work programme

2014 - 2015

building the future

ETSI's Vision of a Connected World

Our 'clusters' (above) provide a simplified, yet comprehensive, way of identifying our different areas of expertise based on business relevance or application domain rather than our committee structure. Each cluster represents a major component of the global Information and Communications Technologies (ICT) architecture and brings together the work of those technical committees and other groups which 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, and demonstrate the way that technologies are converging into 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 have 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 63 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 2014-2015

This Work Programme offers an opportunity to take a look at some of the emerging technologies we can expect to see in the years to come – and to highlight the important part that ETSI will play in their development.

For example, Machine-to-Machine (M2M) communications will form the foundation for tomorrow's connected homes and cities. In 2014 we will complete a work plan for the future standardisation of smart appliances and we are analysing the impact of smart cities on the Internet of Things. The oneM2M Partnership Project, of which we are a founding partner, expects to produce its initial release of specifications for the first deployable M2M solution.

Sustainability has become a hot topic, particularly with regard to energy efficiency and mitigation, and we are producing standards in many diverse areas which will help reduce emissions. For example, we are developing Ultra Low Energy (ULE) Digital Enhanced Cordless Telecommunications (DECT™), which will be ideal for M2M applications and industrial automation, and we are addressing low throughput connectivity. We are working to minimise the adverse impact of Information and Communications Technologies equipment by defining best environmental practices for telecommunication equipment and infrastructures and in 2014 we expect to complete a set of Global Key Performance Indicators to monitor the energy management of deployed broadband.

We are discussing with the European Commission (EC) and other stakeholders how we can build on the success of the Cloud Standards Co-ordination (CSC) initiative to assist the development of Cloud technology.

User experience, privacy and security have always been important items in ETSI. Our recently created Cyber Security committee is starting work and new activities have been launched in Quantum Key Distribution (QKD). We also plan to produce standards in a number of other key areas identified by the EC, including user profiles and the protection of user data in mobile and distributed systems, and support for users of services and devices who have cognitive impairments.

We will continue to develop the UICC, the smart card used in mobile telecoms and for mobile contactless services, including the use of the Smart Security Platform for secure eIdentity; in response to both market and political demand, mobile payments will be one of the first applications to be addressed.

We have begun to consider 5G mobile communications. Meanwhile, in the Third Generation Partnership Project (3GPP™), we are working to further enhance LTE™ and starting work on Release 13. We are also exploring the possible development of LTE for the next generation of critical communications.

Our Industry Specification Groups (ISGs) make specifications for cutting edge technologies. For example, our ISG on Network Functions Virtualisation (NFV) is developing a new approach to the technologies and operations in telecommunications networks, and we have embarked on new activities in content protection. In 2014, work on future network technologies, kick-started by our ISG on Autonomic network engineering for the self-managing Future Internet (AFI), will be developed into Technical Specifications.

We are producing our second release of standards for Co-operative Intelligent Transport Systems (ITS). We are drawing up a rationalised framework for electronic signature standardisation for the cross-border interoperability of electronic signatures throughout Europe. In the eHealth area, we are working on Telemedicine and this year we expect to publish our first set of standards in support of Smart Body Area Networks. To meet the needs of developing TV technology, new activities in the broadcast area include Ultra High-Definition TV (UHDTV) and we are addressing the transportation of video over powerlines to enable the advent of 4K video streaming and video on demand services for UHDTV.

Other work addresses a wide range of topics including the quality of telecommunications services, safety at sea and emergency calling, satellite navigation and communications and GSM™ for the railways.

We will continue to provide the standards with which the European regulatory authorities manage the radio spectrum environment and ensure safe co-existence between the systems operating in it. At the same time we are developing new ways to make the best use of spectrum resources, including Licensed Shared Access (LSA) and TV White Spaces. We are addressing the spectrum requirements for RFID and Short Range Devices and developing the potential of the 5 GHz band.

To improve the quality and timeliness of our test specifications, we are developing the Test Description Language (TDL).

We are constantly expanding our links with research and innovation communities to identify new technologies for standardisation. In 2014 we will begin to discuss the emerging big data market at a 'Hell's Kitchen' session, and we have a varied selection of workshops planned to stimulate new activities and to fertilise our ongoing work.

This Work Programme describes our standardisation activities in areas where we have led the field for many years, as well as new developments which have grown out of our traditional strengths as technology evolves. Activities planned for the next twelve months are wide-ranging and exciting. They demonstrate the way that ETSI adapts to the needs of the market and our members, and the important role of standards in creating tomorrow's world.

Full details of all upcoming standards and specifications can be found at: http://webapp.etsi.org/workprogram.

Jonas Sundborg
Chairman of the Board

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 Information and Communications Technologies (ICT).

Industry Specification Groups

Our Industry Specification Groups (ISGs) operate alongside our traditional standards development process, producing specifications in key new areas. ISGs focus on a specific activity at the cutting edge of technological research and development and, by their nature, offer a very quick and easy alternative to the creation of industry fora.

ISGs active in 2014

ECI	Embedded Common Interface for exchangeable CA/DRM solutions
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

Embedded Common Interface for exchangeable CA/DRM solutions (ECI)
We have created a new ISG to work on content protection, specifically to establish a standardised environment for a general purpose, software-based, embedded, exchangeable Conditional Access (CA)/Digital Rights Management (DRM) system.

Quantum Key Distribution (QKD)
Quantum cryptography has the potential to become a key technology for securing the confidentiality and privacy of communication in the future and thus to be an important driver for the success of various services. In 2014, our ISG on QKD will embark on a major new programme of work.

Collaborative Research

In 2014 we will continue to develop our links with research and innovation communities and to participate as a partner in a number of projects funded by the European Commission (EC). In this way we can identify new technologies for standardisation at an early stage. In particular, we are exploring the opportunities available in Horizon 2020 projects.

Our role in these projects varies. For example, we will work to improve the quality of life through eHealth in the ANTILOPE project. We are supporting the development of the Galileo Global Navigation Satellite System (GNSS) through Project SAGITER and Project SUNRISE. Project SUNRISE runs the Open GNSS Service Interface Forum for two industrial user groups of GNSS and future Galileo services, which we set up through our Forapolis™ service.

As a partner in the Electronic Simple European Networked Services (e-SENS) consortium, the Large Scale Pilot project on cross-border government services to support the mobility of citizens and businesses, we are helping to harmonise national approaches and to develop an interoperable European solution for eID, eDocuments, eDelivery, eSignatures and semantics.

Workshops

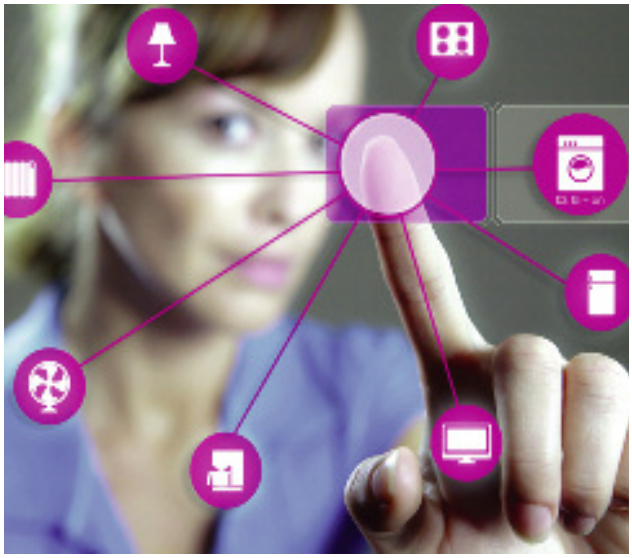
We organise a varied programme of workshops every year to generate early consensus, to kick-start new standardisation activities and to fertilise our ongoing technical work. These include our well established workshops on Machine-to-Machine (M2M) communications, security and Intelligent Transport Systems (ITS), which are now widely regarded as important events in the international calendar.

