



building the future



work programme

2013 - 2014

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# ETSI's Vision of a Connected World



We have introduced the 'cluster' concept to provide a simplified, yet comprehensive, introduction to our activities in the standardisation of Information and Communications Technologies (ICT). This new approach facilitates access to our diverse work, enabling the identification of areas of interest based on business relevance or application domain rather than purely on technical work areas.

Each cluster represents a major component of a global ICT architecture and encapsulates the work of a number of our Technical Committees (TCs) and Working Groups (WGs) that share a common technological scope and vision. It is this joint scope and vision that gives each cluster its own identity; collectively the clusters represent the totality of ETSI's work, creating a connected world.

**ETSI is** a producer of globally applicable standards for ICT, including fixed, mobile, radio, converged, broadcast and Internet technologies. The high quality of our work and our open approach to standardisation has seen our influence extend from our European roots to impact the world.

**ETSI is** officially recognised by the European Union as a European Standards Organisation. Our activities are driven by time to market and our standards help ensure the free movement of goods within the single European market, allowing enterprises in the EU to be more competitive.

**ETSI is** a not-for-profit organisation with more than 700 member organisations worldwide, drawn from 62 countries and five continents. Members include the world's leading companies and innovative R&D organisations.

**ETSI is** at the forefront of emerging technologies. We are building close relationships with research bodies and addressing the technical issues that will drive the economy of the future and improve life for the next generation.

**ETSI is** a world-renowned organisation with a solid reputation for technical excellence. We make our expertise available to our members and customers through a range of services for growing ideas and enabling technology.

Our standards-making process is based on consensus and openness. The choice of what to standardise, the timing and resourcing of the task, and the approval of the final drafts are all decisions made by our members. So the standards we produce truly respond to the needs of the ICT industry, as represented by our members. Join us – and have your say in the future shape of our industry.

# Building the Future

## Work Programme 2013-2014



**Jonas Sundborg**  
Chairman of the Board

ETSI's reputation as a key standardisation player is based on its work on technologies which have had a major global impact. But at the same time we are exploring the latest technological developments to keep in step with – and even ahead of – market demand. As we celebrate 25 years of successful standards-making, it is fitting, therefore, that our activities in 2013 should embrace both our traditional areas of expertise and some exciting emerging topics.

For many years we have been a driving force behind mobile communications systems, playing a prominent role as one of the founding partners of the Third Generation Partnership Project (3GPP™). In 2013, 3GPP plans to complete the service requirements and architecture for its twelfth release of specifications. As well as nearly 200 new top-level 'Features', Release 12 includes 60 studies, most of which will lead to new or revised functionality, including small cells and LTE™ device-to-device proximity services. In particular, we are exploring the potential adaptation of LTE to provide broadband capabilities to the next generation of private mobile radio (PMR) for public safety use.

We are defining the requirements for Release 12 of the Smart Card specifications and their technical realisation, and we are specifying the embedded UICC (eUICC) and its management.

Much of our work has a direct impact on the quality of life. For example, we are embarking on new projects in accessibility and inclusion. We continue to address the quality of telecommunications services. We are helping to improve the energy efficiency of Information and Communications Technologies (ICT) equipment, and developing various mechanisms for assessing the environmental impact of ICT.



In 2013 we will continue to develop 'New Generation' Digital Enhanced Cordless Telecommunications (DECT™) but, taking a new direction with a mature technology, we are also producing the specifications for the application of DECT for Ultra Low Energy (ULE) technology in home automation, for sensors, alarms, utility meters and Machine-to-Machine (M2M) applications.

To promote public safety, we are developing standards for safety at sea and new approaches to emergency calling.

Other ongoing work includes electronic signatures, broadcasting, satellite navigation and communications, fixed networks, GSM™ for the railways, testing and interoperability.... and we provide the standards which the European regulatory authorities use to manage the radio spectrum environment and to ensure safe co-existence between the systems operating in it.

As well as these long-established activities, we are also responding to a new challenge in which ICT is either driving or facilitating other sectors – such as transportation, utilities, eHealth, Cloud, smart cities, smart manufacturing and ambient assisted living.

In the area of M2M communications, we look forward to the progress of the new oneM2M Partnership Project in 2013. Our M2M work will eventually be transferred to oneM2M; until then, we continue to develop our second release of M2M specifications. Related work on powerline telecommunications includes smart metering and home automation.

We expect to complete the first release of Intelligent Transport Systems (ITS) specifications in 2013, which will enable the deployment of Co-operative ITS.

Our main focus in the Cloud area will be Cloud Standards Co-ordination (CSC) but, in addition, we plan to complete a new Technical Report on Cloud as a mitigating technology to reduce greenhouse gas emissions in non-ICT sectors.

In the eHealth area, we are addressing telemedicine and we have begun new work on Smart Body Area Networks.

We are supporting European Commission Mandate 512 with the standardisation of Reconfigurable Radio Systems (RRS), focusing on Licensed Shared Access (LSA), a new technology for spectrum sharing, and we are developing the first ever Harmonised Standard for RRS in TV White Spaces.

New developments being explored in our Industry Specification Groups (ISGs) include Low Throughput Networks, Network Functions Virtualisation, and identity and access management for networks and services. We are further strengthening our links with research, and we are organising workshops, including major international events on M2M, Cloud, security and ITS.

Standards are a crucial enabler of new technologies and in ETSI we are working on some of the key technologies which affect life today and in the future. Altogether, we expect to produce over 2 800 standards and specifications in 2013. This Work Programme is a snapshot, taken at one point in our rolling programme of activities. It cannot, therefore, be fully comprehensive, nor can it be completely up to date. Nevertheless I hope this summary of our activities over the next year or so demonstrates ETSI's role in building the future.

*ETSI's complete work programme is openly available on our website (<http://webapp.etsi.org/workprogram>), where full details of all upcoming standards and specifications can be found. 3GPP's detailed work programme is available at [www.3gpp.org/Work-Plan](http://www.3gpp.org/Work-Plan).*

# New Beginnings

*We are constantly looking for ways to expand our portfolio of activities in response to emerging needs and to keep up to date with the changing nature of the Information and Communications Technologies (ICT) industry.*

## Industry Specification Groups

We introduced the concept of the Industry Specification Group (ISG) to operate alongside our traditional standards development process to produce specifications in key new areas. ISGs focus on a specific activity and, by their nature, offer a very quick and easy alternative to the creation of industry fora.

At the start of 2013, there were 11 active ISGs, working on about 40 different specifications at the cutting edge of technological research and development.

Our most recently established ISG is also by far the largest created so far. The ISG on Network Functions Virtualisation (NFV) held its kick-off meeting at the beginning of 2013, with participation from over 165 individuals. The Group has established an initial work programme of 19 specifications and many more are expected to follow in the coming months. One objective of NFV is to develop a brand new approach to the technologies and deployment of telecommunications networks. This work is attracting considerable interest from industry, with more than 115 organisations making contributions. We expect the ISG to continue to grow, and that its output will influence other standards both inside and outside ETSI.

### At the beginning of 2013, there were 11 active ISGs:

AFI	Autonomic network engineering for the self-managing Future Internet
INS	Identity and access management for Networks and Services
ISI	Information Security Indicators
LIS	Localisation Industry Standards
LTN	Low Throughput Networks
MOI	Measurement Ontology for IP traffic
NFV	Network Functions Virtualisation
OEU	Operational energy Efficiency for Users
ORI	Open Radio equipment Interface
QKD	Quantum Key Distribution
SMT	Surface Mount Technique

## Collaborative Research

In 2013, we will maintain our close links with the research community and participate in relevant European Commission Framework Programme 7 (FP7) projects. In this way we aim to identify new technologies with a standardisation need.

