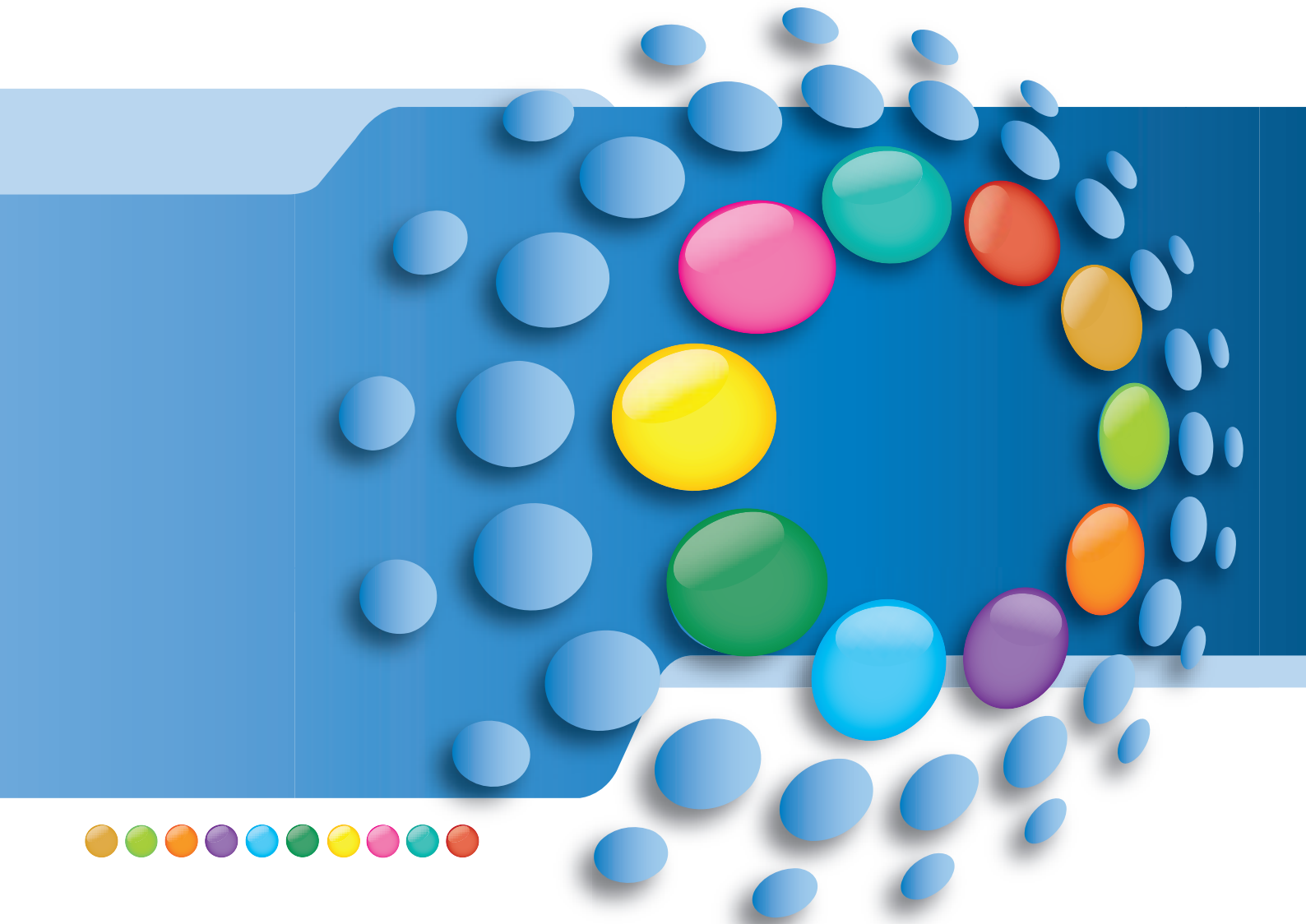ETSI

a connected world

annual report

april 20 12

ETSI is a producer of globally applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and Internet technologies. The high quality of its work and its open approach to standardisation has seen its reach extend from European roots to circle the world.

ETSI is officially recognised by the European Union as a European Standards Organisation. Its activities are driven by time to market and its 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. It is 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. It makes its expertise in interoperability available to its Members and customers through a range of services for growing ideas and enabling technology.

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 ICT. This new approach will facilitate 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.

Security

Home & Office

Public Safety

Better Living with ICT

Interoperability

Content Delivery

Connecting Things

Fixed Networks

Transportation

Wireless Systems

Annual Report 2011 (published April 2012)

Telecommunications and IT are converging. The growing digital economy requires more cross-sector standards. Information and Communications Technologies (ICT) are also emerging as an enabler of other technologies. In response, the range of our work has been steadily widening and we have intensified activities on topics such as Machine-to-Machine (M2M) communications and Reconfigurable Radio Systems.

In recent years, we have been working closely with the European Commission (EC) as they seek to modernise the European Standardisation System. The new system, which is currently being reviewed in the European Parliament and Council, reconfirms the importance of standards in an even wider variety of areas than today, retains the basic structure of the system and adds new elements. Prompted by the convergence of technologies and anticipating this new system, we have already started to work more closely both with CEN/CENELEC and with other fora and consortia.

These changes are among the factors which led us in 2011 to define our Long Term Strategy for the development of ETSI. This will help us to focus on our key role in a changing ICT landscape. The only constant in our industry is change, and ETSI will continue to respond to new developments to meet the evolving needs of its Members.

Dirk Weiler
Chairman of the General Assembly

A new ETSI Board was elected in November 2011, comprising 28 delegates from Europe, China and North America plus, for the first time, members from Japan and South Korea. ETSI may have been established originally to make standards for Europe, but the global application of our work now is obvious to all.

Highlights of 2011 include the finalisation of Release 1 of the M2M specifications. Discussions were under way at the end of the year about the establishment of a consolidated, global M2M initiative in which ETSI is expected to play a major part.

The Third Generation Partnership Project (3GPP™), another global initiative of which we are a founding partner, also recorded a major achievement with the freezing of its Release 10 of specifications for mobile communications. This is the first release to fully meet the 'IMT-Advanced' requirements; in effect, it represents the true introduction of 4th Generation mobile communications.

In 2011 we also developed standards for energy efficiency in ICT equipment and networks, we are working in support of various EC Mandates including smart metering and smart grids, and we produced the electronic signatures standards which will enable secure, cross-border eCommerce. Looking through the pages of this Annual Report, I am delighted to see that, in 2011, ETSI made a real difference to the world we live in.

Jonas Sundborg
Chairman of the Board

I took up office as Director-General of ETSI half way through 2011 and was impressed by numerous aspects of the Institute on which we can build for the future. Historically, we are known for world-leading standards in, for example, mobile telecommunications, cordless telecommunications, telecoms security, smart cards, human factors, and speech and media quality. ETSI has also pioneered the use of validation and testing to deliver interoperability.

But in addition we are now exploring the new technologies which are evolving in our increasingly connected world. To position standardisation at the birth of these technologies, we have strengthened our links with R&D projects and introduced Industry Specification Groups (ISGs) to accelerate standards production in important new areas.

To reflect the way that technologies are coming together, in 2011 we implemented the 'cluster' concept as a way of organising our activities, based on business relevance or application domain rather than on our technical committees. These clusters are introduced on the following pages. Each cluster represents a major component of a global ICT architecture; each contains key ETSI activities, from traditional fixed networks, advanced wireless systems and ICT security to M2M, content delivery and 'greener' living – and there are significant achievements on every page.

Luis Jorge Romero
Director-General

ETSI in a Connected World – an Overview of 2011

Connecting Things

Many of the technologies on which we focussed in 2011 are directly related to the emergence of a connected world brought about by the convergence of technologies. Through the Internet, billions of machines and objects can be connected into what has become known as the 'Internet of Things' (IoT). ETSI is standardising key IoT technologies including Machine-to-Machine (M2M) service platforms.

A major highlight of 2011 was our finalisation of the first release of ETSI M2M specifications, which provide an end-to-end architecture to support multiple M2M-type applications. We showcased this work at a highly successful M2M workshop in October, which proved to be the most popular ETSI workshop to date. We are also supporting two European Commission (EC) Mandates, one on the Smart Grid and the other on the interoperability of utility meters – smart metering – which is aimed at improving customers' awareness of actual consumption to elicit a reduction in their energy usage.

Greener Living

Improving energy efficiency is a recurrent theme in many of our projects. New technologies have the potential to improve life, but this must not be at the expense of the environment. To this end, our achievements in 2011 include work on the measurement of energy efficiency and the publication of an important specification on Life Cycle Analysis (LCA) for telecommunication products, networks and services.

Our Digital Enhanced Cordless Telecommunications (DECT™) specification is already the leading standard worldwide for digital cordless telecommunications for both cordless voice and broadband home communication. In 2011, we embarked on an exciting new application of DECT for a completely different market – Ultra Low Energy (ULE). ULE technology is ideal for sensors, alarms, M2M applications and industrial automation. It may also be applied to utility meters and therefore has implications for the operation of smart grids.

Safety and Security

Information and Communications Technologies have the potential to improve life significantly. But new technology often comes with risks, so we are developing standards to protect the user and to create a more secure and profitable environment for industrial development. For example, in support of eCommerce, we are working to achieve the interoperability of electronic signatures throughout Europe, and we have introduced two important new topics in our smart card standardisation work – the definition of a 4th Form Factor for the UICC and the specification of an embedded UICC and its interfaces. We are also developing standards for safety on the road, rail and at sea, and for emergency communications.

4th Generation Mobile Communications

ETSI is one of the founding partners of the Third Generation Partnership Project (3GPP™) through which we help develop specifications for advanced mobile communications technologies. In 2011 3GPP completed a spectacular workload again. Its main achievement of the year was the freezing of 3GPP Release 10, the first release to fully meet the 'IMT-Advanced' requirements for 4th Generation mobile communications.