To help maintain our lead in addressing the human side of technological development, we are organising a workshop on human factors in ICT in June. We are planning a Telemedicine workshop in May, an Internet of Things workshop in July and our second User Conference on Advanced Automated Testing (UCAAT) in September, in Munich, Germany. In October, in partnership with the Institute for Quantum Computing (IQC), we are organising the second ETSI Quantum-Safe Crypto Workshop in Ottawa, Canada.

We are holding a Hell's Kitchen session in June, when we will address the standardisation needs of the emerging big data market.

Smart Appliances

In response to a proposal from the EC, we are embarking on a new strategic topic – smart appliances. In 2014 we will develop a work plan for future standardisation activities. This will include a workshop on Smart M2M Appliances, organised in collaboration with DG CONNECT in May in Brussels, Belgium, to gather together the various stakeholders to discuss future activities.



Transportation

Bringing the Power of ICT to People on the Move

online work programme

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

Intelligent Transport Systems (ITS) offer numerous benefits including increased travel safety, minimised environmental impact (in terms of CO_2 emissions and fuel consumption) and improved traffic management. ITS has applications in road safety, traffic control, fleet and freight management and location-based services, supporting emergency services and providing driver assistance and hazard warning.

Our Intelligent Transport Systems committee (TC ITS) is leading the drive to achieve global standards for Co-operative ITS, unlocking the enormous potential of vehicle-to-vehicle and vehicle-to-roadside communication.

Following the successful introduction of our first release of standards to enable Co-operative ITS, in 2014 we will begin to develop Release 2. Its content will be based on consultation with all relevant parties and will address new features and functionalities to deal with more complex use cases and the interests of additional stakeholders.

Management standards are a crucial consideration for Co-operative ITS and we are addressing cross layer Decentralised Congestion Control (DCC). We are co-ordinating our work with other regions to ensure harmonised development. We are also standardising Local Dynamic Maps.

In addition, we are looking into the spectrum requirements to support Release 2.

Testing and validation of our standards will continue to be a key part of our work in 2014.

Automotive Radar

In the Ultra Wideband (UWB) automotive radar area, we are revising the European Standards (ENs) for ground-based vehicular radar in the 76 - 77 GHz range and high resolution automotive radar in the 77 - 81 GHz range in the light of the European Commission (EC) 'MOSARIM' project on radar interference mitigation and the amended regulatory framework.

We are planning to revise the relevant ENs on the use of automotive radar to include helicopter radar and fixed roadside installations.

Aviation

In 2014, our Aeronautics committee (TC AERO) will produce standards for the multi-frequency Data Link Services system and airport WiMAX (Aeromacs) in response to EC Mandate 524 in support of the Single European Sky Aviation Research (SESAR) European Air Traffic Management (ATM) Master Plan. We will also continue to support the DG MOVE Pilot Common Project to define standards for ATM functionalities to improve the performance of the European Union's ATM system.

We are updating the EN for ground-based VHF Digital Link Mode 2 and developing a new EN for Mode 4 radio transceivers for the aeronautical mobile service. We expect to complete our work on the Advanced Surface Movement Guidance and Control System, adding a new Part 5 on receivers and interrogators for multilateration equipment.

Railways

In 2014 the major task for our Railway Telecommunications committee (TC RT) will be to resolve interference issues with public systems. The creation of user specifications to enable this move will form a significant part of this work.

We are developing standards in support of the EC Directive on the interoperability of the European rail system. Frequency allocation is a key issue and we are looking at the potential for sharing spectrum with ITS applications.

We will continue with the incorporation of Internet Protocol (IP) into the core network and interface specifications. Revision of the Technical Specifications (TSs) on the user-to-user information element for GSM-R (GSM™ on railways) is ongoing, to take account of new developments and to extend usage to the 1 800 MHz range.

We are looking into solutions to problems of co-existence between UHF RFID and Extended GSM-R.

Maritime

We are developing a new EN for man overboard devices using Digital Selective Calling (DSC) and we expect to begin work on an EN on maritime personal homing beacons for people lost at sea.

We are revising the EN on DSC equipment, and adding a new part on the generic access protocol for devices transmitting on Global Maritime Distress and Safety System frequencies using DSC.

Satellite Support

To facilitate the introduction of new equipment for satellite broadband access on board aircraft and vessels in the 17,3 - 20,2 /27,5 - 30 GHz band, we are developing two TSs covering the performance characteristics of new antenna types for satellite systems in geo-synchronous and non-geosynchronous orbit.

Connecting Things

Integrating Objects to Create New Networked Services

online work programme

An 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 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 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

M2M communications will form the foundation for our future world of smart devices, smart appliances, smart homes, smart buildings and smart cities. Our Smart M2M Communications committee (TC SmartM2M) focuses on services and applications, especially aspects of the IoT and smart cities. We are addressing the application-independent 'horizontal' service platform within the 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.

Smart appliances – products such as white goods, heating, ventilation and air conditioning systems, which are able to communicate directly with the utility operator – are part of larger energy management systems and can contribute to the more efficient and productive use of electricity. In 2014 we will continue to address the interface between the service and the application layers in smart appliance communication and we expect to complete our action plan for the creation of the necessary standards. The plan will include a common data model and identification of a communication architecture and the related protocols.

Work will also continue on a new Technical Report (TR) on smart cities, analysing their impact on the IoT environment. We will review activities in Europe, Asia and the US, and analyse the relevance of smart city applications and the underlying network architecture. This report will describe use cases for smart city applications in the context of, but not limited to, IoT communications.

We will continue to support relevant European policy and regulatory requirements. In particular, we are collaborating with the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) in response to European Commission (EC) Mandate 441 on Smart Metering. M/441 seeks the creation of European standards to enable the interoperability of utility meters (for water, gas, electricity, heat) to improve customers' awareness of actual consumption and thus lead to a reduction in their energy usage. We will provide a framework for and define the functionalities of the horizontal service platform to support these applications.

Other ongoing work in response to M/441 includes a TR on the security of smart energy infrastructures, which we expect to complete by mid-2014. This report will review existing security methods provided by standards currently used in the smart energy industry or mandated by regulation, as well as gaps previously identified, and pinpoint areas where we could provide solutions.

We are also helping to develop a horizontal vision in vertical M2M applications in relation to EC Mandate 490 on smart grids, which aims to develop standards for the next generation of electricity networks. This work is also being undertaken in co-operation with CEN and CENELEC.

As one of the founding partners of oneM2M, the global M2M Partnership Project (www.oneM2M.org), ETSI is playing a key role in ensuring the most efficient deployment of M2M communications systems.

The initial goal of oneM2M is to create a common M2M Service Layer, which can be readily embedded within different hardware and software, connecting the numerous devices in the field with M2M application servers worldwide.

With the completion of Technical Specifications (TSs) on the architecture, protocols, security, and management, abstraction and semantics in 2014, oneM2M expects to finalise its initial release of specifications which will provide the first deployable oneM2M solution.

