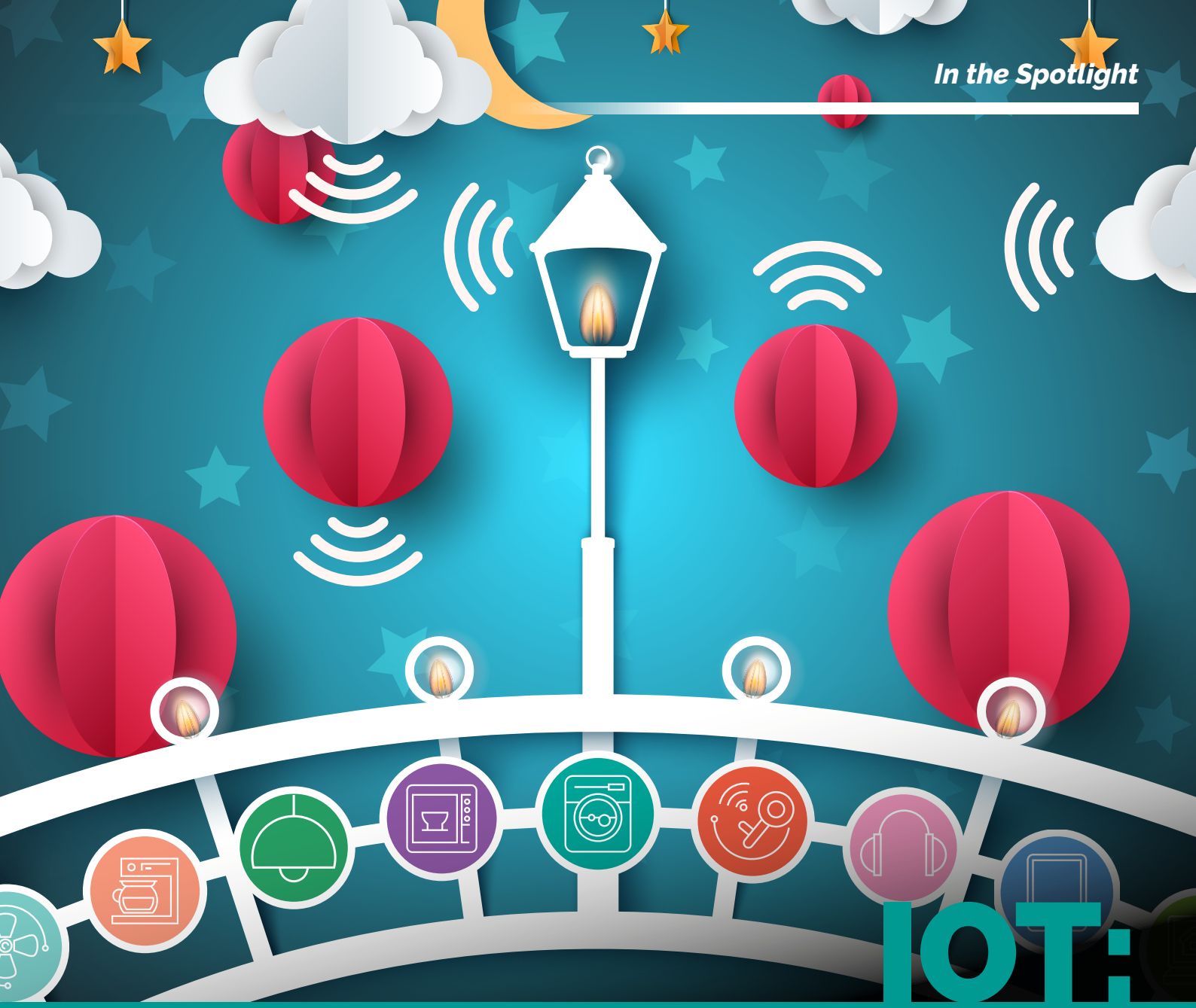
There are also industry and manufacturing use cases, including the safety management of manufacturing plants and construction site workers, complemented with agriculture, farming, energy, and the transportation sectors as well as public and emergency services. Other areas covered are buildings, vending machines, retail supply chains, large events, smart lifts, and smart cities. The project team analysed the consequences and impact of data not being usable in each of these scenarios.

Requirements

This analysis led to the second document which is a Technical Specification (*ETSI TS 103 779*) and specifies measures to ensure data usability from a generic point of view across all these domains. It contains both service and operational requirements that different elements in an IoT system need to fulfil. These elements include sensor/data sources, IoT platforms, AI/ML or monitoring functions, IoT system operators, and data users.

One of the objectives of this project is to feed the findings back to oneM2M. To this end, members of the task force have been actively involved in regularly reporting their progress back to the oneM2M Requirements and Domain Modelling (RDM) working group. They have also contributed the relevant subset of their use cases to a new oneM2M Technical Report (TR-0068 - System Enhancements to Support AI Capabilities) currently in the process of being prepared for publication. The same approach continues with the set of requirements from the Technical Specification which will be used to feed the oneM2M technical report.

Michelle Wetterwald, Netellany- FB Consulting, STF601 leader.



IoT: BRIDGING THE GAP

oneM2M's Market Impact

oneM2M's launch 10 years ago targeted two obstacles that could have limited the scale of the emerging internet of things (IoT) industry. These obstacles are related to geographic and technological fragmentation.

oneM2M basics

To address the first obstacle, the regional standards development organizations (SDOs) that founded oneM2M decided to collaborate on a global standard.

To address the second, oneM2M's standards developers adopted a technology abstraction approach that would accommodate multiple, point technologies across the IoT landscape. They began work by identifying recurring activities *in use cases from various vertical applications.* This helped to identify commonalities that could be addressed with repeatable and standardized functions. Indeed, oneM2M created an IoT middleware layer comparable to an Operating System (OS).

This layer abstracts the technical complexity involved in connecting sensor devices, gateways, decision-making software and visualization dashboards. Moreover, by reusing established technologies and sector-specific standards, the standard avoids unnecessary re-invention. As a result, IoT system operators can combine new-build facilities, based on oneM2M's open standard, with legacy sub-systems, even where the latter use proprietary protocols.

SDOs and contributing members envisaged a future where increasing numbers of devices and applications will become connected. They also anticipated *requirements that go beyond connectivity along the IoT technology stack.* Technical interoperability was a core goal of the oneM2M standard. The future also calls for cross-silo applications and data sharing. These enable innovation and improved decision making. This is what makes oneM2M's standardization roadmap important and primed for future requirements.