Testing and Interoperability

One of the reasons why we develop communications standards is to ensure interoperability in a connected world. ETSI has pioneered the use of validation and testing to deliver interoperability. In 2011, we offered a varied programme of twelve Plugtests™ events and developed numerous test specifications. We continued to update TTCN-3, the highly successful specification language which we developed, and we are now producing new standards for Model-Based Testing (MBT) and Test Description Language (TDL).

Encouraging Innovation

ETSI's activities have always been at the cutting edge of technological development. To ensure we retain this position, we strive to identify new areas for standardisation at an early stage. We have therefore strengthened our links with R&D projects over the last few years, we have organised workshops on innovative topics such as Cloud Computing and Future Network Technologies and we create Industry Specification Groups (ISGs) to develop specifications in key new technological areas. In 2011 we set up four new ISGs. These activities have introduced exciting new topics to our work programme.

2011 – a Good Year for ETSI

In 2011, we extended our partnership portfolio and strengthened our relationships with the EC and with other standardisation organisations, including the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC). We saw growth in our membership numbers and, through strict cost control, we were able to turn a projected deficit for the year into a small surplus.

In 2011 we published over 3 000 standards, specifications, reports and guides, bringing the total since we were established in 1988 to almost 30 000. Many of these have been adopted worldwide and enable the technologies we take for granted in our daily lives. The achievements listed above only scratch the surface of our work, but they do demonstrate the diversity of our activities and highlight ETSI's position as a global leader in standardisation. The following pages contain numerous other success stories.

Fostering Innovation

Our 'standards engineering' approach fosters innovation by supporting our members from the exploitation of research to the interoperability testing of products. We maintain close links with R&D projects and organise workshops on innovative topics to facilitate early consensus building. The concept of the Industry Specification Group (ISG) was introduced to respond flexibly to diverse standardisation needs, whether it is technology push, market pull or a short term business opportunity.

Industry Specification Groups
The ISGs have proved very successful and have brought some interesting new activities to ETSI. By the end of 2011, there were ten ISGs with another – Operational Energy Efficiency for Users (ISG OEU) – in the pipeline for 2012. By the end of 2011 the ISGs had published 17 Group Specifications (GSs) since their establishment in 2008, and were working on about 20 more.

By the end of 2011, there were ten ISGs:
QKD – Quantum Key Distribution
AFI – Autonomic network engineering for the self-managing Future Internet
MTC – Mobile Thin Client
MOI – Measurement Ontology for IP traffic
INS – Identity and access management for Networks and Services
ORI – Open Radio equipment Interface
LIS – Localisation Industry Standards
ISI – Information Security Indicators
OSG – Open Smart Grid
SMT – Surface Mount Technique

New in 2011
In 2011 we created four new ISGs:

ISG LIS (Localisation Industry Standards) – will maintain the localisation (translation and cultural adaptation) standards of the former Localization Industry Standards Association (LISA) and offer a platform for future localisation standards. Participation is high and a Plugtests™ event is planned for 2012.

ISG ISI (Information Security Indicators) – will develop a full set of Information Security Indicators and an underlying Security Event Classification Model.

ISG OSG (Open Smart Grid) – was established to define an Open Smart Grid Protocol for utility metering, tariffs, load control and other applications. The Group held its first meeting in October 2011 and, by the end of the year, had completed the protocol. ISG OSG is now exploring future requirements.

ISG SMT (Surface Mount Technique) – will specify a form factor for embedded modules based on SMT, which meets the requirements of emerging non-traditional mobile devices in support of mobile services across multiple vertical markets.

Collaborative Research
Standardisation has a key role to play in supporting the take-up of innovation. As recognised by the European Commission (EC) proposal for HORIZON 2020, announced in November 2011, standards are crucial tools for accelerating the deployment and diffusion of new products and services into the market. Collaborative research is a European strength, and participation in collaborative research projects, whether as a full partner or by attending events, has triggered new standardisation activities in ETSI – in ISGs but also in our Technical Committees.

By being involved at the beginning of a new technology and identifying the standardisation needs in areas where we are competent, we are helping to push innovation. During 2011, ETSI was a partner in nine EC Framework Programme 7 (FP7) projects and we maintained active contacts with a number of others.

These projects span a wide range of technology areas. Many are related to the Future Internet, including the Internet of Services and the Internet of Things. Others address sectors in which ICT increasingly drives innovation, such as green cars in PowerUp, or societal challenges such as eHealth in the HITCH project and energy efficiency in EARTH. Some projects provide practical support by organising interoperability events, for example to facilitate Future Internet related technologies in MyFIRE and mobile applications in MOSQUITO.

Workshops
In September 2011 we held a second workshop to identify the standardisation or pre-standardisation needs of Future Network Technologies. As a result, several new areas were identified as potential topics for ETSI, for example, network virtualisation.

In the same month, we organised a workshop, 'Standards in the Cloud: a transatlantic mindshare', which considered Cloud Computing from three angles (policy, standardisation and user requirements), in preparation for the drawing up of a standards roadmap for the European Union. Various potential work areas were identified for ETSI. Industrial user groups expressed their interest in contributing actively to the specification of the requirements for Cloud services.

Our Smart Grid Workshop in April attracted over 250 participants. The event provided an update on the status of Smart Grid standardisation in ETSI and in other industry standards bodies. It brought together decision-makers from various industries to address the challenge of a global cross-sector harmonised approach to smart grid standardisation.

Long Term Strategy
In 2011 ETSI developed and agreed its Long Term Strategy (LTS). This high-level strategy spells out our ambitions and intentions, and describes the direction and focus of our future programme of work. Building from our Mission and Vision statements, it defines six strategic objectives for the Institute, identifying the means through which we will achieve these objectives and the influences we will face in doing so.

ETSI Business Innovation Summit
The third ETSI Business Innovation Summit, on 'The Wireless Network of the Future', was held in October 2011 in London, UK. This event provided a platform to discuss how, with the help of standardisation, new technologies can be transformed from innovative ideas into successful market solutions.

Connecting Things
Enabling Interaction between People and Things

The Internet offers the potential to connect billions of machines and objects, creating what is known as the 'Internet of Things' (IoT). The IoT integrates various technologies including Radio Frequency Identification (RFID), Machine-to-Machine (M2M) service platforms and Wireless Sensor Networks (WSNs).

Our activities aimed at 'connecting things' address the diverse aspects of integrating potentially billions of 'smart objects' into a communications network. These devices vary from highly-mobile vehicles communicating in real-time to immobile meter-reading appliances that send small amounts of data sporadically. Today's telecoms networks are not optimised to handle this new type of traffic, and standardisation in this domain is needed to ensure interoperable and cost-effective solutions, to allow the market to reach its full potential.

Machine-to-Machine Communications

One of the highlights of 2011 was the finalisation of the first release of ETSI M2M specifications. This release addresses urgent market needs and provides an end-to-end architecture to support multiple M2M-type applications.

Release 1 comprises three Technical Specifications (TSs). The first deals with the M2M service requirements. The second TS covers the detailed specification of M2M functional architecture, including all the new functionality required to support M2M services, identification of the new interfaces required and the overall data model, as well as an appropriate security solution. The third TS provides the first detailed specification of the necessary interfaces in the form of formal definitions of the Application Programming Interfaces (APIs) and related parameters.

The whole system is capable of running on a generic IP (Internet Protocol) network, but is designed to take advantage and reuse the functionality of underlying telecommunication networks. This includes, for example, security and management aspects developed by ETSI, the Third Generation Partnership Project (3GPP™) and others. These functionalities are made easily available to the M2M application, together with a wide set of additional M2M-oriented functionality such as the management of discontinuously connected terminals, log management, Cloud data storage and privacy management tools.

In 2011 we also completed a Technical Report (TR) containing a threat analysis to the M2M service layer and corresponding countermeasures.

In addition, TC M2M is co-ordinating our response to the European Commission (EC) Mandate M/441 on the creation of standards to enable the interoperability of utility meters (water, gas, electricity, heat). These meters will improve customers' awareness of actual consumption which should lead to a reduction in their energy usage.

TC M2M is also co-ordinating our response to the 'Smart Grid Mandate' (M/490). In 2011 we made good progress with a TR on the impact of smart grids on the M2M platform.

We are contributing to the EC Mandate on electric vehicle charging standards (M/468). Our Intelligent Transport Systems Technical Committee (TC ITS) is working on Co-operative ITS. Good progress was made during 2011 with a TS for broadcasting information about roadside units and charging spots to electric vehicles.

A key event in 2011 was the second ETSI M2M workshop, held in October in Sophia Antipolis, France. This event offered an opportunity for leading experts from all over the world to hear how our M2M standards are being deployed and applied to real-life situations. The workshop was also the occasion for a significant proof of concept for prototypes implementing the Release 1 specifications. The event included practical demonstrations by several major manufacturers and operators covering a cross-section of M2M applications including smart energy, environmental sensing, mHealth, intelligent transport, ambient assisted living, personal robots, home automation, medical appliances and smart metering. With about 270 participants, this event proved to be the most popular ETSI workshop to date. The high level of interest generated by the workshop reflects both the enormous potential that is foreseen for M2M applications and technologies and also ETSI's leading role in the standardisation of M2M.

Connecting Things

RFID

Our Technical Committee for Electromagnetic Compatibility and Radio Spectrum Matters (TC ERM) is addressing the spectrum requirements for RFID. In particular, we are working with the European Conference of Postal and Telecommunications Administrations (CEPT) in an attempt to find additional spectrum for RFID, short range devices and smart metering, to improve the efficiency of the delivery of utilities, including electricity, to consumers.