Work on Release 2 has already begun in parallel, with the aim of adding new functionality, particularly by expanding management, abstraction and semantics. A new version of the TR on use cases, extended with additional cases, will be completed in 2014, in preparation for the next phase of work.

We continue to provide staff and a large part of the infrastructure to support M2M.

eHealth

eHealth could improve the quality of health care, reduce medical costs and foster independent living. Successful implementation of eHealth is one of the key objectives of the Digital Agenda for Europe, which has a target of 2020 for the widespread deployment of Telemedicine (e.g. telecare and telemonitoring) services.

Telemedicine requires the ubiquitous digitalisation of all sectors of society. Figures from the World Health Organisation show that still only 8% of patients use Telemedicine. A serious lack of interoperability is impeding the building of an eHealth 'virtual' clinic, and standards are needed to aid the development of new products. Our eHealth project (EP eHEALTH) is looking for practical solutions in a fragmented market.

We have initiated new work on use cases for eHealth and Telemedicine and the Internet Clinic. In particular, we are considering the security of systems and data, the quality of services, interoperability, validation by testing and usability. We also expect to complete a glossary of eHealth terms.

In addition, we have begun work on a new two-part European Standard (EN) on Medical Body Area Network Systems in the 2 483,5 - 2 500 MHz band to improve their compatibility with low power active medical implants, such as cochlear implants, and to ensure adequate spectrum sharing mechanisms.

Smart Body Area Networks

Smart Body Area Networks (BANs) offer enormous potential in areas such as health, wellness, leisure and sport, where small, low power devices can be used to measure and transmit changes in the body. A number of wireless BAN communication technologies have already been implemented, based on existing radio technologies, but there is need for a more specific and dedicated radio technology optimised for BANs. This would need to include features such as ultra low power radio, with a lower complexity Medium Access Control (MAC) protocol for extended autonomy, enhanced robustness in the presence of interference, and interoperability when communicating over heterogeneous networks in the future IoT. Other key issues to be addressed include Quality of Service (QoS) and security.

To support the development of solutions for interoperability over heterogeneous networks, our Smart Body Area Network committee (TC SmartBAN) is preparing a TR on service and application enablers, data representation and transfer formats, identifying the required management and control information. A second TR will describe measurements and modelling of the SmartBAN RF environment. This will highlight potential trouble spots and help in determining strategies for alleviating them. We are also developing two TSs. One will define an ultra low power physical layer for on-body communications between a hub and sensor nodes. The other TS will focus on low complexity MAC and routing requirements for SmartBANs. Existing solutions, not tailored to the requirements of health and medical BANs, tend to be overly complex and consume unnecessarily high levels of power. We are looking at simpler – and also possibly lower cost – alternatives with longer battery life. All of this work is scheduled for completion in 2014, to meet pressing market demand.

We are also drafting a TR which will provide a system description for SmartBANs, including an overview and use cases.

Other new work to be considered in 2014 includes the possible establishment of a SmartBAN eHealth demonstrator.

RFID and Short Range Devices

We are updating our ENs for short range devices (SRDs) to accommodate the anticipated further rapid expansion of the use of SRDs, and developing a Harmonised Standard for network-based SRDs in the 870 - 876 MHz frequency range which will have applications in smart metering, smart grids and smart cities. We will complete a new TR on wireless power transmission systems below 30 MHz to identify technical requirements and possible interference with existing SRDs, and update our EN for SRD radio equipment in the 9 kHz - 25 MHz band accordingly.

We are revising the Harmonised Standard for 2,4 GHz wideband transmission systems to ensure equal access to all users of the spectrum and, in case of congestion, a graceful degradation of service to all.

We have also begun work on a Harmonised Standard for radio equipment to be used in the 5 725 GHz – 5 875 GHz frequency for wireless industrial automation.

Supporting these New Networked Services

Many of the connecting objects in M2M and IoT need only low throughput connectivity. Our Industry Specification Group (ISG) on Low Throughput Networks (LTN) is specifying a new ultra narrowband radio technology for very low data rates allowing for ultra long autonomy devices under strong energy constraints. In 2014 we expect to complete specifications on a dedicated LTN architecture, the definition of use cases and interfaces and protocols.

Our ISG on Surface Mount Technique (SMT) expects to complete its work in 2014 with the publication of the baseline specification for embedded communications modules using SMT. This will simplify the integration of modules from different manufacturers in a wide range of M2M applications.

Wireless Systems

Enabling a Wireless World

online work programme

Radio technology is an integral part of our daily lives. We use it for 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

Following the adoption of the new Radio Equipment Directive (replacing the Radio & Telecommunication Terminal Equipment (R&TTE) Directive), we will embark on a programme of work to ensure its effective implementation, co-operating closely with the European Commission (EC). This will include a revision of the ETSI Guide to producing Harmonised Standards under the R&TTE Directive.

In the radio spectrum area, we will continue to contribute to the work of the Radio Spectrum Policy Group. For example, in 2014, we expect to provide input to EC discussions on the future use of the UHF band.

Spectrum Efficiency

We are supporting EC Mandate 512 by developing new ways to use spectrum resources, including Licensed Shared Access (LSA) and TV White Spaces (TVWS, the areas of spectrum between allocated frequency bands that are unused by the spectrum owner over a given time in a given location).

Reconfigurable Radio Systems (RRS) and LSA

LSA 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 to ease the pressure on network resources. Our RRS committee (TC RRS) will complete a Technical Specification (TS) on the system architecture for the operation of LSA.

We plan to begin work on a new EN on LSA in the 2,3 GHz band.

We are working on solutions for mobile device reconfiguration and related certification, and the exploitation of synergies between systems. For example, we plan to build on our work on use cases for Radio Environment Maps for intra-operator scenarios to develop the system requirements.

In 2014 we expect to produce a TS defining the system requirements for RRS operating in International Mobile Telecommunications (IMT) and GSM™ bands for intra-operator scenarios. Using our existing TSs on radio reconfiguration for mobile devices as a basis, we are developing three new European Standards (ENs) covering requirements, architecture and the Multiradio Interface.

We are also developing the standards necessary to enable the future enforcement of the new Radio Equipment Directive which, among other things, will allow the use of RRS that affect device certification. We expect to publish a TS on the system requirements for dynamic Declaration of Conformity, a crucial factor in the introduction of new features, especially radio applications.

TV White Spaces

In the area of UHF TVWS, we expect to complete two TSs: one on the co-existence architecture for Cognitive Radio Networks in UHF White Space frequency bands, the other on the system requirements. A Technical Report (TR) will present the findings of a feasibility study into co-existence between Cognitive Radio Systems and RF cable networks.

Other work includes two new TSs and an EN related to the use of Geo-location Databases.

Broadband Radio Access Networks

Our Broadband Radio Access Networks committee (TC BRAN) will complete its revision of the Harmonised Standard for Radio Local Area Networks (RLANs) operating in the 5 GHz frequency band. This change will require manufacturers to build equipment in such a way that users are unable to access the settings required to protect other primary users of the spectrum (such as radar). The new version will prevent illegal operation of initially compliant equipment. Other work in 2014 will focus on modifying existing standards and developing new standards for Broadband Wireless Access systems including RLANs.

Developing the Potential of the 5 GHz Band

Our Electromagnetic Compatibility and Radio Spectrum Matters committee (TC ERM) is channelling considerable effort into the development of the 5 GHz band, which is particularly attractive to device manufacturers because parts of it are allocated for European industrial, scientific and medical use. For example, we are developing an EN for radio equipment to be used in industrial automation, we plan to start a new EN on broadband links to ships and we are addressing RLANs and Intelligent Transport Systems (ITS).