Adoption in smart city scenarios

South Korea saw the earliest adoption of oneM2M standards around 2014. Recognizing oneM2M's potential to enable IoT platforms, its national government included oneM2M in its *Master Plan for Building the IoT.* Then, to assist small and medium sized businesses, the government launched an initiative through the Korea Electronics Technology Institute (KETI) and its *OCEAN* family of open-source utilities and educational initiatives.

In addition to solutions developed by South Korea's mobile operators, *three conurbations deployed complex systems based on oneM2M.* The Busan smart city pilot focused primarily on school zone safety, whereas the city of Goyang dealt with smart eco-city services. In the third case, the city of Daegu emphasized healthcare services for the elderly and maternity services for young families. National commitments and pilots led *many firms to offer component products and systems based on oneM2M.*

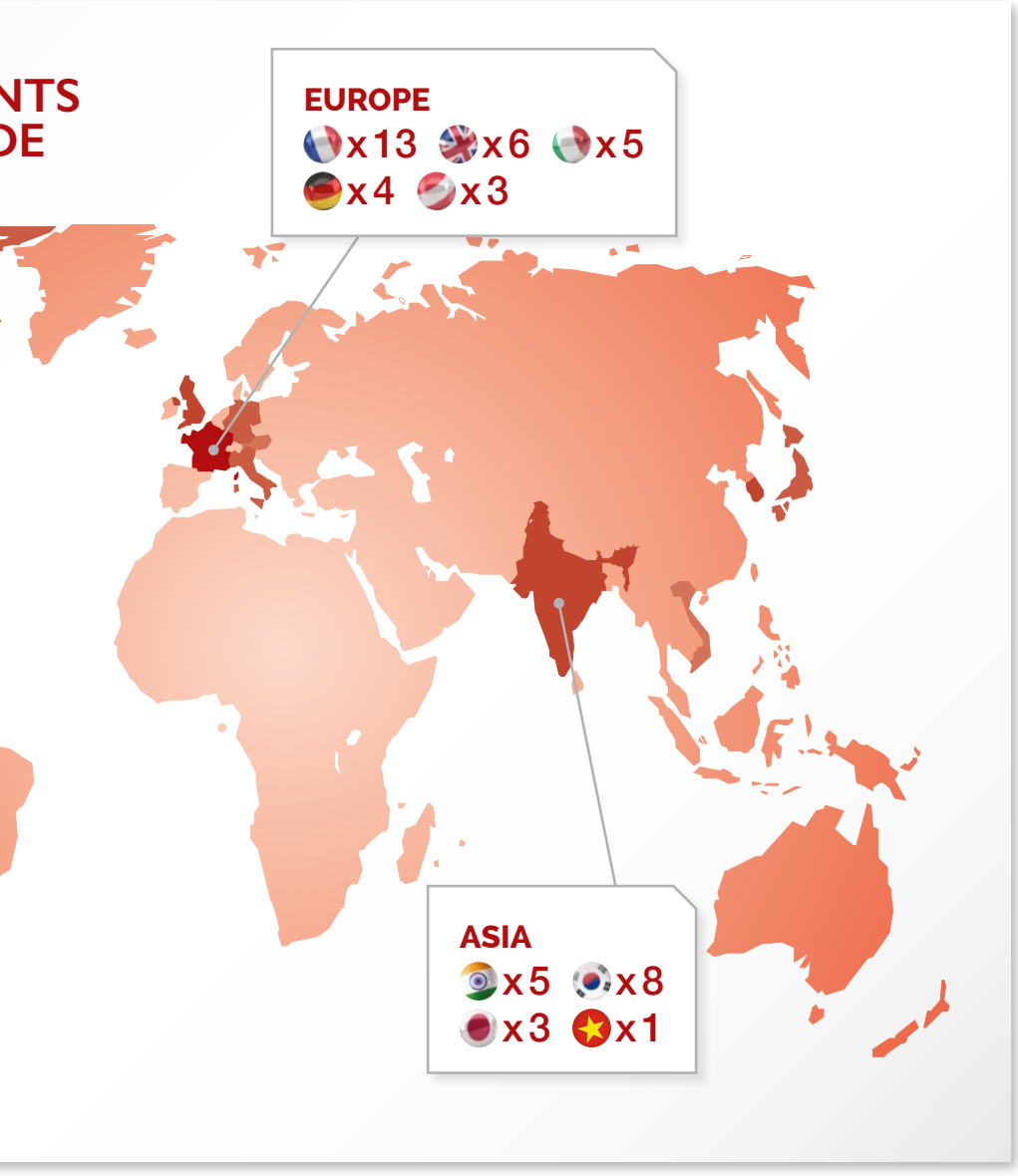
"Smart cities" is a recurring theme among *other oneM2M deployments.* It characterizes multi-stakeholder deployments and the need to manage data from a wide variety of sensors with suitable privacy and security controls. This is where oneM2M's open standard helps multiple entities to collaborate. It does so by supporting technology-agnostic connectivity, alongside policy-based controls, so that users can define data-sharing permissions.

South Korea saw the earliest adoption of oneM2M standards around 2014.

In Bordeaux, France, beyond technical matters, oneM2M standards add value to procurement

In Europe, the city of Bordeaux (France) specified oneM2M for its *City as a Platform.* It wanted to support multiple applications. Beyond technical matters, the oneM2M standards add value to procurement processes. Their use allows municipalities to specify a supplier framework and to procure solutions in a way that *reduces the risk of becoming locked in by a proprietary technology or a single vendor.*

In Hamburg (Germany), Deutsche Telekom's Smart City Lab implemented a subset of oneM2M's common services for connectivity and data management in the *mySMARTLife* project. oneM2M standards supplemented the Port of Hamburg's legacy platform, based on the Open Geospatial Consortium (OGC) standard for geo-location, surface planning and measurement activities. oneM2M enabled the sourcing and publishing of city data beyond geo-spatial sources. It also simplified user access to data through an API with configurable access and security capabilities. Working with established sector standards, this example illustrates the role of oneM2M's interworking framework *as a universal hub for modular and standards-based IoT systems.*



Multi-stakeholder data market places

Addressing the need for cross-silo collaboration, oneM2M standards were used in the UK on a multi-user, multi-use-case system in the *oneTRANSPORT* project. This began as a pilot that was partly funded by the Innovate UK agency. oneM2M standards enabled an environment where suppliers and consumers of IoT data could access smart city and transport network data from over two hundred sensor types. The project showcased small, medium, and large-scale use cases. Respectively, these were for a park-and-ride system in the city of Oxford, a system to manage visitor flows at a town-centre soccer stadium in Watford's town centre and to supervise spectator traffic to the Silverstone Formula One racetrack on the busiest weekend of the year.