We have been looking for solutions to achieve co-existence between UHF RFID and Extended GSM-R (ER-GSM). The aim is to enable friendly spectrum sharing between future UHF RFID systems in the 915 - 921 MHz band and ER-GSM systems in the 918 - 921 MHz band. In 2011, we evaluated the findings of earlier investigations, taking measurements on a purpose-built test-bed. A TS on a second co-existence test between ER-GSM with RFID and a TS on appropriate mitigation techniques were published in February. A further TS on compliance testing for the Detect and Avoid (DAA) (or equivalent) mitigation mechanism was published in August 2011.

Work on a new TS on the smart metering wireless access protocol for short range devices continued. When completed in 2012, it will harmonise protocols for devices supporting smart metering applications.

RFID has a key role to play in retail but, as a contributing technology in the Internet of Things, it also affects banking, identity, authorisation etc., and we are working to address concerns over the privacy and security of RFID. In response to EC Mandate M/436, we conducted practical evaluation tests with a number of manufacturers to examine the accuracy of the concerns over RFID. As a result, a list of recommended standards has been proposed and we are now working together with the European Standardisation Committee (CEN) to develop a sub-set of these standards.

Medical Devices

TC ERM also develops standards for radio communications equipment for medical devices. It handles specifications and standards for medical telemetry transmitting devices and medical implant telemetry devices.

A System Reference Document was published at the end of 2011 which defines the requirements for RF usage for Medical Body Area Networks, i.e. low power on-body, wireless sensors that can simultaneously collect and communicate multiple vital sign parameters to monitoring devices placed on or around the body. Good progress was made on a new European Standard (EN) which is being developed specifically for Low Power Active Medical Implants operating in the 2 483,5 - 2 500 MHz band. These comprise a system of implanted and other external devices worn on the body that form a medical communications system. Given their crucial usage, we are developing a specific product standard to ensure that the radio links are tested to appropriate levels.

With the advent of new technology, new medical products are becoming available which require a revision of the current regulatory requirements. We are therefore preparing a System Reference Document to enable the 2 483,5 - 2 500 MHz band to be used additionally by Short Range Devices operating as Low Power Active Medical Implants outdoors, within a range of a few metres from the equipment. This would provide a remote programming capability with outdoor use.

Wireless Systems
Towards a Fully Connected Wireless World

Radio technology is used extensively worldwide. It is integrated with daily life everywhere, through the use of 2G and 3G mobile telephony, broadcast radio and television, Wireless Local Area Network (WLAN) and cordless technology, Global Navigation Satellite Systems (GNSS), Radio Frequency Identification (RFID) and Short Range Devices. All of these technologies and applications compete for use of scarce radio spectrum resources.

ETSI creates standards which define many of these radio technologies and systems. We also provide the standards which are used by regulatory authorities in Europe and beyond in order to manage the radio spectrum environment and to ensure safe co-existence between all these systems.

Supporting the European Regulatory Environment

ETSI co-operates with the European Commission (EC) and the Electronic Communications Committee of the European Conference of Postal and Telecommunications Administrations (CEPT/ECC) on aspects of the regulatory environment for radio equipment and spectrum, both at the EU level and at the wider intergovernmental level across Europe.

The EC harmonises the essential requirements for radio equipment, which include constructing radio equipment so as to avoid harmful interference, via the Radio and Telecommunications Terminal Equipment (R&TTE) Directive. We provide a broad range of Harmonised Standards which are applied by manufacturers to demonstrate that their products comply with the Directive's requirements before being placed on the market or put into service. In 2011 we contributed to the EC's forthcoming revision of the Directive.

Broadband Radio Access Networks

Among the highlights of 2011 in this area was the publication of a new standard for Broadband Wireless Access (BWA) base stations operating in the 3,5 GHz band, which completes our set of Harmonised Standards for BWA operating in the 2,6 GHz and 3,5 GHz frequency bands. A revision of the standard for Radio Local Area Networks (RLANs) operating in the 5 GHz frequency band was also completed which will provide additional protection for civil and military radars. Towards the end of 2011, we began new work, preparing a System Reference Document describing the technical characteristics for Direct Air To Ground Communication (DA2GC) systems operating in license exempt spectrum. We made good progress with Ultra-Broadband Wireless Systems.

Maritime

In 2011 we published two Harmonised Standards related to VHF radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class D Digital Selective Calling (DSC).

Reconfigurable Radio Systems (RRS)

Our standardisation of RRS includes Software Defined Radio (SDR) and Cognitive Radio, which are expected to become important drivers for the future evolution of wireless communications and to offer substantial benefits, particularly in the better utilisation of the radio frequency spectrum.

The EC's forthcoming revision of the R&TTE Directive is expected to allow the use of RRS that affect device certification. In anticipation, we are developing new

standards to enable the future enforcement of the Directive. This includes enabling the dynamic declaration of conformity, which is a key factor in the introduction of new features, especially radio applications.

In 2011 we published use cases and scenarios in a number of areas. Building on this work, we are now developing Technical Specifications (TSs) for radio reconfiguration for mobile devices, for the system requirements for RRS operating in IMT and GSM™ bands for intra-operator scenarios, and for the system requirements for operation in UHF TV White Spaces.

Among other ongoing work in this field, we are addressing Radio Environment Maps for intra-operator scenarios, the RF performance of Cognitive Radio Systems operating in UHF TV band White Spaces and various co-existence issues.

Satellite Communications

During 2011, we completed work on multi-service interoperability with harmonised Quality of Service (QoS) for broadband satellite systems. A TS on Multi-Protocol Label Switching (MPLS) interworking over satellite was published which will enable integration of Broadband Satellite Multimedia networks into IP-based networks providing end-to-end quality of service.
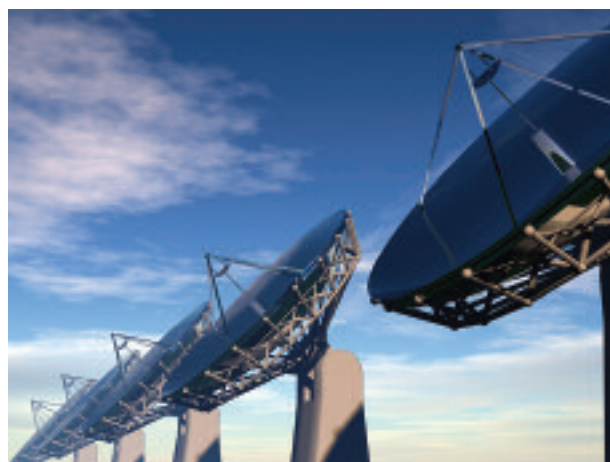
We also completed a TS on the air interface for S-band Mobile Interactive Multimedia (S-MIM). We updated our European Standard (EN) on Land Mobile Earth Stations (LMES) operating in the 1,5 GHz and 1,6 GHz bands, and published a full set of revisions to the Geo Mobile Radio (GMR-1) technical specifications. We also made significant progress with new technical specifications for the SL family of services, a new Technical Report (TR) on satellite radio interfaces, and work on GNSS and hybrid and Mobile Satellite Systems (MSS) type definitions. A study of LTE™ operation via satellite was initiated at the end of 2011.

ETSI and 3GPP

ETSI is one of the founding partners of the Third Generation Partnership Project (3GPP™), in which we come together with five other regional standardisation organisations worldwide, plus market associations and several hundred individual companies, to develop specifications for advanced mobile communications technologies. Based on the evolution of GSM, which was defined by ETSI, 3GPP has developed Universal Mobile Telecommunications System (UMTS™), LTE and LTE-Advanced technologies. A derivative of GSM, GSM-R, which was developed by ETSI's Railway Telecommunications Technical Committee (TC RT), is used in the rail industry.

3GPP is supported by ETSI's Mobile Competence Centre (MCC).

Further information at: www.3gpp.org

4G is Here!

The main achievement of 2011 was the freezing of 3GPP Release 10 in the first half of the year. Release 10 was the first Release which fully meets the 'IMT-Advanced' requirements of the ITU's Radiocommunication sector (ITU-R), and the Release 10 LTE specifications and reports accordingly bear the 'LTE Advanced' logo, marking them as having truly entered the 4th Generation. Significant effort was needed to conclude the fine details of the signalling protocols to support the many new services specified. Over 80 new features and some 20 studies were completed. Many of these were enhancements of service elements from Releases 8 and 9, but several new frequency bands were opened up to 3GPP technology, and considerable work was undertaken on channel aggregation to increase overall bandwidth.

Meanwhile, industry was moving quickly on the implementation of Release 8 LTE networks. By the end of 2011, around fifty operators around the world already had commercially operating LTE networks, with many more undertaking trials, whilst a good number of 2G-only operators are considering a move directly from GSM to LTE, skipping the 3G step.

During 2011, the Release 11 stage 1 specifications were frozen, allowing stage 2 and stage 3 work to gather momentum. Much of the work for Release 11 relates to the improved data rates that can be achieved by combining channels in various available bands – so called 'carrier aggregation'. In all, 3GPP is working on over 150 top-level work items in Release 11, a 40% increase over the number in Release 10, which itself was 44% more than Release 9. If proof were needed of the world's commitment to 3GPP technologies, this surely is it.

Mobile Standards Group

Our Mobile Standards Group Technical Committee (TC MSG) provides the regulatory standards which are needed to support the deployment of GSM, UMTS and LTE networks in Europe. In 2011 we focused primarily on the revision of the Harmonised Standards for, respectively, GSM base stations and GSM repeaters, to introduce Third Generation Partnership Project (3GPP™) Release 9 features.

We also published the fifth release of the Harmonised Standards for base stations, repeaters and user equipment for IMT-2000 third generation cellular networks, which takes account of both LTE and Mobile WiMAX technology and includes a new part for Multi Standard Radio base stations. Work on the sixth release is already under way.

As part of our standardisation of GSM on board aircraft, we are developing a TS to limit the power outside an aircraft radiated from on board base station equipment, which will help prevent interference with mobile networks on the ground.