In addition, we have ongoing work related to a system description for urban railway systems in the 5,8 GHz band. We are also monitoring closely developments in compatibility and sharing conditions for wireless access systems including RLANs in the bands 5 350 - 5 470 MHz and 5 725 - 5 925 MHz as well as for Direct Air to Ground Communication systems. All these activities could have a significant impact on the future use of the allocated ITS frequencies at 5,8 GHz.

Advanced Mobile Communications Technologies

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

3GPP expects to complete its Release 12 specifications with a view to having all protocols stable by the end of 2014. Release 12 encompasses around 200 new top-level 'Studies' and 'Features'. A number of these build on the IP Multimedia Subsystem (IMS), for example, simplifying the transport and delivery of the Short Message Service without using the mobile station's integrated services digital network number. This will open the way for non-E.164 numbering schemes which are likely to be needed for machine-type communications. 3GPP is also specifying IMS Telepresence to improve the sense of realism in telepresence conference rooms. Such improvements contribute to the architecturally simpler all-IP approach envisaged from the start for LTE™, and hence the phasing out of the circuit-switching technology of previous generations and ultimately a reduction in the cost of deployment of new networks.

Carrier aggregation is expected to account for one third of 3GPP's work in 2014, as the possibility of maximising use of scarce bandwidth by sharing spectrum becomes increasingly attractive.

Discussions about the use of 'LTE-unlicensed' (running data transmission in unlicensed bands) are expected to continue throughout 2014. 3GPP is also studying congestion mitigation, both in the radio access and the core network.

Work has already started on Release 13. Studies include infrastructure sharing and interworking amongst second, third and fourth generation networks, improved facilities for public warning systems using an enhanced Multimedia Broadcast/ Multicast Service and interference cancellation/suppression using Multiple Input Multiple Output (MIMO) antenna configurations.

Whilst most of its radio work is directed at building on the LTE-Advanced technology, 3GPP still puts significant effort into improving third generation Universal Terrestrial Radio Access (UTRA) and High Speed Packet Access (HSPA), and even second generation GSM, often using spin-off from work in later generation radio access technologies. Ideas are emerging as to what fifth generation telecommunications may mean, and this is expected to lead to initial studies in 3GPP.

ETSI continues to support 3GPP through our Mobile Competence Centre (MCC), which also provides the secretariat for the European Friends of 3GPP.

Harmonised Standards for IMT

Our Mobile Standards Group (TC MSG) continues to revise the Harmonised ENs for GSM base stations and repeaters, to align with 3GPP Releases. In particular, in 2014, we plan to complete our work on the requirements for medium range and local area multicarrier base stations, in line with 3GPP Release 11. By the end of 2014, we also expect to have finished most of the seventh release of the multipart Harmonised Standard for base stations, repeaters and user equipment for IMT.

Digital Enhanced Cordless Telecommunications (DECT™)

Our DECT specification is the leading standard around the world for digital cordless telecommunications. We are now developing New Generation DECT and a new application of DECT technology, Ultra Low Energy DECT, designed to meet the needs of the Machine-to-Machine (M2M) market.

Satellite Communications

In response to the EC's Space Mandate (M/496), our Satellite Earth Stations and Systems committee (TC SES) will continue to address location systems.

We are producing four new TRs on, respectively, cognitive radio techniques applied to satellite communications systems, the environmental impact of satellite broadband networks, a hybrid satellite/terrestrial network architecture for high speed broadband access and the use of LTE in satellite networks.

In the satellite navigation area, we are enhancing our specifications on the SL satellite radio interface (Mobile Satellite Service terminals for geostationary systems operating in the L band) and preparing new TSs for GNSS.

Other Wireless Work

At the request of the EC, we have established a joint working group in which TC ERM and the European Committee for Electrotechnical Standardisation (CENELEC) will work together to analyse co-existence issues stemming from the Digital Dividend decisions and their impact on Harmonised Standards. This includes co-existence between broadcast receivers and new LTE mobile phones operating in the 800 MHz band, as well as improving spectrum sharing between LTE and SRDs. We plan to publish a Technical Report on the subject.

Our Access, Terminals, Transmission and Multiplexing committee (TC ATTM) is addressing the technical and deployment aspects for 'small-cells backhauling' in LTE networks through various proposed frequency bands and technologies (Line-of-Sight and Non-Line-of-Sight). A key TR on this subject is being drafted. Other activities are expected to consolidate the technical background in preparation for defining energy efficiency metrics and test methods for point-to-point radio systems commonly deployed in mobile backhaul networks. We are also addressing MIMO techniques applied to point-to-point radio systems.

Our Industry Specification Group (ISG) on the Open Radio Equipment Interface (ISG ORI) has begun work on its fourth release of specifications for an interface between remote radio heads and base band units of mobile base stations.

In the area of measurement uncertainty, we expect to complete a new TR on the usage and effect of mathematical operations on Relative Measurement Uncertainties. One practical application of this work will be 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.

Work continues on a new EN to increase the reliability of wireless alarms with low duty cycles.

Better Living with ICT

Technologies for a Better Life

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

Many of the standards and specifications produced by our Environmental Engineering committee (TC EE) are aimed at improving the energy efficiency and the environmental impact of ICT equipment. We are also contributing to a number of global initiatives launched with these aims. In our standardisation, we are working to define the best environmental practices for telecommunication equipment and infrastructures in different situations. Activities planned for 2014 include continuing support of European Commission (EC) Mandate 462 on energy efficiency in fixed and mobile information and communication networks, and the implementation of the regulations related to the EC Directive on Energy-related Products such as the Regulation on network standby mode power consumption.

In 2014 we expect to publish revised versions of seven of our European Standards (ENs) on the climatic and mechanical requirements for telecommunication equipment. These standards address the environmental classifications in various installation locations and the test methods to verify compatibility with the different types of location in which the equipment is intended for use. The test methodologies will be aligned with International Electrotechnical Commission (IEC) standards and with North American specifications.

Work will continue on a multipart ETSI Standard (ES) on the requirements for the control and monitoring of power and cooling systems used in telecommunication and data infrastructures, with the aim of monitoring and reducing power consumption. By the end of 2014, we expect to have completed new parts on battery systems and telecom/ICT equipment, bringing the number of parts produced so far to twelve.

We will complete new guidelines on power supplies for customers' ICT devices which use renewable energy sources.

We plan to publish an ES in support of M/462, defining a methodology to determine energy efficiency and the key performance indicators for an entire telecommunication network. This work is being carried out in collaboration with the Third Generation Partnership Project (3GPP™) and Study Group 5/Working Party 3 (SG5/WP3) of the Telecommunications Standardisation sector of the International Telecommunication Union (ITU). We will also revise the standards for the energy efficiency of access equipment to include the measurement methods of the power consumption of the latest technology equipment.

Working in collaboration with SG5/WP3, we expect to complete a revision of the ES for the Life Cycle Assessment (LCA) of ICT products, networks and services, with the objective of producing a common ETSI-ITU methodology. This methodology will allow manufacturers and operators to determine the environmental impact of a telecommunication product from the raw material or components until the end of its life, as well as to measure the environmental impact of a complete telecommunication network or service. We are addressing the weaknesses identified by the EC pilot project on the practical application of the various LCA methodologies for ICT.

We expect to complete two new ENs on the engineering requirements for racks and sub-racks used in telecommunications.