Our role in these projects varies. For example, our wide ranging expertise means we can help drive innovation in diverse areas, such as improving the quality of life through eHealth in the HITCH project and Smart Personal Health (SPH). In 2013 our Centre for Testing and Interoperability expects to finalise test specifications for a vehicle to grid interface for charging electric vehicles, as part of the PowerUp project. And, through our Forapolis™ service, we are supporting the implementation and evolution of the European Union's Global Navigation Satellite System (GNSS)

programmes. ETSI is a partner in Project SUNRISE, which runs the Open GNSS Service Interface Forum for two industrial user groups of GNSS and future Galileo services, Location Based Services (LBS) and Intelligent Transport Systems (ITS).

We are a partner in the new Electronic Simple European Networked Services (e-SENS) consortium, the new Large Scale Pilot project on cross-border government services to support the mobility of citizens and businesses. Our work here includes promoting our eSignature standards, identifying standardisation needs and standardising the enabling technologies.

## Workshops

Every year we organise workshops to facilitate early consensus-building, to kick-start new standardisation activities, and to fertilise ongoing technical work. These include our well established workshops on Machine-to-Machine (M2M) communications, security and ITS, which have become major events in the international calendar.



New for 2013 we will be holding the first ETSI Smart Cities Workshop, examining the major issues that face city authorities and infrastructure providers who are building the cities of tomorrow. We are organising a second ETSI Workshop on Environmental Impact Assessment and Energy Efficiency. And our ISG on Quantum Key Distribution is running an event to bring together the diverse communities involved in the standardisation and deployment of the next-generation cryptographic infrastructure.



*Standards provide the means for protecting the user and creating a more secure and profitable environment for industry and commerce. Our security work addresses numerous aspects including mobile/wireless communications, information technology infrastructure, lawful interception and data retention, electronic signatures, smart cards, fixed communications and security algorithms.*

### Smart Cards

The UICC is designed as a secure platform for supporting multiple applications across industry sectors. While it was often used in the past to host a single application such as the (U)SIM, increasingly multiple applications are now residing on UICCs. In addition, the UICC must be installed in devices in ways which make it difficult or impractical for it to be removed (such UICCs are called embedded UICCs or simply 'eUICCs'). This evolution by industry requires remote management capabilities and the use of other form factors in addition to smart cards.

In 2013, our Smart Card Platform Technical Committee (TC SCP) expects to publish a Technical Specification (TS) on the eUICC and its management, containing use cases and a set of requirements. We will then expand this work and begin the technical realisation of the requirements.

We will continue to define the requirements for Release 12 of the Smart Card specifications and their technical realisation. This includes, in particular, the optimisation of the UICC access to allow the device to offer an improved user experience, as well as use cases and requirements related to the addition of new contactless features.

More and more applications are using ETSI's SCP specifications and the UICC as a secure element for Near Field Communication (NFC). As a result, several secure elements may exist in a device and use the Host Controller Interface (HCI). We are now standardising the interaction between these secure elements through the HCI in order to increase interoperability and avoid proprietary implementations.

We plan to produce a new UICC conformance test specification and to upgrade several existing test specifications to cover new releases of the respective core specifications. We will also address the specification of an Application Programming Interface (API) for the secure channel for the Java Card™ Platform.



### Electronic Signatures

In 2013 our Electronic Signatures and Infrastructures Technical Committee (TC ESI) will focus mainly on the execution of the European Commission (EC) Mandate on Electronic Signature Standardisation (M/460), working in co-operation with the European Committee for

Standardisation (CEN). Phase 2 of the mandate will occupy us from early 2013 until the end of 2015. Our responsibilities include business guidance documents on the use of electronic signature standards in each of the Rationalised Structure areas, general requirements on policy and conformity assessment for signature creation and validation, work on signature creation and validation and trust service providers supporting electronic signatures, studies of trust application service providers, and testing compliance and interoperability.

### Lawful Interception and Data Retention

In 2013 our Lawful Interception Technical Committee (TC LI) will continue to update its lawful interception and data retention suite of deliverables by adding new services. This includes the maintenance of our seven-part TS on the handover interface and Service-Specific Details (SSD) for Internet Protocol (IP) delivery.

We plan to finalise a TS on the Dynamic Triggering of Interception (which is required as a result of the diversification of service and network architectures), and to complete two Technical Reports (TRs) on lawful interception and data retention in Cloud and virtual services. We are developing a new specification to define a specific Warranty electronic interface between two systems for the exchange of information relating to the establishment and management of lawful interception.

### Security Algorithms

Our Security Algorithms Group of Experts (SAGE) responds to the needs of our other committees for cryptographic algorithms for use in standardised telecommunications systems. In 2013, the Group expects to complete the major task of specifying a second set of 3G authentication and key generation algorithms as an alternative to the existing Milenage algorithm. This work is motivated by the growing interest in eUICCs. Pre-installing a second algorithm set alongside Milenage will allow operators who initially use Milenage in their SIM applications to switch to the second algorithm if Milenage is ever compromised. This will help future-proof the application and give users greater confidence in devices with eUICCs which may have to remain operational for many years. Regular SIMs may also benefit from having an alternative algorithm available.

### Other Aspects of Security

Our Industry Specification Group on Information Security Indicators (ISG ISI) is scheduled to complete six specifications in 2013.

Security is a key element in standardisation and affects most areas of our work. In 2013 we are also looking into the possible replacement of the Terrestrial Trunked Radio (TETRA) air interface encryption algorithm, and we are developing a TR on security-related use cases and threats in Reconfigurable Radio Systems (RRS). We continue to liaise with CEN as new standards are developed in response to EC Mandate 436 on the privacy and security of RFID. Other ongoing activities include Quantum Key Distribution.

# Connecting Things

## Integrating Objects to Create New Networked Services

*An ever increasing number of everyday machines and objects are now embedded with sensors or actuators and have the ability to communicate over the Internet. These 'smart' objects can sense and even influence the real world. Collectively they make up what is known as the 'Internet of Things' (IoT). The IoT draws together various technologies including Radio Frequency Identification (RFID), Wireless Sensor Networks (WSNs) and Machine-to-Machine (M2M) service platforms.*

*In ETSI we are addressing the issues raised by connecting potentially billions of these 'smart objects' into a communications network, by developing the standards for data security, data management, data transport and data processing. This will ensure interoperable and cost-effective solutions, open up opportunities in new areas such as eHealth and smart metering, and allow the market to reach its full potential.*

### Machine-to-Machine Communications

Our Machine-to-Machine Communications Technical Committee (TC M2M) is addressing the application-independent 'horizontal' service platform within the M2M architecture which, with its evolved functionality, is capable of supporting a very wide range of services, including smart metering, smart grids, eHealth, city automation, consumer applications and car automation.

In 2013, we will address the second phase of work in response to the European Commission (EC) mandate on Smart Metering (M/441), which includes security, use cases and the monitoring of deployments.

We are also responding to the 'Smart Grid Mandate' (M/490) and a prolongation of the first phase of this mandate is under discussion with a view to including the architectural models developed for M/441.

In due course, much of TC M2M's work will be transferred to the new oneM2M Partnership Project, where it will be addressed at a global level. Until then, TC M2M will continue the development of Release 2, expanding the configuration towards inter-operator communications. Release 2 will also include the construction of a common application semantic

for the sharing of information in different application and services environments (vertical sectors). We are preparing two Technical Reports (TRs): one to address how the different protocols used in home automation can be translated into a single semantic; the other will examine how application-specific semantics can be shared via common ontologies and object virtualisations.

Other topics under discussion for 2013 and beyond include the standardisation of telecommunication network support for the IoT and how to support the adoption of TC M2M standards by vertical applications.



The oneM2M Partnership Project brings ETSI together with six of the world's other leading Information and Communications Technologies (ICT) Standards Development Organisations.