Open Radio Equipment Interface (ORI)

Our Industry Specification Group ORI is developing a standardised and interoperable data link interface for remote radio head equipment in distributed mobile cellular base stations. Use of distributed radio equipment can lead to significant cost savings for a mobile operator, as well as offering greater flexibility in network design and deployment. In 2011, ISG ORI produced its first specifications, defining the Release 1 requirements and the lower layer interface.

New Generation DECT

'New Generation DECT' extends basic DECT functionalities with many added features such as high quality audio, broadband data and audio streaming. In 2011, we continued to work on New Generation DECT, developing Release 2011 of the DECT standard. Release 2011 introduces advanced features such as high quality wideband (7 kHz) and super wideband (14 kHz) voice, support of Internet telephony and broadband data connections. We have also addressed security features (authentication and encryption), with new algorithms based on the Advanced Encryption Standard (AES). At the same time, the DECT base standard and the Generic Access Profile have been updated. Enhancements include additional features such as phone book handling, answering machine control, handset capability enquiry, security enhancements and an energy-saving 'ECO mode'.

Related test specifications are also being developed. In particular, we are updating and producing standards for use by the DECT/CAT-iq Certification programme which has been set up by the DECT Forum to ensure full interoperability between devices from different vendors.

Better Living with ICT
Technologies for a Better Life

The large scale deployment of new technologies has significantly improved the way we communicate for both social and business purposes and has opened up exciting opportunities. However, most of these deployments have been technology-led, without any prior assessment of their social consequences. Part of our work is to make products and services simpler to use, safer and more efficient, taking account of social and cultural factors.

In addition, we recognise that technological progress must not come at the expense of the environment. So we are actively 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

Our Environmental Engineering Technical Committee (TC EE) has a particularly important role to play as the world seeks to improve energy efficiency.

Among the highlights of 2011 for TC EE was the publication of a Technical Specification (TS) on Life Cycle Analysis (LCA) for telecommunication products, networks and services. This provides a methodology to determine the environmental impact of a telecommunication product from the raw material/components until the end of its life and also to measure the environmental impact of an entire telecommunication network or service. This is the first ever LCA tool designed specifically for use in the telecommunications field and has been adopted by the European Commission (EC) as part of its Recommendation on 'Mobilising Information and Communications Technologies to facilitate the transition to an energy-efficient, low-carbon economy'.

TC EE is also defining 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.

A European Standard (EN) is being produced in response to the EU's Energy-using Products (EuP) Directive and Mandate M/439 on the standby and off-mode power consumption of office telecommunication equipment.

In 2011 TC EE completed an ETSI Standard on the energy efficiency of network access equipment and a TS on the energy efficiency of wireless access equipment. Other ongoing activities related to energy efficiency include work on transmission equipment, router and switching equipment, core network equipment and customer premises equipment. These standards define the methodology and the key performance indicators to determine energy efficiency and support EC Mandate M/462 on efficient energy use in fixed and mobile networks.

TC EE is also collaborating with our Access, Terminals, Transmission and Multiplexing Technical Committee (TC ATTM) and with the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) in response to EC Mandate M/462. Together we are developing a set of ratios, or 'Global Key Performance Indicators (KPIs)', to monitor the energy consumption of deployed broadband and to define green sites for industrial and commercial users.

Ensuring Equality of Access

Human Factors is the scientific application of knowledge about human capacities and limitations in order to make products, systems, services and environments effective, efficient and easy for everyone to use. It is a key factor in the commercial success of any ICT product or service in the digital networked economy.

Our Human Factors Technical Committee (TC HF) is working in support of EC Mandate M/376 on the European accessibility requirements for the public procurement of products and services in the ICT domain. National procurement authorities have acknowledged that they lack the specialist human factors expertise necessary to include accessibility requirements in invitations to tender for the provision of ICT products and services. We have therefore begun work, in co-operation with CEN and CENELEC, on a set of functional accessibility requirements. We are leading a Specialist Task Force, which includes representatives of both CEN and CENELEC, in the drafting of two Technical Reports (TRs) and an EN on ICT accessibility requirements and testing methods, which will be used for conformance testing in public procurement processes. We made rapid progress in 2011. Three workshops were held to give stakeholders an opportunity to learn about the project, to discuss the latest drafts and to offer feedback and, by the end of the year, the technical content of the drafts was essentially complete.

For many years, TC HF has championed the importance of making developments in technology accessible to all in our society, including the elderly, the young and those with disabilities. This 'Design for All' approach also widens access generally and enables European industry to meet the needs of many more users, thus improving its competitive position at the global level. TC HF is responding to the EC Mandate on Design for All (M/473).

In 2011, we also began new work on user interface aspects for aging users, which addresses the issue of cognitive impairment and is intended to help ensure that older people who develop memory problems or mental issues can still use ICT devices and services.

Looking to the future, in February 2011 we published an ETSI Guide (EG) on 'Inclusive eServices', which offers guidance to improve the accessibility and use of new user interaction technologies (particularly communications-related services) that are expected to be available in the near future. The Guide provides a technology roadmap for the next ten years with a focus on the impact of these technologies on older people and those with disabilities. It will help identify the standardisation activities required to address new developments.

Media Quality and the User Experience

Our Speech and Multimedia Transmission Quality Technical Committee (TC STQ) is recognised worldwide as a centre of excellence for Quality of Service (QoS), Quality of Experience (QoE) and media quality. Highlights of its year include a new ETSI Standard (ES) on the transmission requirements for IP-based Home Gateways and other media gateways which provides speech transmission performance and QoS requirements for narrowband and wideband media gateways.

With the migration of Public Switched Telephone Networks (PSTNs) towards Next Generation Networks (NGNs), where data, voice, voice-band-data and video share a common packet-switched network, it is crucial to provide the same services, including modem and fax services, with this new technology, without any degradation in QoS or inconvenience to the end-user. This is particularly important for those countries where fax is the only legally accepted method of 'electronic' document transfer. In 2011 TC STQ produced a TR on the effects of IP impairment on fax quality.

In 2011, continuing work on terminals using 'superwideband' – bandwidth up to 15 kHz – and fullband terminals in conversational services for teleconferences and audio-visual applications focused on measurement methods for headsets.

We also address acoustic safety. TC STQ and our Safety Technical Committee are working in co-operation with CENELEC on the revision of the EN on personal music players in mobile phones, with the aim of regulating the levels of output, particularly to protect children and young adults. As part of our response to EC Mandate M/452, we are working to ensure that conversational functions on mobile phones and equipment such as hearing aids and in ear monitors (IEMs) used in broadcasting, where at times the location demands higher sound levels, are not adversely affected.

In 2011 we completed important work on the quality assessment of multimedia services, which has implications for mobile television, and video quality analysis for multiplay services including the results of Digital Video Broadcasting – Terrestrial (DVB-T) and IPTV live tests.

In 2011 our User Group published an EG on the definition and methods needed to assess QoS at the various stages of the customer relationship other than utilisation. This Guide completes the set of standards needed to assess the quality of telecommunication services as perceived by users and represents the culmination of several years' effort. The new Guide was endorsed by the Telecommunications Standardisation sector of the International Telecommunication Union (ITU-T) as Recommendation E.803, and the first publication in the set, a TS on the reliability of billing, is now referenced in several European and African countries. This work was extended in 2011 with a new ETSI Guide which includes a methodology to help users apply QoS assessment results correctly.

Content Delivery
Facilitating Content Consumption, Whatever the Platform

Recent developments in the Internet, mobile communications and broadcasting have led to a convergence of traditional communities. However the specifications developed by different market players do not currently interoperate across platforms. Content providers therefore incur significant additional cost and customers' 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 business community and the consumer.

Content Distribution

Our Media Content Distribution Technical Committee (TC MCD) is working towards the overall development of multimedia systems, including television and communication, managed and unmanaged networks. The ultimate goal is the adoption of a consistent set of worldwide solutions.

TC MCD published three Technical Reports (TRs) in 2011. Two examine the current situation and perspective: the first addresses the flow of programme information and describes a number of interfaces, while the second covers the flow of subtitles through production, broadcast and transmission up to final distribution. The third TR deals with audience measurement.

TC MCD and our Technical Committee for Telecommunication and Internet converged Services and Protocols for Advanced Networking (TC TISPAN) jointly address Content Delivery Networks (CDNs). In 2011 TC MCD approved a TR on content delivery infrastructure, which outlines the general architecture for the operation and use of CDNs. Development of the services and architecture for a CDN for IPTV was completed in 2011; TC TISPAN is now developing the protocol definition. CDN interconnection requirements are also being addressed.

We are studying interoperable Conditional Access/Digital Rights Management (CA/DRM) solutions which are suitable for multimedia platforms in a convergent environment, and have begun new work on the multi-screen convergence service.

TC TISPAN also deals with IPTV service delivery for fixed Next Generation Networks (NGN). The IMS-based IPTV interoperability test specification was updated and Release 3 was published in July 2011.

Broadcasting

ETSI's 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.

JTC Broadcast achieved a major milestone in 2011 with the completion of the first set of DVB specifications in the realm of 3DTV. In this first phase, the Committee has specified the delivery system for Frame Compatible Plano-Stereoscopic 3DTV, which means that previously installed set-top boxes will be able to support 3DTV. The additional equipment expenditure avoided by this solution is especially significant for Pay TV operators. The DVB 3DTV specifications also take account of the use of subtitles in 3D, enabling them to be placed in the correct position in the third dimension (i.e. in front of the speaker rather than behind). Work has now begun on the second phase of 3DTV specifications.

Another major highlight of 2011 was the introduction into the DVB-T2 specification of a new profile for mobile and portable TV. This new 'T2-Lite' profile enables mobile TV to be added to existing broadcasts very easily and efficiently. In addition, T2-Lite allows for reduced-cost receivers and improved battery life.