We will continue to co-operate with various European research projects on energy efficiency including the 5GrEEn project which addresses 5G mobile networks.

During 2014 our Access, Terminals, Transmission and Multiplexing committee (TC ATTM) expects to achieve a significant goal with the completion of a series of standards on Global Key Performance Indicators (KPIs) to monitor the energy management of deployed broadband. This work is being undertaken in close co-operation with our Industry Specification Group on Operational energy Efficiency for Users (ISG OEU) in order to take into account users' operational needs. When completed, these KPIs 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.

ISG OEU plans to produce reference specifications on sustainable data centres and ICT sites and the sustainable access network, as well as a position paper on the global KPIs of sustainable digital multiservice areas. The group is also addressing the energy consumption of access network equipment and servers and the efficiency of the general engineering of networks and sites.

Although our environmental activities are concentrated in a number of specific committees, our environmental policy affects all aspects of our work. For example, before work is started on any new standard or specification at ETSI, environmental aspects must be considered and documented by the technical committee concerned.

Access for All

In 2014 our Human Factors committee (TC HF) will concentrate on eInclusion and 'Design for All', with a focus on services rather than hardware.

TC HF has a long and internationally respected record of championing Design for All, ensuring that developments in technology are accessible to all in our society, including the elderly, the young and those with disabilities. This approach helps give everyone the same access to goods and services. In addition, by widening access, European industry expands its market and thus improves its competitive position globally.

These issues are likely to become more prominent as the EC seeks to provide a regulatory framework for Design for All, making its consideration mandatory for manufacturers and service providers. In ETSI we will continue to ensure that Design for All is taken into account in the creation of new standards, in line with EC Mandate 473.

In 2014 we expect to produce standards in a number of key areas identified by the EC, including mobile payment systems, user profiles and the protection of user data in mobile and distributed systems, and support for users of services and devices who have cognitive impairments.

Specifically we are participating in a pre-study into the human factors aspects of the services in smart, accessible, sustainable cities and communities.

We have also embarked on a new Technical Report (TR) which will examine the work required and propose a structure to address character repertoires beyond the 12-key keypad (for use on soft keypads for smartphones and other ICT devices).

The main focus of activity in our User Group will be its continued collaboration with a French association for visually handicapped people, the Association Valentin Haüy, with the aim of identifying the specific needs of visually impaired people in terms of standardisation. We expect to present the results in a TR before the end of 2014.

We will also complete a revision of our ETSI Guide (EG) on the quality of telecommunication services. This will take account of developments in Quality of Service (QoS) assessment methodology and new mobile Internet services arising from the growth in the use of smartphones.

Media Quality and the User Experience

Our Speech and Multimedia Transmission Quality committee (TC STQ) is working on a long-term project on terminals using super-wideband (bandwidth up to 14 kHz) and full-band terminals for conversational services for teleconferences and audio-visual applications. In 2014 we will update our two Technical Specifications (TSs) on transmission requirements, and on hands-free terminals and teleconferencing systems. We are also developing a new TS on the transmission requirements for super-wideband handheld (handset and hands-free) terminals, to optimise the end-to-end quality perceived by users.

We will continue to update the series of ESs which define the transmission requirements for narrowband Voice over Internet Protocol (VoIP) terminals from a QoS perspective, as perceived by the user, to bring them into line with the latest international standards.

We regularly revise our multipart TS on the QoS aspects of popular mobile services to reflect the latest developments in GSM™, 3G and LTE™. In 2014 we will address the definition of QoS parameters and their computation. We are also revising our ES on background noise simulation techniques and the background noise database.

Work continues on a number of new projects initiated in 2013 including a TR which will provide an overview of existing standards on the maximum levels of acoustic output from headphone equipment used by call centre agents, and the test methodology for measuring these levels.

We are working on a TR on the handling of measurement uncertainties in electro-acoustics.

We are starting work on a new TS on reference benchmarking methods and background traffic load profiles, to ensure proper comparability of test results, and a TS on a sound field reproduction method for terminal testing.

To improve listening quality for users with hearing difficulties, we are developing a TS on transmission quality and speech intelligibility for people with hearing impairments.

We are preparing a TS on the possibility of using emotion detectors to improve the test sentences used for subjective testing.

Safety

Our Safety committee (TC Safety) monitors developments in electromagnetic fields (EMF), electrical safety and safety in cable television systems, as these impact the interests of our members. In 2014 we will work with the European Committee for Electrotechnical Standardisation (CENELEC), reviewing current standards in the light of changes brought about by the revised EC Directive on the protection of workers from the risks related to EMF at work.

Security

Standards for Secure, Reliable Communications

online work programme

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

Our Smart Card Platform committee (TC SCP) is responsible for the specification of the UICC, a smart card mainly (but not only) targeted at telecoms and used in various environments to secure service-related credentials. The UICC's most notable use is as a platform for the Third Generation Partnership Project (3GPP™) (U)SIM application. It is also a secure element of choice for mobile contactless services such as ticketing or payment.

In 2014 we will expand the requirements specification for the embedded UICC, addressing profile interoperability and the management of credentials as well as the policy control function and the related rules.

As part of the technical realisation of embedded UICCs, we are defining the architecture of the eUICC and its relation to the remote profile provisioning and management systems, as well as its physical, logical and electrical characteristics and the processes and security mechanisms required for the safe and effective management of subscription data. The aim is to complete the first version of the technical specification by the end of 2014.

We will continue to investigate test environment integrity and test case execution.

Work is ongoing on UICC access optimisation to provide mechanisms to support a better user experience when the UICC is used as a platform for several applications, in particular for Near Field Communication (NFC) applications. New uses of the UICC in contactless environments will require a number of enhancements to the respective UICC specifications. The UICC may, however, not be the only secure element hosting NFC applications in a mobile device using the Host Controller Interface (HCI) as an interface to the NFC controller. In order to increase interoperability and avoid proprietary implementations, there is a need to standardise interaction between the NFC controller, the UICC and these other secure elements, particularly the routing of data to a specific application (in any one of the secure elements) without user interaction. We are therefore working with GlobalPlatform and the NFC Forum and expect this issue to be addressed in various specifications to be released in 2014.

Routine work includes the ongoing maintenance of our specifications and the updating of our test specifications to cover new features and functions.

Electronic Signatures

In 2014, our Electronic Signatures and Infrastructures committee (TC ESI) will continue to work on the second phase of the European Commission (EC) Mandate on Electronic Signature Standardisation (M/460). The goal is to achieve mutual recognition and the cross-border interoperability of electronic signatures throughout Europe, by providing a rationalised framework for electronic signature standardisation. This work will occupy us till the end of 2015 and will be undertaken in collaboration with the European Committee for Standardisation (CEN). Together we will update the Technical Report (TR) which contains the rationalised standardisation framework.

Other work in 2014 includes the development of business guidance documents on the use of electronic signature standards and general requirements on policy and conformity assessment for signature creation and validation. We will also align the specifications for signature creation and validation and trust service providers supporting electronic signatures with the rationalised framework, addressing any gaps identified in the work plan and completing the necessary European Standards (ENs). In the area of trust application service providers, we will study the standardisation requirements for electronic delivery using electronic signatures. We will also develop a set of specifications and tools to test compliance and interoperability, particularly for signature creation and verification. We plan to investigate the possible internationalisation of our electronic signature standards.

We will study what standards might be needed in the light of the new EU regulation for electronic ID and trust services.