Launched in July 2012, oneM2M is developing technical specifications for a common M2M Service Layer that can be readily embedded within various hardware and software, connecting the wide range of devices in the field with M2M application servers worldwide. It is hoped that a standardised platform for M2M services and technologies will enable new business and partnering models.

The initial requirements assessment phase will include two TRs, one on use cases and the other on the benefits of oneM2M technology, and a Technical Specification (TS) on oneM2M requirements.

oneM2M is also beginning the high level design with the drafting of a two-part TR analysing proposed architectures, and a stable draft of a TS on the M2M architecture is expected to be ready before the end of 2013. oneM2M has also now started work on security, protocols management, abstraction and semantics. By the end of 2013, oneM2M expects to have produced a minimally deployable solution.



## RFID and Short Range Devices

Our Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM) is updating the European Standard (EN) for Short Range Device (SRD) radio equipment in the 9 kHz - 25 MHz band, partly to allow operation of RFIDs for applications such as national ID cards, passports and Near Field Communication (NFC) technology. We are revising the EN for SRD radio equipment in the 9 kHz - 25 MHz band, which will now also include wireless charging.

We have asked the European Conference of Postal and Telecommunications Administrations (CEPT) to consider making the 915 - 921 MHz band available for use by RFID and SRDs and also to consider designating the 870 - 876 MHz band to SRDs and smart metering. We continue to work closely with CEPT as a roadmap for the future is being prepared and we have reopened work on a new ETSI Standard (ES) for SRDs in the 870 - 876 MHz and 915 - 921 MHz bands.

Ongoing work is addressing the co-existence between UHF RFID and Extended GSM-R (ER-GSM, GSM™ on railways) to enable friendly spectrum sharing. The final results of trials and tests, including active mitigation techniques, will be incorporated in a Harmonised Standard for RFID. Discussions will continue in 2013 over the possible inclusion of the 915 - 921 MHz band.

We continue to liaise with the European Committee for Standardisation (CEN) as new standards are developed in response to EC Mandate 436 on the privacy and security of RFID.



## eHealth

Improving the quality of health care, reducing medical costs and fostering independent living for those needing care are key objectives of the Digital Agenda for Europe. Telemedicine, for example, can improve the treatment of patients both at home and away, and reduces unnecessary hospitalisation. However, figures from the World Health Organisation show that only 8% of patients today use tele-monitoring.

Medical issues are currently a key focus of work in TC ERM. In particular, we are working on an exciting new project – telemedicine solutions for the 'Internet polyclinic' – which aims both to reduce costs and to provide new access to healthcare in parts of the world where the population is scattered. We are preparing a TR, analysing the economic, legal and technical issues for the implementation of a telemedicine solution, and examining use cases. We are also working on a TS to ensure interoperability (by defining the protocol requirements), security and maximum quality for the transmission of confidential data.

We are producing a System Reference Document to enable the 2 483,5 - 2 500 MHz band to be used by SRDs for new medical products, such as cochlear implants operating as Low Power Active Medical Implants outdoors, with a range of a few metres.

We have set up a new Technical Committee (TC SmartBAN) to develop standards for a dedicated radio technology for Smart Body Area Networks.

## Supporting these New Networked Services

Many of the connecting objects in M2M and the IoT need only low throughput connectivity. Our Industry Specification Group on Low Throughput Networks (ISG LTN) is specifying a new ultra narrowband radio technology for very low data rates for ultra long autonomy devices to provide an efficient connection that is both cost-effective and low in energy consumption. We have begun defining use cases and a dedicated architecture for LTN.

We are also developing an exciting new application of Digital Enhanced Cordless Telecommunications (DECT™) – Ultra Low Energy (ULE) – for use in sensors, alarms, M2M applications and industrial automation. The technology will also be ideal for utility meters and related devices and therefore has implications for the operation of smart grids. Other DECT work (in the 1 900 - 1 920 MHz band) aims to provide greater capacity for video, HD-voice, streaming and various M2M applications.

Our Industry Specification Group on Identity and access management for Networks and Services (ISG INS) is developing architecture and protocol specifications for advanced identity management in the Future Internet including the Internet of Things. The focus of ongoing work is on requirements for a global distributed discovery of identifiers, providers and capabilities. The group is also analysing and specifying mechanisms to obtain user consent for access or the exchange of identity attributes.

We are revising the Harmonised Standard for 2,4 GHz wideband transmission systems in response to issues raised over the use of SRDs in factory automation. Discussions continue over the possible allocation of additional spectrum, since the high reliability and fast response times required by these industrial automation applications might not be achievable in the 2,4 GHz band because of sharing with existing 2,4 GHz applications.



# Wireless Systems

## Enabling a Wireless World

*Radio technology is an integral part of our daily lives – used in our mobile phones, for broadcast radio and television, in Wireless Local Area Network (WLAN) and cordless technology, Global Navigation Satellite Systems (GNSS), Radio Frequency Identification (RFID) and Short Range Devices (SRDs). All of these technologies and applications compete for use of limited radio spectrum resources.*

*ETSI creates the standards which define many of these radio technologies and systems. We also provide the standards which the regulatory authorities in Europe – and elsewhere – use to manage the radio spectrum environment and to ensure safe co-existence between all these systems.*

### Supporting the European Regulatory Environment

In 2013, we will analyse the implications for our radio work – particularly in relation to software defined radio, cognitive radio and installations – of the European Commission (EC) proposals to replace the Radio and Telecommunications Terminal Equipment (R&TTE) Directive with a new Radio Equipment Directive.

While the European Union develops new modes of spectrum sharing in Europe (a key element of the its Radio Spectrum Policy Programme), we are developing new technologies which take advantage of these approaches. We propose new radio systems via 'System Reference Documents' which provide technical, legal and economic information to inform the allocation of spectrum. For example, in 2013, we will examine the technical means for systems to operate under a Licensed Shared Access (LSA) regime.

We are also contributing to studies in the EC's Radio Spectrum Policy Group on managing radio interference.

### Broadband Radio Access Networks

In the area of Ultra-Broadband Wireless Systems, our Broadband Radio Access Networks Technical Committee (TC BRAN) expects to complete a Technical Report (TR) describing the system architecture, economic model and technical requirements for a Broadband Wireless Access (BWA) system providing 1 Gbit/s per km<sup>2</sup>. We are also modifying existing standards or developing new standards for BWA Systems including Radio Local Area Networks (RLANs).

### Spectrum Efficiency

#### Reconfigurable Radio Systems and Licensed Shared Access

We are supporting EC Mandate 512 with the standardisation of Reconfigurable Radio Systems (RRS). This includes LSA, the key new technology which allows for the co-existence of the original incumbent with a new cellular operator in the same frequency band, thus opening up opportunities for spectrum sharing. In particular, we are developing a TR for Mobile Broadband services in the 2 300 - 2 400 MHz frequency band using LSA.

We are already developing the standards for the future enforcement of the new Radio Equipment Directive. Among other things, this new directive will allow, for the first time in Europe, the use of RRS that affect device certification. The work of our RRS Technical Committee (TC RRS) includes enabling dynamic certification, which is a crucial factor in the introduction of new features, especially radio applications. We plan to complete a TR describing use cases for Dynamic Declaration of Conformity, while work continues on the related system requirements.

We are finalising a TR on use cases for the building and exploitation of Radio Environment Maps (REM) for intra-operator scenarios, which will give operators a better picture of available radio systems in specific areas and enable them to adapt their resources to that knowledge. Work continues on a Technical Specification (TS) on the system requirements for RRS operating in IMT and GSM™ bands for intra-operator scenarios.