The standards for Connected TV and Interactive TV were also revised in 2011. The DVB Globally Executable MHP (GEM) specification was updated to provide support for Over-The-Top (OTT) television and Hybrid Broadcast/Broadband (HBB). With these updates there is a complete middleware solution in place covering not only 'traditional' broadcast via satellite, cable and terrestrial but also video delivery via IPTV and over the open Internet. In addition, these updates support hybrid scenarios where services are provided by broadcast as well as the broadband channel.

JTC Broadcast revised the MHEG-5 broadcast profile to introduce support for encrypted content delivery by back channel and changes to the key handling functionality.

In the area of security, a 14-part Technical Specification on DVB Content Protection and Copy Management (DVB-CPCM) was finalised in 2011. As a result, there is now a complete solution in place to distribute content in the home and to support the various business models of content owners.

Cable TV Systems

In 2011, our Access, Terminals, Transmission and Multiplexing Technical Committee (TC ATTM) approved five new European Standards (ENs) which standardise the ultra-high-speed cable data networking system known as DOCSIS 3.0. In addition, the Committee approved 16 Technical Specifications (TSs). 15 of these complete the IPCablecom 1.5 suite, which defines the system for Voice over Internet Protocol (VoIP) telephony that is currently being deployed by cable operators worldwide. The 16th TS describes the system characteristics for terrestrial broadcast receiver equipment used in cable systems. Finally in the cable access area, TC ATTM approved three new TRs, covering respectively energy efficiency, the Digital Dividend and converged architectures.

Fixed Networks
Fulfilling the Promise of Unlimited Bandwidth

People's communication needs are endlessly evolving. Nowadays the consumer expects the services he requires to be easily accessible and available wherever he is, whatever device he uses. Technically, this means networks must converge. Our fixed networks work provides a comprehensive set of standards for networks that meet today's needs.

The Fixed Next Generation Network (NGN)

Our Technical Committee for Telecommunication and Internet converged Services and Protocols for Advanced Networking (TC TISPAN) deals with the fixed NGN and defines the entire NGN network, covering the core network, the home network, security, numbering, addressing and routing, network management and testing.

During 2011, TC TISPAN continued to maintain its NGN specifications as next generation networks rolled out, to correct or clarify features. Testing is a major factor in the success of any technology, and new test specifications were developed to support NGNs in a number of key areas.

We are also working on the infrastructure to support telephone number mapping (ENUM) and in August 2011 we published a Technical Specification (TS) on ENUM and Domain Name System (DNS) principles for an inter-operator Internet Protocol (IP) backbone network. A TS on the requirements for types of numbers as identifiers in NGNs was also published in February. We started new work aimed at describing the use of the DNS protocol in NGN.

Guidelines were elaborated in 2011 addressing IP Multimedia Subsystem (IMS)-based NGN fixed network interconnection. The NGN IPTV Release 3 protocol specifications were published, along with the Content Delivery Network (CDN) architecture. The security of NGN networks was also enhanced in 2011.

Network Access

Network access specifications are the responsibility of our Access, Terminals, Transmission and Multiplexing Technical Committee (TC ATTM). The Committee produces specifications for Digital Subscriber Line (DSL) technologies, including frequency management issues.

In relation to DSL splitters, a new TS was published for micro-filters to be used with Asymmetric DSL (ADSL) and Very High Speed DSL (VDSL). Work on Dynamic Micro-filters is progressing.

We are also addressing energy efficiency in ADSL, the European functional requirements for VDSL2 and a number of studies that apply across ADSL2Plus and VDSL2, related to the application of retransmission, virtual noise and specific requirements for multi-mode transceivers. TC ATTM will turn its attention next to the need for a new DSL system for geographical areas not currently covered, such as rural areas and suburbs. We are also looking into the possibility of reverse power feeding from the customer's premises to a mini DSL Access Multiplexer (DSLAM).

TC ATTM is embarking now on important new standardisation activities relating to the transition of cable data networks from IPv4 to IPv6. With the imminent exhaustion of the IPv4 address space, the transition of Europe's broadband Internet networks to IPv6 is urgent.

The first step will be the development of a Technical Report analysing current equipment support and transition technologies.

Cloud Workshops

We organised two Cloud workshops in Sophia Antipolis, France, during 2011, with the aim of building consensus on priorities and relationships with other organisations.

The first of these, for ETSI Members, was held in June. During this event opportunities were identified where we have a distinctive role to fulfil in governance and regulatory issues, risk mitigation and service level agreements, as well as, at a more technical level, wide area portability and interoperability between different Cloud service providers.

The second workshop, 'Standards in the Cloud: a transatlantic mindshare', was held in September. Organised jointly with the European Commission, it brought together, among others, large commercial users, Cloud service providers and representatives of the US government. This event examined the future of Cloud from three angles (policy, industry and markets, and standards and interoperability) and identified various potential work areas for ETSI such as channelling EU regulatory provisions into standardisation, addressing requirements and enabling certification.

New Technologies

Our work on fixed networks includes more evolved technologies related to network management such as the definition of an architectural Reference Model of a Generic Autonomic Network Architecture (GANA). This work is led by our Industry Specification Group on Autonomic Network Engineering for the Self-managing Future Internet (ISG AFI) which aims to establish a common understanding of what autonomic behaviour is and how an autonomic, self-managing network should be engineered. In June 2011, ISG AFI published its first Group Specification (GS) on the scenarios, use cases and requirements for the autonomic/self-managing future Internet.

Home and Office
Connecting Devices in the Home and in Businesses

While broadband was once simply about the delivery of high-speed Internet access and services to a PC, it is now being driven beyond the PC, to other devices, delivering services in the home as well as in the 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.

Ultra Low Energy Technology

In 2011, we embarked on an exciting new application of Digital Enhanced Cordless Telecommunications (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 over five years) and, with New Generation DECT, connectivity to the Internet is already available, which makes the technology ideal for sensors, alarms, Machine-to-Machine applications and industrial automation. ULE technology may also be applied to utility meters and related devices and therefore has applications in the operation of smart grids. During 2011, working in close collaboration with the DECT Forum, we undertook a technical study into ULE technology, aimed at defining requirements and priority applications.

Powerline Communications
Smart Metering

In 2011, our Powerline Telecommunications Technical Committee (TC PLT) continued to work in response to European Commission (EC) Mandate M/441 on Smart Meters. In addition, in March, the EC issued a new Mandate, M/490, on Smart Grid deployment. The aim of these two mandates is the creation of a set of European standards to enable the interoperability of utility meters (water, gas, electricity, heat) to improve customers' awareness of actual consumption so that they can adapt their energy demands –

smart metering. This work is being undertaken in co-operation with the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC). For its part, TC PLT is working on a new Technical Specification (TS) on the physical (PHY) and medium access control (MAC) layers for powerline networks using low voltage and medium voltage electricity grids between the utilities and meters in the home. A TS is also being drafted for Low Rate Narrow Band Orthogonal Frequency-Division Multiplexing (OFDM) including IPv6 on the upper layers, in line with ITU-T SG15 and IEEE P1901.2 standards.

Multiple Input Multiple Output (MIMO) PLT

The future digital home will share video content in formats such as HD 3D, 2K, 4K and Multiple Views Video. Current home networking technologies do not provide the required throughput, reliability and coverage for these forthcoming video formats. To anticipate this future demand, we are studying the possibility of improving the performance and coverage of PLT systems by using MIMO instead of Single Input Single Output (SISO) technology. By the end of 2011, TC PLT had almost completed a set of three Technical Reports (TRs) on the feasibility of MIMO PLT to measure the capacity of MIMO channels in several European countries. Two TRs were published in 2011 and the third is expected to be published early in 2012.

Optical Networks

Our network access work also includes the specification of optical components, especially optical fibres and passive components, and optical access networks. We are working on a series of specifications for optical fibre systems in customer premises. In 2011 we began new work to provide an appropriate engineering specification for the building of an optical backbone. When finalised, these specifications will support the global deployment of fibre in customer premises and enable the development of the equipment required for the transmission of digital as well as analogue services within the home.

Other Areas of Work

Other aspects of connecting devices in the home and office which were dealt with during 2011 include work by the Third Generation Partnership Project (3GPP™) on 'femtocells', including Home Node B/Home extended Node B features, smart metering wireless access protocols for the physical and data link layers and QoS issues.

Transportation
Systems for 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

Our standardisation for road transport is focused on wireless communications for vehicle-to-vehicle and vehicle-to-roadside communications, with priority given to the safety of life by reducing of road fatalities and injuries, traffic efficiency and minimising environmental impact (in terms of CO_2 emissions and fuel consumption).

As part of its response to European Commission (EC) Mandate M/453, our Intelligent Transport Systems Technical Committee (TC ITS) is developing the standards needed for the implementation and deployment of 'Co-operative ITS'. Co-operative ITS offer enormous potential in the provision of, for example, driver assistance and hazard warning, emergency services, traffic control, fleet and freight management and location-based services. In 2011 we addressed three key issues: the G5 radio channel, its conformance testing in support of interoperability, and conformance and interoperability tests for the European Electronic Toll Service (EETS) and the International Organization for Standardization (ISO) CALM FAST service. The first full set of ETSI standards for Co-operative ITS – 'Release 1' – is due to be finalised by mid-2012.

During 2011 we published conformance test specifications for a number of key features and we are addressing the issue of the Local Dynamic Map (LDM), which will support various ITS applications in co-operative transportation systems, including road safety applications.

We are co-operating with the European Committee for Standardisation (CEN) to identify mitigation techniques to improve the co-existence of Dedicated Short Range Communication in the 5,8 GHz band and Co-operative ITS in the 5,9 GHz band.

Work continues on standards for the access network, including channel configuration and congestion control for the 5,9 GHz ITS band. For the 63 - 64 GHz band, a new Harmonised European Standard (EN) for Co-operative ITS was finalised.

In February 2011, we held a very successful workshop on ITS in Venice, Italy, which attracted over 140 experts from around the world.