Lawful Interception and Data Retention

In 2014 our Lawful Interception committee (TC LI) will continue to update its Lawful Interception (LI) and Data Retention suite of deliverables by adding new services as necessary. This includes the maintenance of our seven-part Technical Specification (TS) on the handover interface and service-specific details for Internet Protocol (IP) delivery.

We plan to finalise a new TS on the dynamic triggering of interception and to complete two TRs on LI and Data Retention in Cloud and virtual services. We will complete a specification to define a specific warrant electronic interface between two systems for the exchange of information relating to the establishment and management of LI. And we are preparing a new specification for an internal network interface covering connections between LI systems and several network elements from different vendors.

The security of LI and Data Retention systems is a fundamental and ever more challenging requirement as networks become increasingly IP service-centric, globally distributed and, frequently, software-based. We are therefore developing a new security specification, paying particular attention to Network Functions Virtualisation (NFV) which is a key element in this area.

Other possible topics include the media stream handover interface for encrypted data, with the aim of creating a tool to decrypt intercepted encrypted communications.

Security Algorithms

Our Security Algorithms Group of Experts (SAGE) develops cryptographic algorithms to support our standardisation activities. The group's latest 3G algorithm, TUAK, offers an alternative to Milenage in case that algorithm is ever compromised. To build confidence in TUAK, an independent evaluation of its security and performance is being conducted by universities. We will publish the findings as a TR.

Cyber Security

With increasing European and worldwide initiatives and growing legislation, standardisation of Cyber Security has emerged as a new key topic. Our recently created Cyber Security committee (TC CYBER) will begin work in 2014. It will address the security of infrastructures, devices, services and protocols, as well as security tools and techniques. In addition to creating standards, it will provide advice and guidance on security and operational security requirements to users, manufacturers and network and infrastructure operators.

Other Aspects of Security

Security is a key element in standardisation and affects most areas of our work. In particular, in 2014 we expect to complete a major study into the possible replacement of the Terrestrial Trunked Radio (TETRA) air interface encryption algorithm, and we are producing new security mechanisms for New Generation Digital Enhanced Cordless Telecommunications (DECT™). We address the security of several specific application areas related to GSM™ technology, notably GSM on-board aircraft, GSM for automatic emergency calls from vehicles, GSM for railway telecommunications and geo-mobile radio interfaces for satellite access to the core network of GSM. We are developing a TR on security-related use cases and threats in Reconfigurable Radio Systems (RRS). Work in the broadcasting area includes the specification of content scrambling algorithms for DVB-IPTV services using MPEG2 transport streams and the security of media content distribution.

Security in New Technologies

Standards are central to the adoption of new security technologies and ETSI is leading the way in developing specifications for Quantum Key Distribution (QKD). Our QKD Industry Specification Group (ISG) is focusing on the security of implementations of QKD systems and how they can be described and characterised for deployment. Specifications in preparation include the characterisation of optical components for use in QKD systems and protection against Trojan horse attacks as well as standardised descriptions of the important characteristics of QKD devices and the required communication channels.

We plan to finish our work on Next Generation Network (NGN) security and publish a new version of the Threat and Vulnerability Risk Assessment (TVRA) methodology, taking into account indicators defined by our ISG on Information Security Indicators (ISG ISI). The possible application of the TVRA methodology to NFV will be investigated.

ISG ISI is developing Group Specifications (GSs) covering all aspects of security event detection. In 2014, it plans to publish the fifth in a series describing a set of Security Key Performance Indicators to evaluate the performance and maturity of the detection tools and processes used for security assurance. The sixth and final specification, on guidelines for security event testing, is scheduled for completion in 2015.

We are also working on the security aspects of Machine-to-Machine communications and the complexity of emerging future networks which have greater autonomy and virtualisation, and change the ways in which services are both used and offered.

Content Delivery

Facilitating Content Consumption across Different Business Areas

online work programme

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 customers' buy-in remains below expectations. We are addressing the urgent need to align these diverse specifications and to harmonise solutions, for the benefit of both the industry and the consumer.

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.

The JTC's focus is digital broadcasting. Television is a rapidly developing technology and TV standards are expected to undergo significant changes in the near future. Radio is also evolving, with hybrid radio being a particular focus. As a result, several new activities have been identified for 2014. For example, the committee expects to be particularly active in Ultra High-Definition TV (UHDTV) and related areas, where it will define the means by which UHDTV content will be transmitted over broadcast channels.

Ongoing work includes the updating of the popular Digital Video Broadcasting (DVB) service specifications, describing the necessary metadata for TV broadcast. The existing DVB IPTV standards will also be revised to take account of the transition to IPv6.

Work will continue on the Technical Specification (TS) on Common Interface (CI) Plus. Following the release of CI Plus v1.4, in 2014 the JTC expects to complete a second generation interface (CI Plus v2.0) which will be based on the USB interface.

Other work for 2014 includes a new European Standard (EN) on DVB Next Generation Handheld (DVB-NGH), which will specify a highly advanced air interface for mobile terrestrial broadcasting. The JTC also expects to publish a revised version of the DVB Return Channel Satellite 2 (RCS2) multipart specification, which defines the world's only standardised interactive satellite system. The current DVB-S2 specification will become a multipart document. The new part 2 will include extensions to the original DVB-S2 specification (DVB-S2X), which will bring improved spectral efficiency to professional satellite applications as well as new operational modes such as channel bonding. Part 1 will be the original specification, updated and amended to take account of the division.

The JTC will revise its popular TS on hybrid broadcast-broadband. Work has started on a new TS on look-up for radio services for RadioDNS, the open technology that lets broadcast radio and the Internet work together, enhancing the listener experience. The specifications for Electronic Programme Guide (EPG) and SlideShow will be updated to include IP delivery.

In the audio area, JTC Broadcast expects to deliver a number of specifications including a revision of the TS on Digital Audio Compression (AC-3, Enhanced AC-3), as well as new specifications for Digital Audio Compression (AC-4) and Multi-Dimensional Audio.

Programme Making and Special Events (PMSE)

The PMSE market urgently needs access to new spectrum resources to satisfy demand both now and in the future. 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. In 2014 we expect to complete a new Technical Report (TR) outlining the results of tests on protocols for spectrum access and sound quality control systems for PMSE applications using cognitive interference mitigation techniques. We also plan to update our multipart EN on wireless microphones in the 25 MHz - 3 GHz frequency range to take account of the latest developments.

Content Delivery and Protection

In 2014 our End-to-End Network Architectures Project (EP E2NA) expects to complete a TR which will analyse solutions for interoperable multimedia customer premises equipment for Conditional Access (CA)/Digital Rights Management (DRM). This will be suitable for multimedia platforms (broadcast, broadband or hybrid) and for the content and services delivered over them.

Our new Industry Specification Group on Embedded Common Interface for exchangeable CA/DRM solutions (ISG ECI) is working on content protection, specifically a software-embedded Common Interface for CA- and DRM-solutions. Work has started on the first four parts of a multipart specification, addressing the architecture, the virtual machine, security and trust.

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. We provide a comprehensive set of standards for networks that meet today's – and tomorrow's – needs.

Cloud

Following the success of the Cloud Standards Co-ordination (CSC) initiative and the appreciative response to our final report, in 2014 we will be discussing within the CSC community and with DG CONNECT ways in which we can further develop this work.