### TV White Spaces

Ongoing activities related to TV White Spaces (TVWS) include a TS on the co-existence architecture for Cognitive Radio Networks (CRNs) on UHF White Space frequency bands, a TS containing the system requirements for operation in UHF TVWS, and a feasibility study into Radio Frequency (RF) performance for Cognitive Radio Systems operating in UHF TV band White Spaces, which will address concerns about interference. We are also conducting a feasibility study into co-existence between Cognitive Radio Systems and RF cable networks. We will address the synergies between commercial, public safety and military systems in support of M/512.

We will also finalise the draft of a new Harmonised Standard for Wireless Access Systems operating in the UHF spectrum, the first to be developed for RRS in TVWS spectrum.

### Low Duty Cycle Transmission

The rising number of applications using SRDs is causing increasing complexity, and co-existence problems are emerging between systems and services operating in the same bands. As part of our work on spectrum efficiency, we are therefore looking at the use of low duty cycle transmission as a passive mitigation technique. The aim is to promote market growth by increasing the compatibility of SRDs in a wider spectrum and a changing spectrum environment. We expect to publish a new TS by mid-2013.

### Satellite Communications

In the satellite navigation area, our Satellite Earth Stations and Systems Technical Committee (TC SES) is developing four new TSs on GNSS-based applications and standardisation needs and GNSS receiver reference performance and interference mitigation capability. We will also be looking at several new subjects: Cognitive Radio techniques for satellite communications, the environmental impact of satellite broadband networks, and hybrid satellite/terrestrial network architecture for high speed broadband access.

We are taking the lead role in three areas in response to the EC's 'Space Mandate' (M/496): Navigation and Positioning (NP) receivers for road applications and airport services, disaster management and interoperability and the integration of Mobile Satellite Systems (MSS) and Fixed Satellite Systems (FSS) with terrestrial systems, in particular Next Generation Networks (NGN), and with GNSS, in particular Galileo.



## Advanced Mobile Communications Technologies

As one of the founding partners of the Third Generation Partnership Project (3GPP™) ([www.3gpp.org](http://www.3gpp.org)), ETSI plays a prominent part in the development of mobile communications.



3GPP Release 12 Stage 1 (service requirements) was frozen in March 2013, Stage 2 (architecture) is scheduled for completion by the end of the year, leaving just Stage 3 (protocols) to be frozen in 2014. Release 12 encompasses nearly 200 new top-level 'Features', resulting in a wide variety of new functionality and improvements to existing features, reflected in thousands of new or updated specifications. Release 12 also includes 60 studies, most of which will lead to new or revised functionality including, for example, small cells and LTE™ device-to-device proximity services.

The potential use of LTE for the next generation of private mobile radio (PMR) for 'critical communications' such as police and law enforcement agencies is also being considered. An obvious benefit would be the ability to take equipment from off-the-shelf product lines to keep costs down.

A significant proportion of 3GPP's work in 2013 will be focused on channel aggregation, to meet the growing demands of data transmission. Other priorities in the radio aspects area include topics related to higher data rates and increased capacity, either by the use of more frequency bands, or by further improvements in spectral efficiency. 3GPP will address energy saving, cost efficiency (including the use of Self-Optimising Networks (SON)), support for diverse application and traffic types, and backhaul enhancements.

In the systems area, 3GPP will look at promoting new business opportunities, in public safety and critical communications, proximity services and machine-type communications. In the area of WiFi integration, 3GPP will work on network selection aspects, S2a mobility with the GPRS Tunnelling Protocol (GTP) for WLANs, and optimised offloading to WLAN in 3GPP Radio Access Technology (RAT) mobility. In the area of system capacity and stability, issues of user-plane congestion and core network overload will be addressed.

ETSI continues to support 3GPP through our Mobile Competence Centre (MCC).

At the request of the EC and in co-operation with the European Committee for Electrotechnical Standardisation (CENELEC), our Electromagnetic Compatibility (EMC) and Radio Spectrum Matters Technical Committee (TC ERM) is revising standards to control interference between LTE operating in the newly opened 800 MHz band and short range devices and televisions already operating in the same band.

## Harmonised Standards for IMT

Our Mobile Standards Group (TC MSG) continues to revise the Harmonised European Standards (ENs) for GSM base stations and repeaters, to align with 3GPP Releases. In particular, in 2013 we plan to include requirements for Medium Range/Local Area multicarrier base stations, in line with 3GPP Release 11. We also expect to complete the sixth release of the Harmonised Standards for base stations, repeaters and user equipment for IMT, and to begin work on the seventh release.



## New Generation DECT

Digital Enhanced Cordless Telecommunications (DECT™) is the leading standard worldwide for both cordless voice and broadband home communication. We are now working on New Generation DECT and developing the latest release of the DECT base standard.

## Other Wireless Work

Our ISG on the Open Radio Equipment Interface (ISG ORI) is working on its third release of specifications for an interface between remote radio heads and base band units of mobile base stations.

Our ISG on Surface Mount Technique (ISG SMT) is working on a baseline specification for embedded communications modules using SMT.

In the area of measurement uncertainty, TC ERM expects to complete a new TR on the usage and effect of mathematical operations on Relative Measurement Uncertainties (RMUs) by the end of 2013. One of the practical applications of this work is the evaluation of measurement uncertainties associated with the radiated measurement of the output power of a base station already in operation in a public network.

We are updating part of the EMC standard for radio equipment and systems, to enable the introduction of universal chargers for mobile phones.

We are developing an EN on wireless alarms with low duty cycles, so that they can use shared spectrum more reliably.

In addition to routine updating of our existing fixed radio documents, our Access, Terminals, Transmission and Multiplexing Technical Committee (TC ATTM) expects to complete a major revision of the multi-part EN on the characteristics and requirements for point-to-point equipment and antennas in fixed radio systems. This will include options for point-to-point applications operating in the 70 GHz, 80 GHz and 90 GHz frequency bands as well as the consolidation of energy efficiency metrics and relevant test methods.

We are exploring small cells backhauling (Line-of-Sight and Non-Line-of-Sight) for LTE networks and Multiple Input Multiple Output (MIMO) applications, which are expected to be significant in the future fixed radio market.

# Better Living with ICT Technologies for a Better Life

online work programme

*While technological progress has improved the way we communicate for both social and business purposes and opened up exciting new opportunities, we are careful to minimise any adverse social consequences. Part of our work therefore involves making products and services simpler to use, safer and more efficient.*

*We are also committed to identifying energy efficiency solutions that mitigate the impact on climate change of the growing use of Information and Communications Technologies (ICT). The ultimate goal is to ensure that ICT improve the quality of life for all.*

## Energy Efficiency for ICT

ETSI takes environmental responsibilities seriously. Indeed, before we begin work on any new standard or specification, environmental aspects must be considered and documented in the proposal.

Much of our work to improve the energy efficiency of ICT equipment supports European Commission (EC) Mandate 462 with important deliverables on measurement methods and the control and monitoring of energy efficiency in telecom products and networks.

Our Environmental Engineering Technical Committee (TC EE) is developing a multi-part ETSI Standard (ES) on the control and monitoring of power and cooling systems used in telecommunication and data infrastructures, to monitor and reduce power consumption. We are revising the European Standards (ENs) for the high voltage DC power supply interface requirements up to 400V to help reduce energy consumption in central offices and data centres. We also expect to publish two ENs for DC sources up to 400V and an EN for the earthing and bonding of telecommunication equipment connected to a 400V DC power source.

We plan to complete various other standards on the energy efficiency of transport telecommunication equipment, router and switching equipment, mobile radio access and radio base stations.

We are addressing Key Performance Indicators (KPIs) for the energy efficiency of deployed broadband services at a global level. Over the next two years, our Access, Terminals, Transmission and Multiplexing Technical Committee (TC ATTM) plans to complete a series of standards on global KPIs, working in close co-operation with our new Industry Specification Group on Operational energy Efficiency for



Users (ISG OEU) in order to take into account users' operational needs. In 2013 we expect to publish a new three-part ES covering KPIs for operational telecommunication infrastructures, operators' data centres and mobile access networks. In addition, ISG OEU is also working on six specifications for performance indicators for environmentally efficient ICT. This work will provide ICT users with tools to monitor the energy management of networks and sites in full compliance with the Kyoto Protocol on climate change and the reduction of greenhouse gas emissions.