Automotive Radar

In 2011, we made good progress with standards and specifications concerning the use of Ultra Wide Band (UWB) short range radar (SRR) and radar equipment using Wideband Low Activity Mode (WLAM) in the 24,05 - 24,50 GHz band. We revised our Technical Report on surveillance radar in the 76 - 77 GHz range, and published a new EN for narrowband SRR in the 24 - 24,25 GHz band, which will help prevent potential interference with police speed metering.

Aviation

Our Aeronautics Technical Committee (TC AERO) develops 'Community Specifications' in support of the EC's Single European Sky (SES) initiative.

In 2011, our ongoing work related to Air Traffic Management equipment included the updating of the EN for the Advanced Surface Movement Guidance and Control System (A-SMGCS), which ensures the safe movement of vehicles and aircraft on the ground at airports. We published a new EN on Data Link Services (DLS), which will improve the efficiency of communications between controllers and pilots. We began work on a Harmonised Standard on VHF Data Broadcast (VDB) for Ground-based Augmentation Systems (GBAS), and work on the VHF air-ground Digital Link Mode 2 and Mode 4 systems progressed well, in response to EC Mandate M/405.

Railways

GSM for Railways (GSM-R) continues to roll out, not only to new markets in Eastern Europe but also worldwide. GSM-R now reaches 75% of the railway lines in Europe and extends to all five continents. Most Western European railways are now fully equipped with GSM-R on their high speed and conventional lines. Our Railway Telecommunications Technical Committee (TC RT) addressed various new features in 2011 to meet growing user demand and to accommodate extended frequency bands.

Maritime

We made good progress in 2011 with an EN on the new international standard for distress messages – Digital Selective Calling (DSC) – and with standards for maritime survival locating devices using DSC signalling, maritime personal homing beacons for search and rescue and maritime mobile transmitters and receivers for use in the MF and HF bands. Work began on a new EN for the base unit of a man overboard system and we published a new EN for VHF radiotelephone equipment for the maritime mobile service operating in the VHF bands for the new integrated handheld class D DSC.

Satellite

In the satellite area, work began on a new EN on Earth Stations Onboard Mobile Platforms (ESOMPs) in the Ka band (27 - 31 GHz), which has applications both on the railways and at sea.

Security
Creating a Secure Digital Life

New technologies bring new threats. Information security standards are crucial to protect the user and to create a more secure and profitable environment for industrial development. Standards are also essential to ensure compliance with legislation.

Our work addresses numerous aspects of security: mobile/wireless communications, information technology infrastructure, lawful interception and data retention, electronic signatures, smart cards, fixed communications and security algorithms.

Electronic Signatures

Standards to support the use of electronic signatures and public key certificates are a primary driver in enabling the successful evolution of eCommerce. Our Electronic Signatures and Infrastructures Technical Committee (TC ESI) is working with the European Committee for Standardisation (CEN) in response to the European Commission (EC) Mandate on Electronic Signature Standardisation (M/460). M/460 aims to achieve the mutual recognition and cross-border interoperability of electronic signatures throughout Europe.

A rationalised standardisation framework has been defined, which provides an inventory of eSignature standards, a structure for European eSignatures standardisation documents, a gap analysis and a future work plan. As one objective of M/460 is to raise awareness, ETSI and CEN together organised a workshop in November 2011, at which the draft framework and its objectives were presented. Internationalisation of this framework is of the utmost importance, so we are planning an EU-US workshop on electronic signatures to be held in 2012.

Also in support of EC policy, we published four Advanced Electronic Signatures (AdES) baseline profiles in 2011, which will ensure the interoperability necessary to enable the cross-border interchange of electronic documents containing AdES signatures. Enhanced versions, which will ensure the preservation of the technical validity of signatures for a period of time after signature creation, will be finalised early in 2012. These baseline profiles provide the basic features necessary for a wide range of business and governmental applications.

Our activities on Registered Email (REM) were completed in 2011 with the definition of interoperability specifications between REM solutions based on different transport protocols. We also produced a new Technical Specification (TS) to address problems caused in some countries by the co-existence of mailing systems using different protocols.

TC ESI finalised its work on information preservation systems security in 2011. The goal was to provide a common, objective and reliable basis both for preservation service providers to implement and manage secure Information Preservation Systems and also for assessors to measure whether these systems meet the quality requirements of the EU Directive on services in the internal market.

We also made good progress in 2011 with various test specifications and with standards and specifications on trust service providers, the Qualified Certificate profile and procedures for signature validation.

Lawful Interception and Data Retention

We produce and maintain a suite of standards for Lawful Interception and Data Retention. This work, which is the responsibility of our Lawful Interception Technical Committee (TC LI), is crucial to preserve national security, to combat terrorism and in the investigation of serious criminal activities. TC LI is pioneering the development of Lawful Interception, and its LI standards are being adopted around the world. Global interest in our work continues to grow: in 2011 new interest emerged in particular from Australia and Brazil.

Updating of our LI and Data Retention standards is an ongoing exercise, particularly to add new services. In 2011, we also published a new Technical Report (TR) on System Architecture and Internal Interfaces for Data Retention, which offers practical guidance for operators on how to deal with requests for the handover and delivery of real-time or stored information. By the end of the year, a second TR on requests for the handover and delivery of information (known as the 'eWarrant Interface') was almost completed.

New work was initiated mid-2011 on LI and Data Retention in Cloud and virtual services, which is expected to form the main focus of work in 2012.

Smart Cards

The main task of our Smart Card Platform Technical Committee (TC SCP) is to expand and maintain the Smart Card Platform specifications for mobile communication systems. The Committee's work in 2011 was dominated by the introduction of two important new topics – the definition of a 4th Form Factor for the UICC and the specification of an embedded UICC and its interfaces.

Agreement on the requirements for a 4th Form Factor for the UICC, smaller and possibly thinner than the Mini-UICC (which is sometimes referred to as 3FF or by some, in the context of mobile communications, as micro-SIM) was reached; whilst smaller, a mandatory requirement for a UICC of this form factor is that it shall retain existing UICC functionalities. The technical realisation of this form factor is, however, still under discussion.

Work on Machine-to-Machine (M2M) applications has given rise to the possibility of having a UICC that is embedded in a communication device in such a way that it is 'not easily accessible or replaceable'. Such a UICC is called an 'embedded UICC' (eUICC). The ability to change subscriptions on devices which utilise an eUICC necessitates new methods for provisioning identity and access credentials both securely and remotely. TC SCP has agreed to undertake new work to address this.

A significant achievement of 2011 concerned the Card Application Toolkit. It can now be executed on composite devices such as an M2M module to which, for instance, an external display and/or keypad would be temporarily or permanently attached. The technical solution allows the new device capabilities to be exposed to the UICC which can then make use of a broader set of proactive commands that would otherwise not be accepted by the device. A typical use would be for an M2M communication module in a vending machine to which a display and keypad are connected for maintenance operations which are not needed for normal operation.

Security Algorithms

ETSI is a global leader in the provision and maintenance of security algorithms. Our Security Algorithms Group of Experts (SAGE) produces authentication and encryption mechanisms for various technologies to prevent fraud and unauthorised access to public and private telecommunications networks and to protect user privacy.

ETSI Security White Paper

A fully comprehensive overview of ETSI's security activities and achievements is provided by the fourth edition of our Security White Paper (www.etsi.org/SECURITYWHITEPAPER).

This new edition includes extensive updates. New areas of work which have, or will have, security aspects have been added, including M2M communications, Identity and Access Management for Networks and Services (INS) and developments in 3GPP. Details of Plugtests™ events related to security matters have also been inserted.

ETSI Security Workshop

The sixth annual ETSI Security Workshop took place in January 2011. The workshop, which is now a major event in the international security calendar, attracts increasing numbers of experts from all over the world. The event, which in 2011 included sessions on security aspects for Cloud, Intelligent Transport Systems, M2M and Smart Grids, provides opportunities for co-operation and professional networking and offers pointers as to the future direction of security standardisation.

In 2011, SAGE completed a major project to develop a third set of crypto-algorithms for LTE™. These algorithms were requested by the Chinese partners in the Third Generation Partnership Project (3GPP™) to meet the requirements of their country's regulatory authorities. Network equipment and handsets supporting the new algorithms are expected to be on the market during 2012.

The Security of Converging Networks

In 2011, security work in our Technical Committee for Telecommunication and Internet converged Services and Protocols for Advanced Networking (TC TISPAN) focused on IPTV, service and content protection, Customer Premises Networks (CPNs), the Network-to-Network Interface (NNI), prevention of unsolicited communications, threat analysis for customer networks and application layer security.

We defined the security services and mechanisms for CPNs connected to the TISPAN NGN. The Committee is working in close collaboration with TC LI on Lawful Interception and Data Retention for the NGN. This will include a mapping of handover capabilities.

New work was started on a Threat and Vulnerability Risk Assessment (TVRA) of smart metering and relevant security requirements, with the aim of giving consumers confidence in the security of their data.

One of the highlights of 2011 was the publication in March of the first set of Group Specifications (GSs) by our Industry Specification Group on Identity and Access Management for Networks and Services (ISG INS). These specifications will be used to simplify how users gain authorised access to services and data beyond enterprise boundaries. They also support increased privacy, thus improving user acceptance.

Other Aspects of Security

Security is also a growing issue for Terrestrial Trunked Radio (TETRA). A major two-year study has begun to examine the possible replacement of TETRA's air interface encryption algorithm and, with the developing focus on broadband TETRA, additional algorithms will be needed.

In broadcasting, the 14-part Technical Specification on DVB Content Protection and Copy Management (DVB-CPCM) was finalised in 2011. As a result, there is now a complete solution in place to distribute content in the home and to support the various business models of content owners.

Other ongoing security work includes Radio Frequency Identification (RFID), Quantum Key Distribution and Intelligent Transport Systems (ITS), where we are addressing the protection of user privacy and developing standards to counter risks associated with Co-operative ITS.