Network Technologies

In 2014, our Network Technologies committee (TC NTECH) will complete Technical Reports (TRs) on the use of the Domain Name System protocol and implementation of ENUM-based mechanisms to enable number portability when using Voice over Internet Protocol (VoIP) technology. We will complete the specifications of the protocols required on the interfaces of the Content Delivery Network architecture.

In the area of future network technologies, we will transform the two Group Specifications published by our Industry Specification Group (ISG) on Autonomic network engineering for the self-managing Future Internet (AFI) into ETSI Technical Specifications (TSs). One of these will describe scenarios, use cases and requirements for autonomic management and the other will outline the Generic Autonomic Network Architecture (GANA) reference model. We will work on the application of the GANA model onto concrete use cases (such as the Third Generation Partnership Project (3GPP™) Evolved Packet Core) and on the evolution of this reference model to take into account emerging technologies such as Software-Defined Networking. Other work includes design guidelines and testability and the establishment of a framework for organising Proof of Concept events to demonstrate the viability of autonomic management.

Cable Networks

We are working in support of European Commission Mandate 462 on energy efficiency in information and communication networks. In 2014 our Integrated Broadband Cable Telecommunication Networks committee (TC CABLE) expects to complete a new ETSI Standard (ES) which will define Global Key Performance Indicators (KPIs) for Hybrid Fibre Coaxial (HFC) access networks and describe how they should be applied, and a TR on energy efficiency and KPIs for cable access networks.

We are also standardising next generation broadband cable technologies, addressing the increasing demand on data rates and the sophistication of the service portfolio including the transition to IPv6. We will publish a new ES on the Converged Cable Access Platform Operational Support System Interface (CCAP-OSSI), which will define the management interface into key HFC access platforms for high speed data services and narrowcast digital video. We will complete a TS on measurement methods for the network performance of broadband data services.

We expect to publish all parts of a series of multipart TSs which will define 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.

Other work includes new TSs for the Data over Cable Service Interface Specification (DOCSIS) 3.1 to support the next generation of broadband cable modem technology. This will enable cable broadband customers to achieve data rates up to 10 Gbit/s downstream and 1 Gbit/s upstream. The first three TSs are expected to be published in 2014 and work will begin on two more.

Network Functions Virtualisation (NFV)

Our ISG on NFV has drawn up a work programme to develop a new approach to the technologies and operations in telecommunications networks. We are working on 15 specifications and plan to hold one or more Proof of Concept events in 2014 in which participants will demonstrate and test the early implementation of NFV concepts under real conditions.

End-to-end Network Services

Recognising that communication networks may need to implement a wide range of technologies and related standards to provide a complete service to users, our End-to-End Network Architectures Project (EP E2NA) brings together all the relevant ETSI players to develop an end-to-end system view of Information and Communications Technologies (ICT) networks.

We are focusing particularly on the fixed segment and interconnection to other networks. Initial work includes the compilation of an inventory of relevant use cases, followed by the production of technical requirements based on the inventory. For example, we are conducting a review of standardisation of the location of transcoders for voice and video communications inside and across networks, and plan to publish a TR containing guidance to service providers and suggesting additions to existing standards to fill any gaps identified.

Home and Office

Connecting Devices in the Home and Office

online work programme

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 around the world for digital cordless telecommunications. We expect to publish a new release of the DECT base standard before the end of 2014.

We will also continue to develop New Generation DECT, which is introducing advanced features such as high quality wideband (7 kHz) and super-wideband (14 kHz) voice, support of Internet telephony and broadband data connections. New Generation DECT also includes additional security features (authentication and encryption), with new algorithms based on the Advanced Encryption Standard (AES). In this regard we plan to finalise a revision of part 4 of the New Generation DECT specification, addressing Software Update Over The Air (SUOTA) (to include feedback from implementation), and to complete the corresponding test specification.

In addition, we are developing a new application of DECT targeted at Machine-to-Machine (M2M) applications and the Internet of Things, including sensors, alarms, utility meters and industrial automation. Ultra Low Energy (ULE) DECT boasts low power consumption, good QoS (a unique feature compared with other low power wireless standards) and wider coverage than competing technologies.

The first phase of development of DECT ULE is for home automation. Following the publication of a Technical Specification (TS) for ULE applications, we expect to complete a second specification, covering more features (such as SUOTA and repeaters) by mid-2014. Eventually, application of the technology will extend to industrial automation. The DECT base standard currently under revision will include the necessary new protocol elements and procedures.

We are also working on regional variants of the DECT ULE standard for worldwide use, in particular so that it can be adapted to any frequency plan proposed in America, Japan or other countries outside Europe. The main task will be to find a common carrier numbering scheme for all countries.

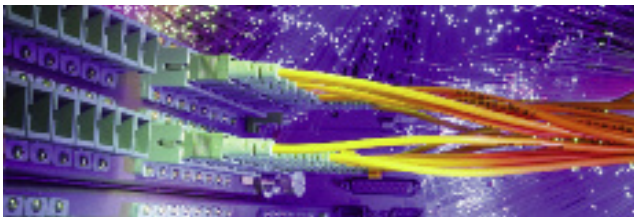
Market acceptance of DECT ULE technology depends very much on the interoperability of different implementations. So, after finishing the test specification for the DECT ULE transport layer, we will begin to develop the test case libraries and update the test framework and profile test specification for the home automation network.

We are also revising the two DECT Harmonised Standards in order to take into account both DECT ULE and the decision of the Electronic Radiocommunications Committee (ERC) on the use of antenna gain parameters.

In 2013 we produced a System Reference Document on the operation of DECT in the 1 900 – 1 920 MHz band. If accepted, this would provide additional capacity for various M2M applications, smart appliances and streaming audio. We would then update the base standard accordingly.

Home and Office Interconnection

Our Access, Terminals, Transmission and Multiplexing committee (TC ATTM) is developing specifications for optical fibre systems to support the global deployment of fibre on customer premises and to enable the development of equipment required by building and 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 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.

Other topics in this field include European requirements and applications for FTTdp and Very high bit rate Digital Subscriber Line 2 (VDSL2).

Powerline Communications

Our Powerline Telecommunications committee (TC PLT) is focusing on the transportation of video over powerlines to enable the advent of 4K video streaming and video on demand services for Ultra High-Definition Television (UHDTV) and new advances in technology such as High Efficiency Video Coding (HEVC).

We expect to complete a Technical Report (TR) on the impact of HEVC and the H.265 codec on the transmission of high definition video over powerline networks. This report represents the first phase of work towards the development of the standards necessary to enable the provision of very high rate services over powerlines. We will then look at the optimisation of video transmission over powerlines.

We plan to complete a TR on the transmission of very high rate video using a Powerline High-Definition Multimedia Interface for short range links. One use of this technology would be to simplify the installation of home cinema.

In addition, we expect to publish a new TS on the co-existence of VDSL2 and PLT modems on customer premises using Dynamic Spectral Management (DSM), which has already proved useful for the mitigation of interference caused by networks co-existing in the same building.

We will complete our work on the powerline communication requirements for smart meters, in response to European Commission Mandate 441.

Interoperability

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

online work programme

Interoperability is driven by market demand. It gives users much greater choice of products, and allows manufacturers to benefit from the economies of scale of a wider market.

A Unique Approach to Interoperability

Our Centre for Testing and Interoperability (CTI) provides hands-on expertise in standards validation to support our standardisation activities through the organisation of our highly regarded Plugtests™ interoperability events, the development of test specifications, the application of protocol specification techniques and the use of 'best practice' methodologies. ETSI is unique among Standards Development Organisations in having pioneered the combined use of these practices. As a result we deliver interoperable standards of consistently high quality.