In collaboration with the Telecommunications Standardisation sector of the International Telecommunication Union (ITU-T), we are producing a common methodology for assessing the environmental impact of ICT.

We expect to complete a new ES, developed in co-operation with ECONET (the low Energy CONsumption NETworks project), on the energy management capabilities of future telecommunication fixed network nodes.

We also define the best environmental practices for telecommunication equipment and infrastructures in different situations. We are updating the three ENs for the climatic and mechanical requirements for telecommunication equipment and are scheduled to complete a set of publications on thermal management.





## Access for All

As for environmental aspects, each ETSI committee initiating a new standard or specification must consider and document user-related aspects such as accessibility and usability, user security and safety. As well as supporting the EC's policies on eAccessibility and eInclusion, we are aware that these factors can play a crucial role in the commercial success of ICT products and services.

Our Human Factors Technical Committee (TC HF) has an international reputation for its work in making products, systems and services easy for all to use.

In 2013, TC HF expects to complete its work in response to EC Mandate 376 on the accessibility requirements for the public procurement of ICT products and services. Working in co-operation with the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC), we plan to publish two Technical Reports (TRs) and, in the first half of 2014, an EN on ICT accessibility requirements and testing methods.

In response to EC Mandate 473, we are turning our attention again to eInclusion and Design for All – ensuring that developments in technology are accessible to all in our society, including the elderly, the young and those with disabilities. For many years ETSI has championed the importance of Design for All, and Design for All requirements are built into ETSI standards, wherever relevant.

We expect to publish a TR on mobile text telephony over Internet Protocol (IP), to enable users who are deaf or hard of hearing to use an off-the-shelf mobile terminal as a text communication device. Specific new projects for 2013 include work on user-centred terminology for devices and services and the preparation of an ETSI Guide (EG) on the design and development of mobile ICT devices for people with cognitive disabilities. We are also taking up our work on user interface aspects for aging users again, helping to ensure that older people who develop sensory or cognitive impairments can still use ICT devices and services.



Our User Group is identifying use cases for visually impaired people accessing ICT products and services and interacting with machines or equipment. We plan to produce a TR to define their technical requirements, with a view to possible future standardisation.

## Media Quality and the User Experience

We are addressing the growing demand for wideband and 'super-wideband' (bandwidth up to 14 kHz) speech communication and multimedia in hands-free and video phone applications. In 2013, our Speech and Multimedia Transmission Quality Technical Committee (TC STQ) expects to complete two new Technical Specifications (TSs) on terminals using super-wideband and full-band terminals for conversational services for teleconferences and audio-visual applications: one relates to headsets, the other to hands-free terminals and teleconferencing systems. We also plan to finish a TR on the audio quality, the loudness and fidelity of speech, as perceived by the user, for wideband and super-wideband speech terminals.



We continue to address end-to-end transmission planning requirements for real-time services in a Next Generation Network context, focusing on delay and jitter. We have added 3G and LTE™ aspects to the scope of this work and expect to finalise a new TS in 2013.

We are adapting the ETSI Quality of Service (QoS) model to better reflect user perception, and are addressing the quality of video streaming services and the development of reference load and background traffic profiles. We are updating our guide to acoustic safety limits.

We continue to update our standards in line with international developments. We are also working on a new TR on the QoS parameters and the related measurement methodology for smartphones, and are addressing the background noise simulation technique and background noise database.

## Safety

Our Safety Technical Committee monitors developments in electromagnetic field safety, electrical safety and safety in cable television systems.



# Content Delivery

## Facilitating Content Consumption across Different Business Areas

*The Internet, mobile communications and broadcasting are converging. But the standardisation of these different areas has traditionally followed different paths, so they do not interoperate across the same platforms. Content providers therefore incur significant additional cost and customer buy-in remains below expectations. ETSI is addressing the urgent need to align these diverse specifications and to harmonise solutions, for the benefit of both the industry and the consumer.*

### Content Delivery

We are working on aspects of the development of multimedia systems (television and communication) to meet present and future market demand for media content distribution.

Multi-screen capabilities mean having the same content and services available through multiple screens connected via different access technologies (fixed, wireless, mobile) with different network characteristics and potentially utilising a combination of broadcast and broadband in the end-user equipment. Our End-to-End Network Architectures Project (EP E2NA) is developing a Technical Specification (TS) on multi-screen convergence which includes defining a terminology, collecting use cases and scenarios, identifying requirements and analysing the impact and the gaps in current standardisation.

We continue to work on protocol definition for Content Delivery Networks (CDNs); the specification of intra-CDN protocols will be finalised in 2013 and we are planning a new specification of protocols for CDN interconnection.

In the area of content protection, we are analysing the architecture, the requirements and the mechanisms for interoperable and exchangeable Conditional Access/Digital Rights Management systems for multimedia platforms in a convergent environment.

### Broadcasting

Our standardisation of broadcast systems, programme transmission and receiving equipment is dealt with in a Joint Technical Committee which brings us together with the European Broadcasting Union (EBU) and the European Committee for Electrotechnical Standardisation (CENELEC) – JTC Broadcast.

In 2013 JTC Broadcast plans to revise the ETSI Standard on MHEG-5, mainly to promote the co-existence of MHEG with other Connected TV Application Protocol Interfaces (APIs)

such as Hybrid Broadcast Broadband TV (HbbTV). On the DVB side, the committee expects to complete new standards on Next Generation Handheld DVB (DVB-NGH) and the DVB Internet Protocol Television (IPTV) scrambler, which will specify the scrambling algorithms for IPTV services. The existing DVB IPTV standards will also be reviewed and updated as necessary. In addition, we are revising the DVB-RCS2 standards, with new parts covering guidelines for their implementation, and the committee expects to complete evolutionary extensions of the DVB-S2 standard.

New work has begun for Digital Audio Broadcasting (DAB) filecasting, which will allow a service provider to deliver files to an end-user with metadata to identify the files. This application will use the Multimedia Object Transfer (MOT) protocol for file delivery.

### Cognitive Interference Mitigation Techniques

Our Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM) continues to work on cognitive interference mitigation techniques for use by Programme Making and Special Events (PMSE) devices – wireless microphones, in-ear monitors, talk-back links, audio links etc. As an alternative to the allocation of new spectrum, we are investigating the possibility of using cognitive spectrum access methods to allow usage of hitherto unavailable spectrum and to facilitate spectrum sharing. We plan to complete a multi-part System Reference Document on PMSE in 2013.

### Localisation Industry Standards

Our Industry Specification Group on Localisation Industry Standards (ISG LIS) will continue to recreate and maintain the standards of the Localization Industry Standards Association (LISA) and offer a platform for future localisation standards. Specifications on Term-Base Exchange (TBX) and Segmentation Rules Exchange (SRX) are expected to be completed in 2013 and new work has been initiated on the Match percentage calculation method.



# Fixed Networks

## Fulfilling the Promise of Unlimited Bandwidth



*The way we communicate changes as technology evolves. Nowadays consumers expect services to be easily accessible and available everywhere, on whatever devices they are using. Technically, this means networks must converge. Our fixed networks work provides a comprehensive set of standards for networks that meet today's – and tomorrow's – needs.*

### Cloud

The main focus of our Cloud activities in 2013 will be Cloud Standards Co-ordination (CSC), which will include a series of brainstorming sessions to discuss the requirements for Cloud standards. Launched in December 2012 in response to a request from the European Commission (EC), this initiative will identify a detailed map of the standards required in areas such as security, interoperability, data portability and reversibility.