Interoperability
Interoperability in an Interconnected World

One of the underlying motives for the development of communications standards is to facilitate interoperability between products in a multi-vendor, multi-network and multi-service environment. Interoperability ensures that users have a much greater choice of products and that manufacturers can benefit from the economies of scale that a wider market makes possible. ETSI's efforts to ensure interoperability are thus driven by market demand.

In their drive to deliver interoperable standards, our Technical Committees follow the principles of applying best practice specification techniques, the validation of standards and the development of test specifications related to key ETSI technologies. We also co-ordinate interoperability and related testing activities with other partners including the Third Generation Partnership Project (3GPP™).

The ETSI Approach to Interoperability

ETSI has pioneered the use of validation and testing to deliver interoperability. Testing is now recognised as a crucial phase in any serious development process. Without testing, there can be no compliance with standards, no harmonisation and no way of checking interoperability.

Interoperability is intrinsic to all areas of our work. With over 20 years' experience, our Centre for Testing and Interoperability (CTI) is responsible for this horizontal activity, providing hands-on expertise in standards validation (especially through the organisation of Plugtests™ interoperability events), the development of test specifications, the application of protocol specification techniques and the use of methodologies and best practices.

Plugtests Events

Over the years, the CTI has organised over 160 Plugtests events, offering manufacturers an opportunity to test their products against standards and resolve any issues. In addition, feedback from these events directly improves the development of our standards.

In 2011, the CTI offered a varied programme of twelve Plugtests events covering a wide range of technologies including femtocells, eHealth, digital living, electronic signatures for XML and PDF documents, Voice over IP for Air Traffic Management, Gigabit-capable Passive Optical Networks (GPON) and DECT CAT-iq. Particularly significant were the advances in testing and interoperability activities for Intelligent Transport Systems (ITS) and Machine-to-Machine (M2M) communications.

Co-operative Mobile Systems

In November 2011, in co-operation with the European Road Transport Telematics Implementation Co-ordination Organisation (ERTICO), the CTI organised the first ITS Co-operative Mobility Plugtests as part of a special Interoperability Week held in Helmond, in The Netherlands. The event was designed to verify the interoperability of ETSI standards-based ITS systems. Supported by the European Commission-funded research projects, DRIVE C2X and eCoMove, and hosted by the Netherlands Organisation for Applied Scientific Research (TNO) and the Dutch Integrated Testsite Cooperative Mobility (DITCM), this Plugtests event enabled 14 ITS companies from eight different countries to test the interoperability of their solutions in face-to-face configurations. The event verified the interoperability of the protocols for Co-operative Awareness Message (CAM) and

Decentralised Environmental Notification Message (DENM) services and the GeoNetworking standards developed by our ITS Technical Committee; more than 750 interoperability tests were carried out. The ITS Conformance Validation Framework was also demonstrated during the week and live trials against implementations were conducted, both of which proved highly successful.

The results of the event were presented at a workshop attended by more than 50 delegates from suppliers, research institutes, car manufacturers and associations. The results were very encouraging and are expected to help accelerate ITS standardisation and the deployment of Co-operative ITS systems.

Cross-Technology Evaluation

In another first, in support of TC ITS and our Technical Committee for Electromagnetic Compatibility and Radio Spectrum Matters (TC ERM), the CTI organised a Cross-Technology Evaluation Plugtests event. Held at the European Commission Joint Research Centre (JRC), Ispra, Italy, in July 2011, this event addressed the co-existence of ITS and Dedicated Short Range Communication (DSRC) equipment as used in the European Electronic Toll Service (EETS) and helped to address the potential problem of interference caused by the use of adjacent frequency bands.
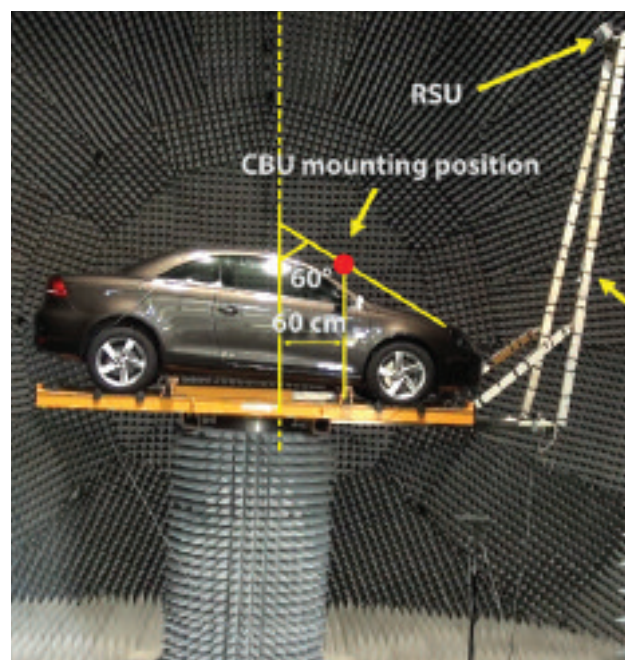
Interoperability

M2M Workshop and Demonstrations
At ETSI's second M2M Workshop, held in Sophia Antipolis, France, in October 2011, leading M2M firms demonstrated the interoperability of products based on our new M2M standards. This year the focus was on implementation and the deployment of standards-based solutions. Five comprehensive demonstrations showcased how the interoperability of standards-based solutions in M2M products is key to market success. The event covered a wide cross-section of M2M applications, including smart energy, environmental sensing, mHealth, intelligent transport, ambient assisted living, personal robots, home automation, medical appliances and smart metering. The demonstration showcase is the first in a series of ETSI activities focused on M2M interoperability.

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 which enable us to produce specifications that are easy to understand and easy to use.

Work on the performance testing of distributed systems was completed in 2011, giving the testing community for the first time an agreed terminology which can be used for performance testing by both operators and equipment makers.

TTCN-3
TC MTS continues to update the standards for Testing and Test Control Notation version 3 (TTCN-3), the highly successful test specification language which we developed originally for Europe but which is now deployed worldwide in a variety of areas including the automotive sector, transportation, the Internet, medical applications, web-based services, finance, industrial automation and distributed systems.

In addition, for some time, the TTCN-3 community has been seeking assurance that tools comply with the TTCN-3 standards. In 2011 we met this need by creating a new conformance test suite for the TTCN-3 core language, which currently contains more than 1 000 conformance tests.

ETSI has been working on testing for ePassport readers which will enable the faster processing of passengers at airports and improvements to border security worldwide. In 2011, in collaboration with the JRC, we completed a prototype TTCN-3 test system for ePassport reader conformance testing. A Technical Report (TR) was then published as a framework for developing a conformance test specification for eIdentification. This TR contains a range of sample test cases which have been validated against real ePassport reader devices. We also implemented two prototype test systems for ePassport readers, and published a White Paper on testing ePassport readers using TTCN-3.

For the last nine years, the CTI has co-organised the international TTCN-3 User Conference, which was held in 2011 in Bled, Slovenia. In addition, in April, the CTI participated in 'Connectathon 2011' in Pisa, Italy, when TTCN-3 tools were successfully applied to healthcare systems.

The CTI continues to play a major role in 3GPP testing, keeping pace with the rapid progress being made by LTE™. In 2011 delivery of LTE user equipment (UE) TTCN-3 test cases for validation and certification was once again completed on time.

Model-Based Testing
Work on Model-Based Testing (MBT) is rapidly becoming a key issue in ETSI; experience in industry to date indicates that MBT can increase productivity in testing by 30%. In 2011 TC MTS produced our first MBT standard, which was published in June – an ETSI Standard (ES) which defines the requirements for modelling notations suitable for test generation.

In October, jointly with the Fraunhofer FIRST and FOKUS institutes, we organised a Model-Based Testing User Conference in Berlin, Germany. The event far exceeded expectations, attracting 120 experts from 21 countries. 70% of those attending came from industry, which emphasised the fact that MBT of software-based systems has matured in the last decade from a topic of research into a fully-fledged industrial technology.

Test Description Language
In October 2011, we began new work on the Test Description Language (TDL). We are developing an ETSI Standard which will define a graphical notation 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.

Public Safety
Mission-Critical Communications to Rely on

The need for emergency telecommunications includes many scenarios ranging from a man overboard to a major natural disaster. We are working on standards and interoperability tools to enable communications in a diverse range of emergency situations.

Disaster Warning Systems

Perhaps one of the most graphic examples of the importance of our standardisation work came in March 2011 when a catastrophic earthquake and tsunami hit the north-east coast of Japan. The Earthquake and Tsunami Warning System (ETWS), specified in Release 8 of the Third Generation Partnership Project (3GPP™) system, worked exactly as designed and, though the loss of life was dreadful, it might have been very much higher had the ETWS not existed or had it failed to operate correctly.

While 3GPP has specified the Public Warning System (PWS), a globalisation of the ETWS which includes US requirements, based on the cell broadcast service, our Emergency Telecommunications Special Committee (SC EMTEL) has defined the European requirements for this service – EU-Alert. In 2011, SC EMTEL began to enhance EU-Alert with support for multiple languages. With 23 different official languages in the European Union, this is a very significant issue for Europe.

TETRA

The Terrestrial Trunked Radio (TETRA) standard was built on requirements from the whole Professional Mobile Radio (PMR) industry to serve a variety of markets – public safety, transport, industry and commercial users – but the main market for TETRA is still national public safety organisations.

Our TETRA Technical Committee (TC TETRA) continuously revises the existing TETRA 1 (narrowband) and TETRA 2 (wideband) standards to meet the needs of these markets, utilise the latest developments in technology and develop TETRA broadband data expansion solutions. For example, in 2011 we introduced Direct Access (DA) to the TETRA Enhanced Data Service (TEDS), a new extension to TETRA Release 2. TEDS provides wideband high speed data communication services. With TETRA DA, a mobile station can now access the TEDS channel directly, which provides greater flexibility in how TEDS is integrated into a TETRA network and improved performance for data-centric terminals. DA also allows faster updating and offers significant improvements in a number of features including the provision of the short data service (SDS), location messaging and GPS.