Plugtests Events

In 2014 the CTI expects to focus particularly on technologies related to Machine-to-Machine (M2M) communications and the Internet of Things (IoT), including Constrained Application Protocol and IPv6 over low power Wireless Personal Area Networks, Small Cell technologies, the ETSI M2M architecture, semantic interoperability, home appliances and Vehicle2Grid.

We will also be addressing Digital Cinema, Digital Private Mobile Radio (PMR) for maritime use, Network Functions Virtualisation and eCall, the European in-vehicle emergency call service. Our programme for 2014 already includes the Mezzanine Film Format Plugfest and the Small Cell LTE™ Plugfest 2, both in Paris, and SIPit in Nice, France.

Following the success of our testing of Electronic Signatures in support of European Commission (EC) Mandate 460, we have been awarded an EC grant to carry out eight more remote Electronic Signatures and Infrastructures events over the next two years.

Tool support and test infrastructure for interoperability events will also be enhanced.

Test Specifications

Our Core Network and Interoperability Testing committee (TC INT) assists the industry with the deployment of the Internet Protocol (IP) Multimedia Subsystem (IMS) by producing high quality test specifications. In 2014, we plan to develop conformance test specifications for the Diameter protocol, for use in roaming.

We will continue to develop LTE test specifications for terminal certification and conformance test specifications for LTE. Conformance testing during the development phase of Evolved Packet Core (EPC) and IMS products will significantly reduce the time-to-market of the LTE architecture, as protocol-conformant products will be less likely to cause interoperability problems with the products of other vendors.

We will also consolidate the Intelligent Transport Systems (ITS) conformance and interoperability validation platform and develop conformance test specifications for Digital Enhanced Cordless Telecommunications (DECT™).

Methods for Testing and Specification

Our Methods for Testing and Specification 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. In this way its work plays a significant role in the market success of numerous technologies.

The main focus in 2014 will be the Test Description Language (TDL), 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. TDL will fill the gap between the simple expression of what needs to be tested (the test purposes described in prose or Test Purpose Language) and the complex coding of the executable tests in Testing and Test Control Notation version 3 (TTCN-3). TDL exploits the benefits of model-based software engineering, accelerating test development without sacrificing quality. In effect, TDL represents the next generation of testing languages.

With encouragement from industry, we are driving the introduction of TDL and we expect to achieve a significant milestone in 2014 with the publication of an ETSI Standard (ES) defining the language. Phase 2 of TDL development will then continue, adding the language functionality to integrate TDL test descriptions into test automation frameworks. We also plan to produce a standardised concrete graphical syntax for end-users and a TDL exchange format to foster tool interoperability.

At the same time, we will continue to maintain TTCN-3, and to upgrade the conformance test suite for the TTCN-3 core language, to take account of the latest evolution of the language and to extend the coverage of the suite.

In the security area, we are drafting a Technical Specification (TS) on security testing terminology and an ETSI Guide (EG) on the security assurance lifecycle.

Following the outstanding success of the first User Conference on Advanced Automated Testing (UCAAT) in 2013, TC MTS and the CTI will together organise the second UCAAT, in Munich, Germany, in September 2014.

Public Safety

Mission-Critical Communications to Rely on

online work programme

Communication is a key factor in an emergency situation, whether it is a small incident such as a man overboard or a major natural disaster.

Terrestrial Trunked Radio (TETRA)

Broadband offers significant potential for critical communications, providing high bandwidth services such as streaming video, automatic number plate recognition, location services and database access and allowing a more integrated approach to Public Protection and Disaster Relief (PPDR) command and control systems. Our TETRA and Critical Communications Evolution committee (TC TCCE) is addressing PPDR and other mission-critical services, focusing particularly on standardising the interfaces to broadband systems.

We have begun work on a Technical Report (TR) describing the architecture for the mobile to network interface of a critical communications application operating over a broadband IP interface. In parallel we are developing a Technical Specification (TS) for the interface and we have started to build a reference model for the architecture and the various interfaces which together will provide a broadband critical communications solution. We have also embarked on a study into the related security mechanisms.

The possible development of LTE™ to accommodate critical communications users is being pursued and we are therefore working closely with the Third Generation Partnership Project (3GPP™) on the standardisation of group call system enablers, off-network proximity services and security services.

In addition we continue to update the TETRA standards to meet the developing needs of users. During 2014 we will revise the TETRA base standard in line with the TS we produced in 2013 to extend the frequency range of TETRA down to 138 MHz. We are making improvements to the TETRA Enhanced Data Service (TEDS) including the addition of voice services. And we plan to publish a User Requirement Specification for TETRA Direct Mode Operation (DMO).

Emergency Calling

Our Emergency Telecommunications committee (SC EMTEL) is addressing 'Total Conversation', which uses a combination of video, real-time text and audio to give people with hearing or speaking disabilities the same level of access to emergency services as able-bodied people, in accordance with the Citizens' Rights Directive. We are drafting a TR which will provide implementation guidelines for Total Conversation emergency calls. The results of this work will also be input to the Internet Engineering Task Force (IETF) and 3GPP to ensure that Total Conversation emergency calls are supported in their specifications.

We expect to complete a TR aimed at enabling the transportation of GPS co-ordinates, as well as the cell ID, from smartphones to the public safety answering point (PSAP). This would allow a caller to be pinpointed to within a few metres, rather than kilometres.

3GPP continues to improve public warning systems using an enhanced Multimedia Broadcast/Multicast Service (MBMS). In ETSI we are revising the TS for EU-Alert, the European Public Warning System. The new version will include rich media alerts using eMBMS (offered over LTE), which could be used, for example, to broadcast pictures of missing children to smartphones. By co-ordinating with similar activities in the US, we also hope to facilitate roaming between the US and Europe.

New work under discussion for 2014 includes collaboration with the Alert4all project which is funded by the European Commission (EC) and aims to improve the effectiveness of pan-European alert and communications systems using a variety of communications technologies.

In support of EC Mandate 493 on the Location Enhanced Emergency Call Service, we expect to publish an ETSI Standard (ES) on the functional architecture for emergency caller location determination and transport in Europe. The architecture is intended to cover a situation, for example, where a Voice over Internet Protocol (VoIP) service provider and one or several network operators need to co-operate to determine the location of the caller. Stage 3 of the work in support of M/493 will continue in 2014. We also plan to specify the protocols required on the interfaces.

We support the EC eSafety initiative, eCall, the in-vehicle emergency call service which automatically relays 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 Universal Mobile Telecommunications System (UMTS™) networks; in 2014, we will finalise a TR to add this emergency call facility in LTE. We will also create two new TSs providing test specifications for eCall high level application protocols, one for conformance tests and the other for interoperability tests.

Other Aspects of Public Safety Standardisation

We will continue to address Multiple Alert Message Encapsulation over Satellite and reference scenarios for satellite-based emergency communications. We plan to complete a new TS on categories of devices to provide Emergency Communication Cell over Satellite, which will guide those involved in procurement.

We will complete a feasibility study into synergies between PPDR/civil Private Mobile Radio (PMR), military and commercial domains, in response to the Reconfigurable Radio Systems Mandate (M/512).

Other work includes acoustic safety limits, standards for maritime safety equipment and various mechanisms for road safety through the use of Intelligent Transport Systems.

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- Autonomic Systems
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- Broadband Wireless Access
- Broadcasting
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- Cloud Technology
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- Testing
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