In the UK, the multi-user, multi-use-case system based on oneM2M was commercially implemented.

Following a *successful pilot,* the system came into commercial operation. It was then expanded to support data sharing across the *Transport for West Midlands footprint.* A further evolution involved a *data sharing ecosystem for connected vehicles.*

Growing adoption across India

In 2020, India's adoption of oneM2M as a national standard triggered additional deployments. With support from European collaborators, for example, the *International Institute of Information Technology, Hyderabad (IIIT-H) launched a Living Lab* to work with government bodies, start-ups and large organizations on smart city solutions. Early applications included air pollution monitoring, building energy consumption, water usage and street lighting. IIIT-H later collaborated with the *India Urban Data Exchange (IUDX)* to enable the use of data for the public good.

In 2020, India adopted oneM2M as a national standard.

IUDX's open-source software platform is present in 20 cities across India. The IIIT-H/IUDX collaboration allows any registered IUDX user to access sensor data collected from a oneM2M data monitoring capability. This is another demonstration of oneM2M's role as a technology interworking hub.

Elsewhere, the Indian government's Centre for Development of Advanced Computing launched its oneM2M-based Common SMART IoT Connectivity *(CoSMiC)* platform. This platform targets intelligent transport systems by enabling data sharing between IoT field devices and applications in different verticals.

India's Centre for Development of Telematics (C-DOT) develops new information and communications technologies to meet local market needs in areas related to rural applications, strategic sectors, and security agencies. To this end, C-DOT launched its oneM2M-based *C-DOT Common Service Platform (CCSP) with an initial portfolio of 11 applications.* While the scope of oneM2M standards is broad, *C-DOT's development team demonstrated oneM2M's power to support multiple applications* using only a sub-set of the standard.

As the IoT market expands, industry emphasis is shifting to cross-silo interoperability and innovative use cases.

A standards-based roadmap for future IoT systems

As the IoT market expands, industry emphasis is shifting to cross-silo interoperability and innovative use cases. oneM2M is in a unique position to address such developments. That is because oneM2M's *roadmap and release cycle* can accommodate new requirements coherently. Release 1, for example, laid the foundations for the oneM2M technical specifications. These specifications were subsequently improved in Release 2 by learning from multi-vendor interoperability testing.

Release 3 added support for 3GPP interworking and security. It also expanded support for sector-specific standards such as OCF, OPC UA, OSGi and Modbus, promoting oneM2M as a system-level standard for integrating sector-specific standards.

oneM2M members will shortly ratify Release 4, while readying new features for Release 5. These features address requirements arising from data privacy frameworks, such as the GDPR and design approaches to handle "AI-for-IoT". Another important topic, advanced semantic capabilities, aims to make it easier and more dynamic to discover and use IoT data sources in large and distributed systems.

Commercial and regulatory demands will drive new IoT requirements beyond the issue of connectivity.

oneM2M has become a mature IoT standard to build on

3GPP standards laid the foundations for ubiquitous mobile telephony, with a continuous release cycle that is invisible to end users. The same applies to oneM2M. Its cross-vertical approach followed by initial releases and testing events means that oneM2M's technical specifications now offer a mature set of capabilities. 10 years ago, these would have been innovative. Now, the IoT industry looks on them as a foundation for future IoT systems.

An early contributor to oneM2M reflected on this evolution during oneM2M's 10-year celebrations. His organization initially marketed their oneM2M-based IoT platform, focusing on connectivity, to telecoms operators. Over time, the company recognized a better business opportunity in the cloud provider and IoT systems market. As a result, they moved their oneM2M team out of the telco line of business and into the cloud services unit. Now, the focus was less about a new standard and more about the services and integration capabilities it enables.

Looking to the future, commercial and regulatory demands will drive new IoT requirements beyond the issue of connectivity. This is evident from the demand for data exchanges that organizations in India are targeting with their oneM2M deployments. Newer deployments will address a broader set of interoperability requirements, which map to the oneM2M standardization roadmap and prospects for the *Interoperability of Things.*

Roland Hechwartner, oneM2M Technical Plenary. Chairman.

ETSI Research Survey 2022

In this edition of the Enjoy! Research pages we focus on the recent ETSI survey where we invited our research and academia members, our Partners, and others from the wider ICT community to complete an online Survey.

The intention of this initiative was to collect feedback on the enablers and eventual barriers to bringing research results and innovative ideas through standardization and onto global markets.

Early Findings

The 80+ survey results received provide several clear messages.

Awareness: Many responses indicated that the research community is already aware of ETSI and the importance of using standards to move research to market. However several replies expressed a need to have additional information on how to get involved and additional tools to facilitate researcher participation.

Education and Information: Although much information already exists on the ETSI web *(https://www.etsi.org/research)* the survey revealed a need for more education for students in technology and business studies, as well as information for researchers on when, where and how to get involved in standardization.

Accessibility: Whilst the ETSI membership fee for universities and research bodies is very low, there is a call to make the participation in standardization even more accessible for researchers. Cost was not identified as the main barrier, a more important factor being the investment of time that is required to understand and participate in standardization activities.

Accelerators: Researchers working on funded projects have specific KPIs and part of the challenge for ETSI is to provide the tools that can enable those KPIs to be reached. Recognition was identified as a clear area to be improved, with an identifiable link between the input from researchers and the final output standards.

Community Builders: The ability for standards bodies to enable networking between researchers and industrial players was highlighted as an important factor. The survey respondents called for more opportunities to meet and interact with their peers and the wider ICT community.

The Way Forward

ETSI already provides a dedicated value offering for researchers (see DIAGRAM), however the survey results provide an excellent indication of where we may develop further.

As a result of the survey findings, ETSI is already considering and further strengthening the following development areas.

Awareness: initiatives will ensure a wider understanding of the value of standardization in the research community

Education and Information: additional means for researchers, educators and students will inform on how to get involved in standardization

Recognition: of the work made by researchers and projects in standards work

Accelerators: will assist in identifying where to contribute and what standards may be used as a basis for research work

Community: we will build upon the existing platforms and events where researchers can network and share their findings to a wider audience.

Many of these issues will be treated at the ETSI research workshop at ETSI facilities on 6-7-8 Feb 2023.

David Boswarthick,
ETSI Director New Technologies.