Our Cloud Technical Committee also expects to complete a new Technical Report (TR) on Cloud as a mitigating technology to reduce greenhouse gas (GHG) emissions in other (non-ICT) sectors. We are developing a methodology that could be used to understand how Cloud technologies could enable carbon abatement, and to estimate the potential for reducing GHG emissions through Cloud computing.

We are co-organising a Cloud interoperability week in September 2013, which will showcase how Cloud standards work together.

### Network Access

Our Access, Terminals, Transmission and Multiplexing Technical Committee (TC ATTM) is developing a series of Technical Specifications (TSs) for optical fibre systems on customer premises and to enable the development of equipment required by in-home services.

The Telecommunications Standardisation sector of the International Telecommunication Union (ITU-T) and the Broadband Forum have asked ETSI to take the lead on reverse power feeding standardisation. We are therefore developing a TS on the requirements for reverse power feeding for Fibre to the Distribution Point (FTTdp), whereby the node at the distribution point can be powered from the customer premises equipment.

### Network Technologies

During 2013, our Network Technologies Technical Committee (TC NTECH) will complete work on the use of the Domain Name System (DNS) protocol and on the specification of Telephone Number Mapping (ENUM)/ENUM-like options for Number Portability.

In the area of network security, we plan to complete six documents: a new specification on Data Retention in the Next Generation Network (NGN) architecture, four revisions of existing NGN-related specifications on, respectively, security architecture, security requirements, security methods and protocols, and security services and mechanisms for customer premises networks, as well as an NGN Threat and Vulnerability Risk Assessment (TVRA) report.

### Cable Networks

Our Cable Technical Committee (TC CABLE) is developing a new ETSI Standard (ES) containing global Key Performance Indicators (KPIs) for energy efficient Hybrid Fibre Coaxial (HFC) access networks and their application, and a report on energy efficiency and KPIs for cable access networks.

Following the introduction of new radio services in the digital dividend UHF frequency band 790 - 862 MHz, we are preparing a TR on the current and evolving electromagnetic environment compared with the current and evolving cable network equipment parameters defined by existing European Standards (ENs).

We are developing a TS on measurement methods for the network performance of broadband data services and another on the equipment and end-to-end system requirements for broadband cable networks to enable the transition from IPv4 to IPv6. We are also defining a plan and testing methodology to verify the compliance of equipment and systems with ETSI standards on the transition of broadband cable networks from IPv4 to IPv6.

We expect to take on new work relating to cable networking equipment, including new and emerging access network components and architectures.

### New Technologies

Our new Industry Specification Group on Network Functions Virtualisation (ISG NFV) will leverage standard IT virtualisation technology to consolidate many network equipment types onto industry standard, high volume servers, switches and storage. This new approach to defining and deploying telecommunications functionality in networks is seen as complementary to the related topic of Software Defined Networking (SDN). Following the kick-off meeting in January 2013, we have put together an ambitious work programme which includes a set of studies to be completed within 18 months which will influence the broader and more formal standardisation needs.

### Network Management

Our ISG on Autonomic network engineering for the self-managing Future Internet (ISG AFI) works at the forefront of evolved technologies related to network management. In 2013 we will define scenarios, use cases and requirements for the autonomic/self-managing future Internet, as well as a set of different reference architectures.

### End-to-end Network Services

Previously, standards for communication networks have been developed in isolation, despite the fact that, when deployed, these networks aim to provide end-to-end services to users and therefore need to implement all the necessary technologies and related standards together. In addition, gaps in standards have been identified which hamper the smooth implementation of these end-to-end networks. In our End-to-End Network Architectures Project (EP E2NA) we are developing a global end-to-end system view of ICT networks, focusing on the fixed segment and on interconnection to other networks and including our long-term vision of the evolution of networks. In 2013, we will begin to compile an inventory of relevant business use cases, from which to produce technical requirements and a gap analysis.

# Transportation

## Bringing the Power of ICT to People on the Move

*ETSI supports various transportation domains – road, railways, aviation and maritime services – with activities which are carried out by key industry players and therefore reflect true market demand.*

### Intelligent Transport Systems

As a world-leader in the standardisation of Intelligent Transport Systems (ITS), we are developing standards for wireless vehicle-to-vehicle and vehicle-to-roadside communications. Our aims are to improve safety on the roads and traffic efficiency, and to reduce the environmental impact of transportation, both in terms of CO<sub>2</sub> emissions and fuel consumption.

In 2013 the main focus of our work in our ITS Technical Committee (TC ITS) continues to be 'Co-operative ITS', which offers enormous potential for road safety, traffic control, fleet and freight management and location-based services. The first release of ITS standards will be completed in 2013. It includes the standards required by European Commission (EC) Mandate 453 for the interoperability of ITS and will enable the initial deployment of Co-operative ITS, well in time for the industry's target for deployment in 2015. We are now beginning the validation of Co-operative ITS at large scale Field Operational Tests (FOTs).

As requested by M/453, we are developing new European Standards (ENs) based on the Technical Specifications (TSs) we produced in 2012 for the conformance testing of the Co-operative Awareness Message (CAM) and Decentralised Environmental Notification Message (DENM) services, for GeoNetworking, for the Basic Transport Protocol and for the integration of IPv6 and GeoNetworking. These standards are crucial for the deployment of Co-operative ITS.



We plan to publish the important ENs on CAM and DENM by the end of 2013.

By the end of 2013 we expect to have completed the EN approval process for the Release 1 standards including the EN on GeoNetworking media dependent functionalities and the TS on Decentralised Congestion Control (DCC). This work is being supported by an ETSI Specialist Task Force (STF 447) funded by the EC. A second EC-funded STF (448) is addressing Local Dynamic Maps, working in co-operation with the European Committee for Standardisation (CEN) and the International Organization for Standardization (ISO). This work is expected to produce an EN by the end of 2013, which will help enable the early deployment of Co-operative ITS. Another STF on cross layer DCC, also funded by the EC, will start work in mid-2013 and expects to complete its first specification before the end of the year.

We expect to publish a TS on Road Hazard Signalling (RHS) in 2013 and to complete two additional safety application TSs on, respectively, longitudinal collision risk warning and intersection collision risk warning before the end of the year. These specifications support EC policies for safety on the roads.

In the network and transport area, we are producing a wide range of ENs, based on existing specifications, including the standards to enable GeoNetworking. The key EN access layer standard on ITS equipment operating in the 5 GHz band (ITS G5) is expected to be published in mid-2013.

During 2013, we will agree on the standards required for Release 2 and begin work. Following detailed consultation with stakeholders, Release 2 will be based on the new features and functionalities anticipated in future Co-operative ITS.

We are also contributing to the EC mandate on electric vehicle charging standards (M/468). Specifications on tyre pressure monitoring systems and on the planning and reservation of electric vehicle energy supplies are scheduled for completion in 2013.

### Automotive Radar

In the Ultra Wide Band (UWB) automotive radar area, our Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM) is revising the EN which will govern the use of equipment operating in the 79 GHz band, to take into account the latest technological developments.

The EN for surveillance radar in the 76 - 77 GHz range is being updated in the light of the EC's 'MOSARIM' project on radar interference mitigation, and we are revising the EN on radar equipment using Wideband Low Activity Mode (WLAM) in the 24,05 - 24,50 GHz band.



## Maritime

TC ERM continues to plug the standardisation gaps in the maritime area. In particular we plan to publish the first two parts of a three-part EN for Maritime Personal Homing Beacons for search and rescue purposes as well as revisions of the three-part EN for handheld Digital Selective Calling (DSC) and the three-part EN for VHF Class D DSC. Work continues on two new ENs for using DSC and Automatic Identification System (AIS) signalling in Man Overboard (MOB) devices. A revised EN on shipborne watchkeeping receivers for the reception of DSC is due to be published before the end of 2013.