Fast standardization
for vertical sectors

Last August, ETSI published an IoT standard dedicated to Smart Escalators and Smart Moving Walks. This standard echoes the specification published last year on Smart lifts, TS 103 735, with similar characteristics and stakeholders. They join a set of specifications dedicated to smart buildings and facilities.

A quick development process

ETSI TS 103 849 for Smart Escalators and Smart Moving Walks is focused on the data exchange offered by escalators for remote monitoring and control and on the overall communication architecture. It covers in particular the elements required to reach full semantic interoperability with non-standard escalators, platforms and the administrative data platforms of existing escalators.

Both standards for escalators and lifts shared a rapid process of creation and publication: less than one year from the opening of the work Item in ETSI to the publication. This is a very short time, considering that it is not only the specification of a complex smart device, but also the standardization of an overall communication and interoperable architecture, including security and management aspects.

Both standards for escalators and lifts shared a rapid process of creation.

Many stakeholders involved

This development did not happen by chance; it is the result of a process combining a set of enabling key factors.

An association of SMEs participated with the support and mediation of SBS and Digital SME.

First of all, we benefited from the active participation of the relevant sector stakeholders, in particular two major associations, *EFESME* and *ELA* - see the interview of the ELA secretary general on page 10. Please note that EFESME, an association of SMEs, participated with the support and mediation of SBS and Digital SME. They provided in-depth knowledge of the sector needs and actual solutions, taking into account the legacy systems and future expectations.

Standardized IoT solutions in ETSI

The second enabler was the availability of standardized IoT solutions in ETSI. The oneM2M standard offered a complete, reliable and advanced IoT framework, specialized in the integration of non-standard and legacy devices, applications and platforms.

oneM2M, with its REST APIs and gateways, security, access control, management functionality, and deployment flexibility (cloud/fog/edge), provided a full IoT base support. *TS 103 849* and *TS 103 735* were able to focus on the specific architectural and communication needs of the Smart Lift and Smart Escalator systems, and their mapping on a profiling of oneM2M, rather than redefining the full IoT System.

We benefited from the active participation of the relevant sector stakeholders.

It should be noted that, like a standardization chain, oneM2M in turn benefits from the reuse of existing security, management and communication standards, again by profiling and not by stratification.

The IoT know-how of SmartM2M

The third point was consolidated IoT know-how in the ETSI Technical Committee SmartM2M. The collaboration of the SmartM2M IoT experts and the other industry sector experts has optimized and streamlined the solution, without wasting time in redoing what was available, and is guiding the definition of the new standard systems. It is a consolidated methodology to analyse the requirements; identify the architectural elements engaged in the IoT data sharing, mapping them on a communication framework and API (oneM2M); and concentrate the work on the data, commands and signal specific to the vertical sector and their relative formats.

A well-established standardization process and support

ETSI processes and services have proved to be very effective and well-tuned, with their tools (templates, rules, Edithelp!, the portal), the publication processes, and support from ETSI officials. This ensures a smooth working environment and a reliable methodology for developing and maintaining new standards.

The ETSI processes include maintenance and evolution. IoT services and applications, including their interaction with humans, are very dynamic. They change and evolve quickly with market opportunity, technology and regulations. ETSI has a proven capability to support the full development and maintenance process for the requested time, with a reviewing cycle which can, if needed, take less than two years.

A specific case of smart lift standardization was developed in parallel by some of the members engaged in the specification work of a Proof of Concept implementing TS 103 735, resulting in a oneM2M platform connecting more than one hundred real lifts. This has made it possible to adjust and verify the specification in parallel with its development.

This work has also led to the standardization of a sector ontology for Smart Lifts according to the SAREF methodology TS 103 410-11 SAREF4LIFTS, and one for Escalators will follow in the near future. For more information about SAREF: *https://saref.etsi.org/.*

ETSI TC smartM2M is currently evaluating an extended specification in this sector, to accommodate deeper integration of the Smart Lifts and Smart Escalators into the buildings and the smart city environments. It is also looking to apply similar processes to the Smart grid sector, especially in the SAREF context.

In conclusion, when a standardization needs a new service or when a system is identified, the recipe for the quick development of a successful high-quality standard is to actively involve relevant stakeholders and to benefit from proven IoT know-how and a well-established standardization process. A key point is to re-use existing standards by referencing them, concentrating the effort on the added value of the new specification, rather than wasting resources and time re-doing what has been already standardized.

ETSI processes and services have proved to be very effective and well-tuned.

Enrico Scarrone, TC Chair SmartM2M.

RedCap a perfect fit for 5G

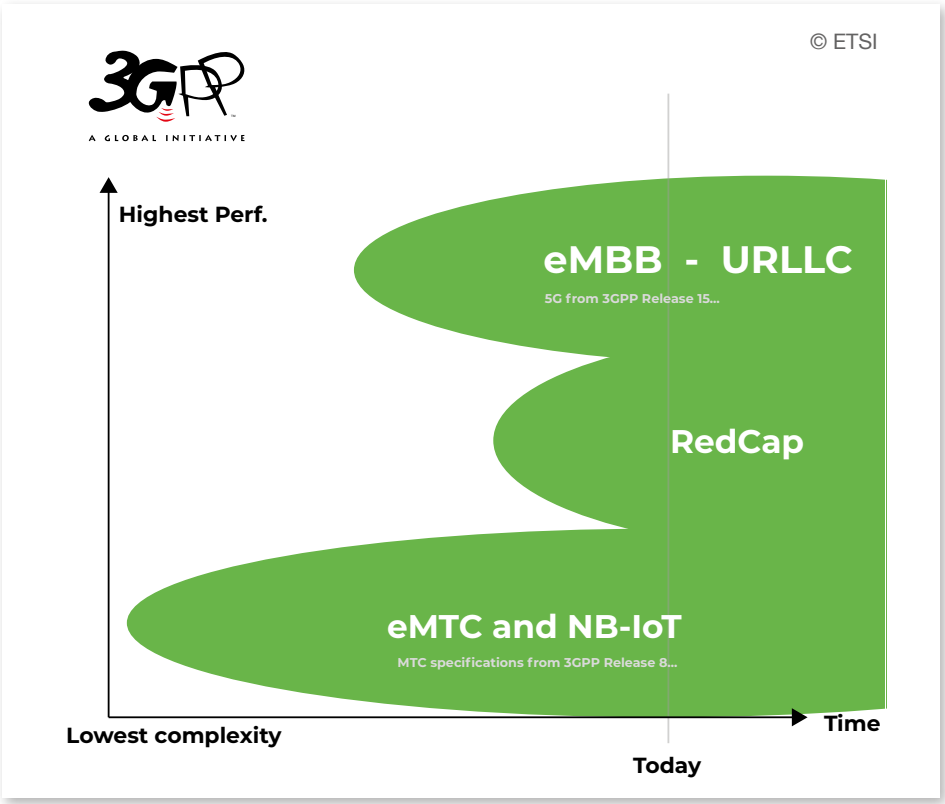
The Reduced-Capability (RedCap) IoT devices specified by 3GPP in Rel-17 facilitate the use of 5G new radio (NR) for applications that don't need all of the bells-and-whistles that NR has to offer but may want a combination of some of the higher data speeds, reduced latency and the increased reliability that 5G networks will bring.

Looking for a moment at the existing 3GPP technologies serving the lower-end IoT segment, the Narrowband IoT (NB-IoT) and enhanced machine type communication (eMTC & Cat-M devices) specifications have been around for a long time now, benefitting from low power consumption and low complexity over a sea of 3G and 4G connectivity.

Then, looking for a moment at the 3GPP technologies serving the higher-end IoT segment, 5G specifications from 3GPP bring both improved mobile broadband coverage and an exciting ultra-reliable, low-latency communication (URLLC) capability, for new more advanced, futuristic IoT use cases.

In between those two concepts sits RedCap - specified to meet a variety of middle ground applications, while supporting nifty data speeds up to around 85 Mbps in low-to-mid frequency bands (and much higher in high frequency bands). RedCap may be a good match for device manufacturers that desire to move from low-end 4G (e.g., LTE Cat-1bis/1/2/3/4) to 5G NR.

All three sets of features help make 5G IoT specifications a game changer for operators and a variety of industries – some of whom will deploy their own 'non-public' 5G networks to connect their equipment.



The uses supported by RedCap vary from factory & industrial site sensors, tracking technology, higher end wearables, security and video surveillance, as well as a variety of other health, home, transport, logistics and business applications.

Part of the attraction of using RedCap will be the lower device complexity made by tuning down NR for reduced bandwidth, lower power consumption, fewer antennas, possible half-duplex operation and a modest 64QAM modulation scheme. These simplifications may enable implementation of smaller and more cost-efficient devices. Going forward, as 5G becomes the most used system, RedCap and the other 3GPP technologies will provide the operator and the user community with a full set of IoT features over one network technology.

Other 3GPP 5G features for positioning accuracy, power saving by Radio Resource Control (RRC), data transmission in RRC inactive mode, taking data hosting to the edge, AI & machine learning, localization, satellite 5G, etc., all add further to the complete picture of 3GPP solutions for the Internet of Everything.

Kevin Flynn,
3GPP Marketing and Communications.

oneM2M Turns Ten

Ten years ago, a group of regional standardization bodies launched oneM2M. Their mission was to collaborate on a global standard for open and interoperable IoT systems with the goal of reducing market fragmentation. Many commercial IoT platforms now follow the features road map that oneM2M mapped out over the last decade. This journey is set to continue as solution providers, large and small, expand their basic solutions to enable cross-silo and end-to-end IoT systems.

Start With a Horizontal Approach

oneM2M's initial goal tackled the critical need for a common service layer, that would be for use not only in connected devices but also in edge gateways and cloud platforms. This also called for an approach that could handle multiple communications technologies. It would solve the connectivity challenge without restricting solutions to a single access technology or communications protocol.

oneM2M also sought to reuse established technologies rather than confuse the market by reinventing what already existed. In practical terms, oneM2M systems can incorporate well-known component technologies such as CoAP, LWM2M, MQTT, and OPC-UA among others.

For long term success, oneM2M recognized the importance of building one standard that could be used across a range of different sectors. This was a demanding goal in not succumbing to the convenience of defining a narrow standard quickly while delaying adaptation for other industry sectors to a later date.

oneM2M's contributing experts understood the strategic importance of a horizontal architecture. They began by analyzing use cases in multiple sectors to identify commonalities for standardization. These provided the foundations for architectural principles that apply across multiple applications. They encourage reusability and enable cross-silo interoperability.

Early Releases Solve the Basic Challenge

Given the wide range of IoT use cases that members studied, it took them until 2015 to complete and ratify oneM2M's Release 1 technical specifications. These standardized a horizontal architecture and twelve common service functions, including device management, security, communications management and, HTTP/CoAP/MQTT protocol bindings. *These elements are present in almost every IoT system.*

2015 was also the year that ETSI and TTA (S. Korea) co-organized oneM2M's first interoperability test event. Extensive tests between multiple implementations yielded many practical insights. Interoperability testing helped to improve technical definitions and resolved specification ambiguities in oneM2M technical documents. This process led to a family of deployable and stable specifications in the form of Release 2.

Recognizing the importance of mobile networks, oneM2M's Release 3 specifications added interworking features *to safeguard IoT deployments over 3GPP networks.*

Preparing for the Future

Over recent years, oneM2M introduced an independent certification scheme and dedicated efforts to address sustainability with IoT. As *cross-silo interoperability* and innovative use cases drive new requirements, oneM2M continues to evolve the standard in a coherent manner. Release 4 will shortly be issued while *new features are being readied for Release 5.* These address privacy frameworks such as GDPR, design approaches to handle AI-for-IoT, and semantic capabilities that make it easier and more dynamic for users to discover and use IoT data sources in large and distributed systems.