## Aviation

In 2013, our Aeronautics Technical Committee (TC AERO) will address the recently issued EC Mandate 524 in support of the Single European Sky Aviation Research (SESAR) Air Traffic Management (ATM) Master Plan. This is likely to lead to the creation of a number of new standards.

We are updating the ENs on ground-based VHF Digital Link (VDL) Mode 2 and Mode 4 radio transceivers for the aeronautical mobile service.

In 2013, we expect to publish a Technical Report (TR) on Broadband Direct-Air-to-Ground Communications Systems operating in the 5 855 - 5 875 GHz band using 3G technology. If appropriate spectrum can be found, this would enable airline passengers to send and receive email in-flight.

In addition, we are working in response to EC Mandate 405 for harmonised standards covering air traffic management equipment. We plan to publish an EN on the Ground Based Augmentation System (GBAS), which augments the Global Navigation Satellite System (GNSS) positioning service to improve air navigation during all phases of approach, landing, departure and surface operations within its area of coverage. We also expect to complete an EN on the Advanced Surface Movement Guidance and Control System (A-SMGCS) for the control of aircraft and vehicles at airports.

## Railways

During 2013 our Railway Telecommunications Technical Committee (TC RT) plans to complete the changes required to incorporate the additional 3 MHz of spectrum recently allocated to GSM-R (GSM™ on railways) in the Third Generation Partnership Project (3GPP™) radio access standard. This will extend applications to the rail system and help meet urban and suburban transport needs.

We are revising our TS on the use of Internet Protocol (IP) in GSM-R to add new features, and are preparing a new TS on core network redundancy.

We are also addressing the EC's mandates on Urban Rail (M/486) and the Interoperability Requirement (M/483), producing a TR on GSM-R on Urban Rail.

We are undertaking a number of compatibility studies to reduce interference between GSM-R and public networks.



# Home and Office

## Connecting Devices in the Home and Office

*The variety of devices that need to be interconnected is growing rapidly and most require broadband. The new services being developed are creating a 'Connected Home' and a 'Connected Office'. Our standardisation for home and office focuses on three aspects: home and office wireless, home and office interconnection, and home and office requirements, including Quality of Service (QoS) and security.*

### Cordless Voice and Broadband Communication

Our Digital Enhanced Cordless Telecommunications (DECT™) specification is the leading standard worldwide for both cordless voice and broadband home communication. The system has already been adopted in over 110 countries but, in 2013, the legislative change to allow license exempt operation of DECT in India is expected to become effective, which will open up a further huge market for DECT products.

Our DECT Technical Committee (TC DECT) continues to work on New Generation DECT and the latest release of the DECT base standard. We expect to finalise a new Part 5 which includes additional features such as phone book handling, answering machine control, handset capability enquiry, security enhancements and an energy-saving 'ECO mode'. In addition to the system specification, the corresponding test specification is being drafted and is expected to be available in mid-2013.

We are also working on an exciting new application of DECT for a completely different market – Ultra Low Energy (ULE). ULE technology addresses many application scenarios not covered by any existing technology, since other current contenders suffer from a variety of drawbacks including high power consumption, spectrum access limitations, short range or a lack of standardisation. The low power consumption of ULE technology extends battery life (typically up to ten years) and, with New Generation DECT, connectivity to the Internet is already available, which makes the technology ideal for sensors, alarms, Machine-to-Machine (M2M) applications and industrial automation. ULE technology may also be applied to utility meters and related devices and therefore has implications for the operation of smart grids.

The main usage of DECT ULE in its first phase of development is home automation. We are therefore updating the DECT base standard to include the necessary new protocol elements and procedures, and we are developing a new Technical Specification (TS) for home and industrial automation using DECT ULE. Phase 1, which focuses on the home automation network, is due for completion first. For the rest of 2013 we will then work on Phase 2, addressing additional features for home automation such as software-upgrade, repeater functionality and hybrid devices.

During 2013 we also expect to complete new work on a System Reference Document for the operation of DECT in the 1 900 - 1 920 MHz band, which would provide more capacity for video, HD-voice, streaming and various M2M applications.

### Small Cells

In the Third Generation Partnership Project (3GPP™) we are working with our international partners on small cells (pico-, femto-, micro-cells), which will become particularly important as demand for capacity and higher data rates increases.



### Powerline Communications

Our Powerline Telecommunications Technical Committee (TC PLT) continues to work in response to European Commission (EC) Mandate 441 on Smart Meters and Mandate 490 on Smart Grids, with the aim of creating a set of European standards to enable the interoperability of utility meters (water, gas, electricity, heat) for 'smart metering'. In 2013 we expect to complete a new TS on smart metering and home automation.

The future digital home will share video content such as HD, HD 3D video, Multiple Views Video and 4K video. 4K is particularly challenging because of the volume of data involved. The new networks based on Multiple Input Multiple Output (MIMO) powerline telecommunications (PLT) offer the possibility of distribution throughout the home of premium services such as 4K video for customers with ultra high definition television (UHDTV). In 2013, we will focus on the transportation of 4K video streams using new compression technology such as HEVC/H265 and MIMO-PLT modems. We are developing a new TS on the requirements for very high bitrate services.

Other new work in 2013 is expected to focus on the creation of a standard for High-Definition Multimedia Interface (HDMI) over powerlines. This exciting development would enable every device in the home to be connected to the powerline and then transferred to a high definition television (HDTV). Thus it would become possible to use powerlines to connect video from a set-top-box or Blu-Ray player to a television, without the need for an HDMI cable.

We are also producing a TS on the co-existence between VDSL2 and PLT transceivers operating in the same frequency bands but on different cables.

# Interoperability

## Interconnection in a Multi-vendor, Multi-network, Multi-service Environment

online work programme

*Interoperability is one of the reasons why we develop communications standards. It is crucial in a multi-vendor, multi-network and multi-service environment. Interoperability gives users much greater choice of products, and enables manufacturers to benefit from the economies of scale of a wider market. The need to ensure interoperability is thus driven by market demand.*

### ETSI's Unique Approach to Interoperability

Because the quality of our standards is a high priority, we have pioneered the use of best practices in our standards-making. Our technical committees apply best practice specification techniques, the validation of standards and the development of test specifications to deliver interoperable standards which meet the needs of industry and support technological progress.

Our Centre for Testing and Interoperability (CTI) has over 20 years' experience in providing hands-on expertise in standards validation (especially through the organisation of our world-renowned Plugtests™ interoperability events), the development of test specifications, the application of protocol specification techniques and the use of methodologies.

In 2013, the CTI's focus will be on continuing to support our core standardisation activities particularly in the area of Machine-to-Machine (M2M), Network Functions Virtualisation (NFV), Intelligent Transport Systems (ITS), Electronic Signatures, security protocols and Radio Frequency Identification (RFID). We will do this through interoperability events and the development of test specifications.

### Test Specifications

We will provide expert support for strategically important areas such as Cloud, Smart Grid, Energy Efficiency, the Internet of Things and ITS. Specifically we plan to further develop the ITS conformance and interoperability validation test platform based on the test frameworks and specifications developed by our ITS Technical Committee.

Our Technical Committee for Internet Protocol (IP) Multimedia Subsystem (IMS) Network Testing (TC INT) will continue to update its existing test specifications to take account of the latest Third Generation Partnership Project (3GPP™) releases. Work will also begin in 2013 on developing conformance test specifications for 3GPP Evolved Packet Core (EPC) interfaces.

We will continue to develop 3GPP LTE™ test specifications that are used by the Global Certification Forum (GCF) to certify the compliance of terminals to 3GPP air interface standards.

In 2013, we plan to launch a new annual ETSI interoperability week. The first will be dedicated to Cloud standards and will be co-located with the EGI Technical Forum and Open Grid Forum meetings in Madrid, Spain, in September. This new activity supports the Cloud Standards Co-ordination initiative.

### Plugtests Events

Our Plugtests events provide valuable feedback to help improve standards and at the same time offer manufacturers an opportunity to test their products and services for interoperability, resolving any issues before entering the marketplace.

Events planned for 2013 will address a range of topics including RFID, small cells, M2M, the 6LoWPAN and CoAP protocols, Co-operative Mobile Systems, Cloud and voice

quality over IMS. In addition, we will be participating in the annual European testing event for healthcare IT interoperability, the IHE Connectathon.

We will also field test the interoperability of mobile applications in the tourism sector, in support of the European Mobile and Mobility Industry Alliance (EMMIA), a strategic initiative funded by the European Commission.

### Methods for Testing and Specification

Our Methods for Testing and Specification Technical Committee (TC MTS) creates standards related to testing and specification languages, and provides frameworks and methodologies to enable other ETSI committees to produce documents that are easy to understand and easy to use. Its work is therefore critical to the market success of numerous technologies.

In 2013, we will focus on standards engineering; our highly successful test specification language, Testing and Test Control Notation version 3 (TTCN-3), Model-Based Testing (MBT), security testing, and particularly Test Description Language (TDL).

We are producing an ETSI Standard (ES) which will define a new language for the specification of test descriptions and the presentation of test execution results, primarily for functional testing, but also potentially for other types of testing. The user community is looking to ETSI to take a strong leadership role in TDL so we have set up a Specialist Task Force (STF 454) to accelerate progress.

We will also continue to keep the TTCN-3 standard suite, and the accompanying conformance test suite, up to date, and to forward our work to the International Telecommunication Union as input to its standardisation activities.

MBT remains a key issue for us; experience in industry to date suggests that MBT can increase productivity in testing on average by 30%. Our recent experiments have shown that commercial MBT tools can be applied successfully to generate tests from standards. This is expected to lead to a revision of the ES on modelling notations with a new section specifying coverage criteria in MBT.

Our work on security will also continue in 2013. We expect to complete a new Technical Report (TR) describing case studies where security testing has been used in industry, a Technical Specification (TS) on security testing terminology and a security design guide. This work is being co-ordinated with various European projects, including the ITEA2 – Diamonds project.

Our annual TTCN-3 User Conference and the MBT User Conference have been highly successful for a number of years. At the request of our members, in 2013 we will launch a new type of conference, the User Conference for Advanced Automated Testing (UCAAT), which will subsume the two previous conferences. With a broader scope, it will appeal to a wider audience. The first UCAAT will be held in October in Paris, France, and will take as its theme 'MBT in the testing eco-system'.



# Public Safety

## Mission-Critical Communications to Rely on

*We are working on standards for communications in a wide range of emergency situations, ranging from a man overboard to a major natural disaster.*

### TETRA

The main focus of our Terrestrial Trunked Radio Technical Committee (TC TETRA) is public safety and other mission-critical services. Broadband will be a key factor in providing the high data speeds required for some applications, such as streaming video from the scene of an incident, so we are concentrating on standardising a broadband extension to the TETRA standard. We are heavily involved with the development of LTE™ to accommodate critical communications users, working closely with the Third Generation Partnership Project (3GPP™) on the standardisation of the interfaces between LTE and Professional Mobile Radio (PMR) systems. In 2013, we will update the statement of requirements document for broadband communications for critical users and define user requirements for security in the use of LTE for critical communications. We also plan to finish updating the spectrum requirements calculations for broadband for Public Protection and Disaster Relief (PPDR).



Our ongoing work includes revising the TETRA standards to meet the developing needs of users. In particular, during 2013, we will continue to expand TETRA into the VHF spectrum, having revised the air interface specification to extend the frequency range down to 138 MHz. This is expected to be particularly important in areas of the world where there is a need for a more economical solution than can be provided in the UHF bands. Improvements in the TETRA Enhanced Data Service (TEDS) will also be incorporated, and the Designers Guide will be updated to include VHF operation and Direct Access. Work is ongoing to develop the standard for wideband TETRA to include voice services in addition to data in TEDS.

We are developing a new European Standard (EN) on multi-carrier transmitter amplifiers for use with TETRA channels and other PMR technologies, and undertaking a major study to examine the possible replacement of TETRA's air interface encryption algorithm.

### Emergency Calling

In 2013, our Emergency Telecommunications Committee (SC EMTEL) expects to complete its requirements work on 'Total Conversation' for the handling of emergency calls placed by people with hearing or speaking disabilities.

Publication of a Technical Specification (TS) is scheduled for mid-2013, which will enable, for example, a deaf person to make a three-way video call involving the public safety answering point (PSAP) and a sign language interpreter, using video and real-time text.

We are working in response to European Commission (EC) Mandate 493 on the Location Enhanced Emergency Call Service, defining a single functional architecture to support European requirements for emergency caller location determination. The intention is that the solution will cover a situation, for example, where a Voice over Internet Protocol (VoIP) service provider and one or several network operators – all independent enterprises serving the customer in the establishment of an emergency call – need to co-operate to determine the location of the caller. The functional architecture is expected to be complete by mid-2013. It will be followed by the definition of related protocols.

New work under discussion includes emergency calls in private networks, developing guidelines for good practice to ensure that accurate location information is provided by IP-PBX private network systems to the PSAP. This would involve updating the existing TS on communication by citizens to authorities in an emergency situation.

We are co-operating with 3GPP in support of the EC's eSafety initiative, eCall. This in-vehicle emergency call service will automatically relay data about an accident from the vehicle involved to the emergency services, providing faster and more effective emergency responses. eCall is based on GSM™ and UMTS™ networks; there is currently no emergency call facility in LTE. In 2013, we will therefore update the existing TSs and Technical Report to accommodate LTE, and also recommend a roadmap for migration from a basic eCall service to a future packet-based enhanced eCall service.

### Other Aspects of Public Safety Standardisation

We are developing standards for the use of satellites in different emergency scenarios, including a TS on devices used in the deployment of emergency communication cells via satellite and a protocol to improve the broadcast of alert messages via satellite.

In response to the Reconfigurable Radio Systems (RRS) Mandate (M/512) we are working on the synergies between commercial, public safety and military domains. Other work includes standards for maritime safety equipment, work on acoustic safety limits and various mechanisms for road safety through the use of Intelligent Transport Systems. In particular, we expect to complete a System Reference Document in 2013, requesting spectrum for equipment operating in the 5 GHz range which is intended for road safety and other applications.

3GPP continues to maintain the Public Warning System (PWS), based on the Cell Broadcast Service.



## World Class Standards

- Air Traffic Management
- Automotive Radar
- Autonomic Systems
- Broadband Wireless Access
- Broadcasting
- Cable Networks
- Cloud Technology
- Cognitive Radio
- DECT™
- Digital Mobile Radio
- eHealth
- Electromagnetic Compatibility
- Electronic Signatures
- Emergency Communications
- Energy Saving
- Environmental Aspects
- Fixed-line Access
- Human Factors
- Identity Management
- IMS Network Testing
- Intelligent Transport
- Internet
- Interoperability
- Lawful Interception
- Machine-to-Machine Communications
- Maritime Communications
- Media Content Distribution
- Mobile Communications
- Network Virtualisation
- Next Generation Networks
- Powerline Communications
- Protocols
- Public Safety Systems
- Quality of Service
- Quantum Key Distribution
- Radio
- Radio Regulations
- Radio Systems
- Railway Communications
- Satellite Communications
- Security
- Security Algorithms
- Short-range radio
- Smart Cards
- Smart Grids
- Smart Metering
- Software Defined Radio
- Testing
- Terrestrial Trunked Radio (TETRA)
- Wireless Medical Devices

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