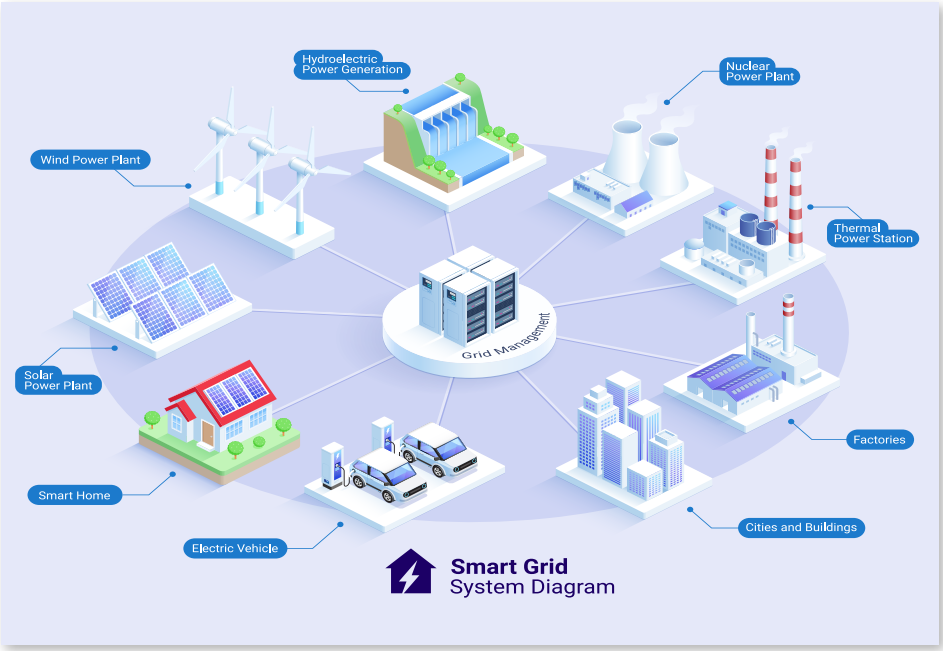
Ken Figueredo, oneM2M MARCOMs Advisor.

Stepping into Semantic Interoperability in the Smart Grid Domain

Two new work items aim to extend the SAREF family of standard ontologies (ETSI TS 103 410) to the Smart Grid domain.

The Smart Grid is a term used for a type of electrical grid that incorporates new technology and equipment to improve efficiency, reliability, and flexibility. Its goal is to deliver electricity from suppliers to consumers using the most efficient means while minimizing environmental impact.

The Smart Grid has experienced significant growth in the last years with applications to manage the generation, distribution, and consumption of electricity being deployed all over the world. Although this domain is still a relatively new concept, its potential benefits are significant and it is expected that the technology will continue to evolve and grow in the coming years.



The need for semantic interoperability in the Smart Grid

The Smart Grid is often mentioned in conjunction with other terms such as smart cities, renewables, and energy efficiency. Smart grid technology should indeed play a role in all these areas. For example, Smart Grids can help reduce the need for new power plants by making better use of existing ones. They can also help integrate renewable energy sources into the grid to make it easier for consumers to adopt energy efficiency measures, or integrate the grid with energy-consuming infrastructures (such as buildings or public lighting) so they can be more efficient.

The interaction between the Smart Grid and other domains is essential for realizing the full potential of each. Working together, they can create a more efficient, reliable and sustainable electricity system that meets the needs of both people and the planet. However, making this possible means that several technologies in different domains must interoperate seamlessly with each other.

Closing the Gap

Despite the great success in the deployment of smart grid solutions and the comprehensive and detailed level of standards available, the lack of clear semantics between domains is one of the main challenges that could hamper further developments. In this context, ontologies play an important role in enabling semantic interoperability between different domains.

To solve this problem and enable interoperability in the smart grid domain, ETSI TC SmartM2M is developing an extension of the SAREF ontology for the smart grid domain: SAREF4GRID. This development is supported by the Edge for Smart Secondary Substation Systems (E4S) association, which includes energy distribution utilities, system integrators, equipment and technology providers, and software vendors.

The first step to achieve this goal was taken last July with the creation of two new work items devoted to the investigation of the ontology requirements for the smart grid domain and to the SAREF4GRID extension itself (the future TR 103 904 and TS 103 410-12, respectively).

Ionut Deaconeasa (Intel) and Raúl García-Castro (Universidad Politécnica de Madrid).

Using Ontologies
to "Standardize" Data Models

We use sensors and other devices to monitor conditions in the physical world or to predict future states, generally with the goal of optimizing performance, minimizing failures or achieving better social outcomes when modelling larger systems, such as Smart Cities. There are many approaches to modelling the behaviour or characteristics of a device.

Data models

A data model can be as simple as a single temperature measurement or more complex such as vibration, speed of rotation, and temperature all combined to measure the state of an airplane engine. In the most complex scenarios, many data models are composed into a virtual model of a component, sometimes referred to as a digital twin, and used as a replacement in simulations of large complex systems, such as airplane performance.

A data model that represents a physical device is what we use in digital dashboards to show key performance indicators or applications that can control physical devices. This is the point in the application life cycle that can benefit by having a single "standardized" solution for modelling physical devices or systems in the real world. The current state is that some sort of proxy or hub converts a data model from a device manufacturer into some other data model for the application developer. Each application framework repeats this interworking process.

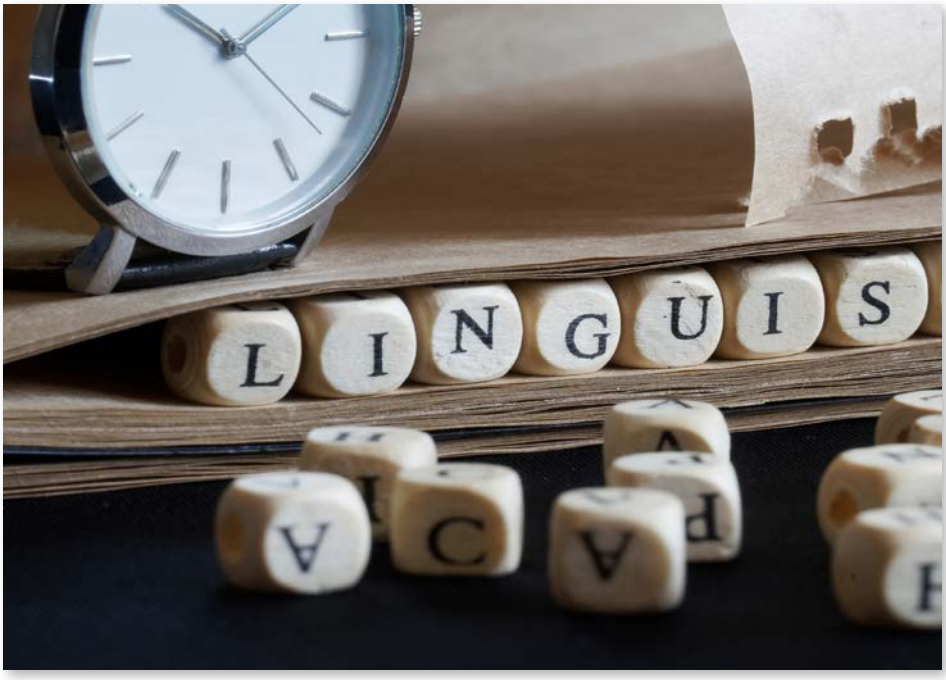
Ontologies can help

Since devices are represented using many different "standard" data models perhaps we can use ontologies to help. Ontologies describe a device as well as relationships that they hold. For example, the Smart Appliances REFerence (SAREF) ontology can describe the capabilities of a streetlight, its location, manufacturer, and last service date. *SAREF* was initiated by the EC who identified an immediate need of the current market to reduce the energy utilization by managing and controlling Smart Appliances. In an IoT system a semantic description of the streetlight using ontologies helps to discover the streetlights of interest.

We can view the data model as another characteristic or relationship of the device. Ontologies can then describe the device data model. As an example, we can use the oneM2M base ontology to describe the data model of a device, such as a streetlight, in addition to the other aspects. By standardizing the description of the data model, through the oneM2M base ontology, we can define common queries issued by an application to discover and then use the device as it was modelled by the manufacturer.

In the absence of a single standard for data models, a standard ontology is an approach that has a lot of potential. Many deployed devices remain siloed by the heterogeneous and frequently proprietary implementations of data models. A standard ontology that describes those heterogeneous models can be the enabler that simplifies application development and reduces constraints on device manufacturers to build multiple versions of data models for their devices.

Bob Flynn, Exacta Global Smart Solutions.



ETSI corporate brochure

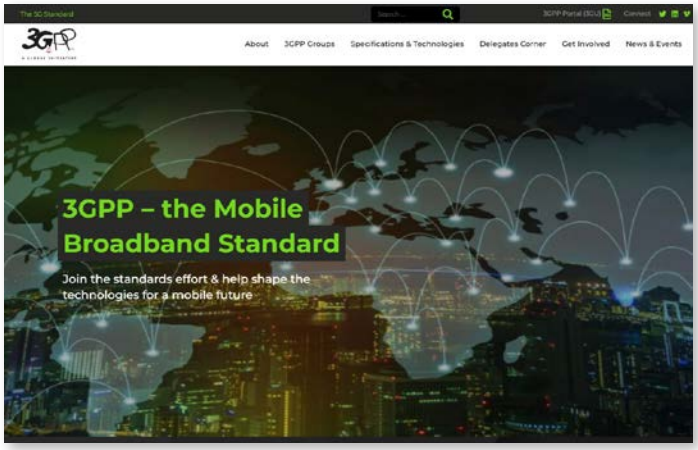
ETSI's latest corporate brochure, "ETSI at a Glance", provides the reader with a broad overview of the Institute.

Learn about ETSI's standardization process, how we prepare future generations to work on ICT Technologies, and how we help our members to be at the heart of digital and drive innovation.

With the updated corporate brochure, dive into some key figures on our membership and technical groups and follow ETSI's strategic direction.

Pick up your hardcopy in ETSI or at our numerous events. An online version is also available: *https://www.etsi.org/media-library/brochures-and-guides*

New **3GPP website**



The 3GPP web pages are now a shop window for newcomers and experts alike, with the recent redesign of the site providing improved functionality and some brand-new content.

A major development is that 3GPP.org can now provide a feed for 3GPP-related news content from the project's growing ecosystem. With 26 market partners in 3GPP, there should be no shortage of new and important content for the revamped News section.

Another new tool under "Browse our Technologies" makes a growing library of articles on a variety of technical features easily searchable, providing a first step on the way to a more detailed understanding of 3GPP technologies.

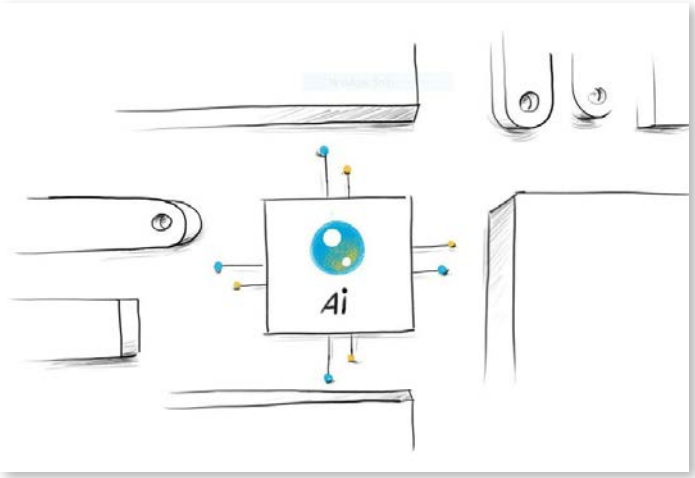
There are additional features to discover, so please visit *3GPP.org* to see for yourself.

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 AI, really?

We have released a new video that explains, in a fun and simple way, how AI actually works and how it is already improving our daily lives. It also covers the key developments that we can expect to see in future years. It explains why standards are essential to enable technical clarity and seamless interoperability and to support European regulation.

Watch the video now *https://www.etsi.org/media-library/videos*



Welcome to
our new staff members

Frédérique Cheron

Director of Events.

Frédérique comes to ETSI with over twenty years of experience in marketing communications and event management, acquired in various international environments. Frédérique received a four-year university degree in information communications from Nice and Grenoble Universities, followed by an MA in communications management from the Aix-en-Provence Graduate School of Management.

During the first seven years of her career, she was Marketing Manager in EU and US-based video-conferencing companies. In 2006, she joined Amadeus, the IT leader in travel industry, where she held different positions, including Product Marketing Manager, Head of Knowledge Management and Head of Business Planning Office. She spent 3 years in Dubai as Marketing and Communications Manager for the Middle East and North Africa regions.

This is not her first time in ETSI: Frédérique did her very first marketing internship in ETSI in 1993!

Walid Heddachi

Junior Systems Administration Professional.

Walid is from Tiaret, Algeria. He moved to the Centre region of France when he was only a teenager to attend secondary school in Bourges, where he passed a vocational baccalauréat in Digital Systems (equivalent to A-levels).

He then moved to Orléans for a 2-year work-related training in “Management and maintenance of IT Systems”. While studying, Walid worked at REL, the space division of FIRST SWITCHTECH, a manufacturer of electro-mechanical relays for extreme environments, first as a system administrator and then as a Network and System Engineer.

He graduated successfully and received congratulations for his final thesis dedicated to the “Migration of obsolete production equipment to a virtual environment”.

Prior to joining ETSI, Walid was a system administrator at the IT System Department of “Orléans Métropole”, managing IT systems for 22 towns.

(Nicolae)-Madalin Neag

Technical Officer.

Madalin is from Oradea, Romania. After a bachelor’s degree from the Polytechnic University of Timisoara with a specialization in Systems Integrated in Telecommunications, he finished a double master’s degree between IMT Atlantique and Polytechnic University of Timisoara, thus obtaining a double specialization in Mobile Networks and Signal Processing.

After his studies, Madalin worked for 3 years as an Integration Engineer at Ericsson in Bucharest, where he was in charge of the deployment of Core Network elements in various customers’ networks.

For the five following years, Madalin worked at Nokia, in Timisoara, as a Customer Support Engineer and a Technical Project Manager, dealing with the latest innovations in the RAN domain.

In his previous positions, Madalin worked with equipment compliant with ETSI and 3GPP standards, so he was very familiar with the world of standardization before joining ETSI.

New Standard to open up the potential of the UICC (Aka SIM)

The mobile telecom industry is facing an increasing demand for applications running on mobile devices like banking, payments, transport and identity. The ETSI Secure Elements Technologies Technical Committee has released new versions of several UICC specifications *(TS 102 221, TS 102 223, TS 101 220, TS 102 222, TS 102 241).* This Release 17 introduces the concept of the logical secure element (LSE) along with its related logical secure interface (LSI) which links the UICC to the terminal. With these additional features, a single hardware device will enable the terminal or smart phone to address multiple logical secure elements independently from each other. Use of the applications defined for one UICC (e.g. USIM), or any other secure element is therefore facilitated thanks to this new functionality. When combined with remote provisioning (e.g. GSMA eSIM), the LSEs can host several independent telecom Profiles that can be used simultaneously by a 3GPP terminal to access different networks without the need for the terminal to embed several UICC components (i.e. Dual SIM). In addition to Mobile Network Operators, service providers, whether they be banks, ID credentials suppliers, transportation companies or private network operators can now rely on their own secure repository to deploy their dedicated services on a UICC hardware. This is a breakthrough for end-users who will easily be able to use multiple services and for service providers to deploy their applications in a secure way on a single mobile device.

New ICT guide available in 19 European languages

ETSI is pleased to announce the new version of the ETSI Guide *EG 203 499,* developed by experts from the Human Factors Technical Committee. The guide aims to further simplify end-user access to ICT devices, services and applications by using recommended terms for basic and commonly used ICT-related objects and activities, notably the terms that end users are commonly exposed to.

The newly published *ETSI EG 203 499,* entitled *"User-centred terminology for existing and upcoming ICT devices, services and applications",* now provides reference terminology for ICT users in 19 major official languages of the EU/EFTA, spoken by millions of native speakers in Europe: Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Slovak, Spanish, and Swedish.

Cross-domain data usability of IoT devices

The vast amount of data generated by IoT devices has increased the use of machine learning, raising the issue of data gathering, data ownership, data transparency, and data bias. Models based on poor data can jeopardize critical use cases such as eHealth, automotive or the emergency sector. Therefore, creating more accurate machine learning models is key and can be improved with a better quality and quantity of classified training sets, as the lack of classified data impacts the machine learning algorithms.

The ETSI SmartM2M Technical Committee has therefore released *ETSI TS 103 779,* defining *Requirements and Guidelines for cross-domain data usability of IoT devices*, through a description of the generated data at all stages of a machine learning process. This standard will help IoT sensor module developers, IoT platform and service providers, machine learning model developers, application developers and IoT consumers to enhance the quality of the outcome of the data.

Join us at upcoming events

organized or supported by ETSI.

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

October 2022

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

The event provides an exceptional opportunity for the security community to come together to network with peers and to exchange with experts around the subject of cybersecurity standardization. The conference will offer three days of debates and discussions on EU and Global Cyber Security Regulation, Policy, Security Innovation and 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. Hosted in ETSI's headquarters, this workshop will offer the opportunity to deep-dive into the different aspects of ICT standardization and to understand how to make the best use of the teaching aides developed by ETSI.

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

The 2022 edition 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.

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

ETSI is pleased to endorse the Network X event and will be actively present 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.

November 2022

7th MCX PLUGTESTS™, 7-11 November, Malaga, Spain.

The seventh MCX PLUGTESTS™ will validate the interoperability of various implementations using different scenarios based on 3GPP Mission Critical Services in Release-17, and also to test various FRMCS capabilities. This event will allow initial testing of Mission Critical Services over 5G test network, with a focus on inter-system communications.

2nd NG eCall PLUGTESTS™, 14-18 November, Kranj, Slovenia.

Hosted by Sintesio, the event will focus on the interoperability of Next Generation eCall (NG eCall) systems or eCall over Long Term Evolution (LTE), based on the interoperability test descriptions defined in the latest version of ETSI TS 103 683.

ETSI STQ Workshop - Quality of Emerging Services for Speech and Audio: A user-centred perspective, 21-22 November, Bratislava, Slovakia.

Quality of Experience for users in the mobile communications ecosystem is constantly evolving. Standardization is crucial to ensure that users can experience high-level acoustics and audio performance of new devices. This workshop will highlight technical innovations and new standards in prediction of perceived quality of speech and audio communications systems.

December 2022

Layer123 World Congress 2022, 5-7 December, London, UK.

ETSI is pleased to endorse the event and will be actively present. Layer123 World Congress is the leading event in Europe dedicated to telco network transformation and the exciting applications it makes possible.

ETSI SNAPSHOT

908 *members*

27% *SMEs*

+130 *technical groups*

619 *standards*
June-August 2022

654 *standards under development*

1.3M *standards' downloads*
June-August 2022

413 *eMeetings*
June-August 2022

9.030 *online participants*
June-August 2022

108 *partnerships*

12 *conferences & Plugtests*
June-August 2022

@ETSI Secretariat

127 *people*

16 *nationalities*

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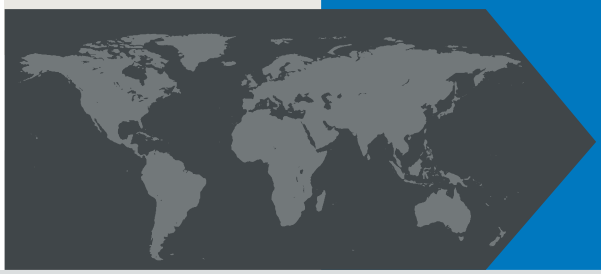

Members from 63 countries

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).

For any information, to contribute on Enjoy!, to be removed from the list of hard copies or subscribe to it, contact us at: enjoy@etsi.org

For more information please visit: *www.etsi.org*

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The Standards People

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