Safety in Transportation

We have been working with 3GPP on eCall, the European Commission (EC) eSafety initiative. This in-vehicle emergency call service will automatically relay data about an accident from the vehicle involved to an emergency service centre. With this information, the emergency services' response time will be much shorter. While 3GPP has defined how the data is transmitted and the voice call established, our Mobile Standards Group Technical Committee (TC MSG) published the specifications and a Technical Report which together will enable eCall Network Access Devices to be tested and certified for operation on Global System for Mobile communication (GSM™) and Universal Mobile Telecommunications System (UMTS™) networks.

We are also creating standards for maritime safety equipment and working on various mechanisms for road safety through the use of Intelligent Transport Systems.

Satellite Emergency Communications

We are working on the establishment of a temporary emergency communication cell based on Wi-Fi, VHF/UHF, WiMAX, GSM or TETRA, which can then be backhauled to the permanent infrastructure by means of a bi-directional satellite link. In 2011, we completed a Technical Report (TR) on Emergency Communication Cells via Satellite (ECCS) which provides rescue organisations with the technical basis for the development of their telecommunication resources for disaster management.

Emergency Caller Location

We began new work in 2011 in support of EC Mandate M/493, on the development of a functional architecture to support emergency caller location determination and transport. This is particularly needed in cases where a Voice over IP (VoIP) service provider and one or several network operators – all serving the customer in the establishment of an emergency call – are independent enterprises needing to co-operate to determine the caller's location.

Other Aspects of Public Safety Standardisation

We updated our standard on the use of location tracking using Ultra Wide Band (UWB) sensors to enable the emergency services to pinpoint people trapped in burning or collapsed buildings. Our work on the use of UWB technology to achieve high-precision local positioning (with a resolution to within a few centimetres), for safety applications on the railways, is also progressing.

SC EMTEL has begun new work on 'Total Conversation' for the handling of emergency calls that can be placed by people with hearing or speaking disabilities.

Our Reconfigurable Radio Systems Technical Committee (TC RRS) published a TR on the costs involved in using RRS in public safety.

Working in Partnership

Working with Europe

We recognise the importance of our status as a European Standardisation Organisation (ESO) in strategic terms, and place great value on our relationship with the European Commission (EC) and the European Free Trade Association (EFTA). Our mission to provide standards and specifications to support European Union (EU) legislation and public policies is both a responsibility and a privilege.

2011 saw the publication of the draft Council Regulation and Commission Decision on the reform of European standardisation. During the discussions leading up to this announcement, we took a strongly proactive approach to ensure that our views were heard. The Commission Decision of November 2011 has now provided for the creation of an ICT Multi-Stakeholder Platform at which we will be represented.

We continued to respond to EC mandates in 2011, as they were adopted, and provided input to drafts. Over the last year, co-operation with our sister ESOs, the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC), has increased; during 2011 we worked together in response to various standardisation mandates. We also made use of the EC's ICT Standardisation Work Programme 2010-2013 to support issues raised by our Members, especially in relation to Co-operative ITS (Mandate M/453) and electronic signatures (Mandate M/460). 2011 saw the arrival of a number of new mandates in which we have a significant interest, including Smart Grid, enhanced Emergency Call and space standardisation. We were also involved in the preparation of new mandates which are expected in 2012 for Software Defined Radio and the Internet of Things.

We sit as an observer at a number of Member State committees and their working groups (for example, 98/34/EC, the Senior Officials Group for Standardisation (SOGS), the Telecommunication Conformity Assessment and Market Surveillance Committee (TCAM), the Communications Committee (COCOM) and the Radio Spectrum Committee (RSCOM)). We also participate in the Radio Spectrum Policy Group (RSPG) and assist in the development of opinions on radio spectrum policy in the EU.

Throughout 2011 we continued to develop Harmonised European Standards (ENs) in support of the Radio and Telecommunications Terminal Equipment (R&TTE) and Electromagnetic Compatibility (EMC) Directives, as well as

ENs that have been listed in the Official Journal of the EU (OJEU) in support of the Single European Sky (SES) Interoperability Regulation.

We have established an ongoing dialogue with DG INFSO (Information Society and Media) in order to support EC policy and objectives, particularly those of the Digital Agenda for Europe and the Cloud strategy. In September 2011, ETSI and DG INFSO co-organised a workshop on Cloud Computing standards. We also have good relations with DG ENTR (Enterprise and Industry), DG MOVE (Mobility and Transport), DG RTD (Research and Innovation) and DG JRC (Joint Research Centre).

Partnership Agreements

We believe that the future is built around international co-operation and have therefore put together a portfolio of partnership agreements with fora, consortia and international and regional Standards Development Organisations (SDOs). We have long recognised that working with others is also the best way to establish coherence between ETSI standards and those produced by others, to avoid the duplication of effort and to ensure that our standards are widely accepted and implemented. Co-operation is crucial to reduce fragmentation in standardisation and to address the convergence of technologies. Our investment in partnerships is also an important means by which we ensure our activities keep up with market needs.

By the end of 2011, our partnership portfolio numbered over 80 such agreements. During the year, we entered into new Memoranda of Understanding (MoUs) with the European association of the electricity transmission and distribution equipment and services industry (T&D Europe) and the Club des Responsables d'Infrastructure et de Production (CRIP). In the aeronautical sector, we established an MoU with the SESAR (Single European Sky ATM Research) Joint Undertaking and signed a Letter of Intent (LoI) with the International Civil Aviation Organization (ICAO). In addition, a Co-operation Agreement was signed with the Society of Cable Telecommunications Engineers (SCTE) and the existing LoI with the Japanese Association of Radio Industries and Businesses (ARIB) was upgraded to a Co-operation Agreement. LoIs were also signed with SAE International and the UMTS Forum.

Partnerships were renewed with the SatLabs Group, the European Research Consortium for Informatics and Mathematics (ERCIM), the Broadband Forum, the Organization for the Advancement of Structured Information Standards (OASIS) and the International Multimedia Telecommunications Consortium (IMTC). Together with CEN and CENELEC, we established joint MoUs with the GCC Standardization Organization (GSO) and the Asociación Mercosur de Normalización (AMN).

Most of these new agreements are the direct result of our increasingly diversified technical activities. New collaborations help to raise our profile in new markets, facilitating the standardisation of new areas which are converging with Information and Communications Technologies (ICT) and allowing ETSI to extend the impact of its expertise.

Dialogue with Emerging Markets

Recognising the opportunities for trade and investment presented by developing international markets, ETSI maintains a dialogue with key partners in the different regions.

In Russia, we supported a Third Generation Partnership Project (3GPP™) LTE™ event in Moscow in May 2011. We also participate in the EU-Russia Information Society Dialogue and its sub-group on Conformity Assessment. Our support for these activities will become increasingly important in coming years with the development of the Customs Union.

Co-operation with China is developing and, in addition to regular contacts and joint work with the China Communications Standards Association (CCSA) and the China Electronics Standardisation Institute (CESI), we have developed new contacts with the Smart Grid Corporation of China (SGCC). In November 2011 we participated in the EU-China Regulatory Dialogue which enables the exchange of information on regulatory affairs and standardisation policy. The second collaborative contract with CEN and CENELEC for a Seconded European Standardisation Expert in China (SESEC) is in its final year. The work of this 'standards attaché' is proving useful in increasing our visibility in China and our contacts with Chinese policy-makers and industry players. Discussions are therefore taking place regarding the continuation of the project. In 2011, we were invited to speak at a number of events in China and have made new contacts with the Zhongguancun Standards Innovation Center, which aims to make Beijing a 'smart city', with smart buildings, transport, power transmission and distribution.

As standardisation activities develop in India, we continue to monitor progress, particularly in relation to the Global ICT Standardization Forum of India (GISFI). In 2011, a number of technical committee meetings were held in India, particularly for 3GPP, which has provided an opportunity for Indian industry to participate directly in our standardisation activities. A second contract for a Seconded European Standards Expert in India (SESEI) is being prepared.

Partner Support Services

We provide services, on a cost-recovery basis, for the benefit of ETSI Members by delivering high quality support to third party organisations where ETSI Members are involved. These services include both forum management services delivered under the Forapolis™ brand and technical support related to interoperability and testing, under the Interopolis™ brand.

Drawing on our two decades of experience, Forapolis continues to offer support services to various standardisation and partnership initiatives. This work performed for external partners is highly regarded and, in 2011, attracted another three partners to the service.

During 2011, the Forapolis Portal Platform evolved to adapt better to the requirements of existing and potential partners and is now widely considered to be an essential time-saving forum management tool for documentation, meetings, working groups and membership.

In 2011, following the success of our work in providing Trusted service Status List (TSL) Conformance Checker services to the EC, in the context of verification of Electronic Signatures, our Centre for Testing and Interoperability (CTI) and partners were awarded a third contract with the EC to develop a platform for the analysis of Trusted Lists and the collection and analysis of certificates included in Trusted Lists.

IPR Policy

Intellectual Property Rights (IPRs) are often incorporated into ETSI standards and specifications. The tension between IPRs (destined for private, exclusive use) and standards (intended for free, collective use) is minimised by the ETSI IPR Policy.

After the completion of user acceptance tests in January and February 2011, our new IPR online database, known as the DARE Project (IPR Database Restructuring), went live at the beginning of March. This site will significantly improve the availability of information related to IPRs declared to us, and will benefit the whole industry, not just our own Members. The database is now being enhanced to take account of feedback from users.

During 2011, we also approved changes to the IPR Policy and the ETSI Guide on IPR with respect to the handling of software copyright issues.

Specialist Task Forces and Other Funded Projects

Specialist Task Forces (STFs) are groups of highly skilled experts sent by ETSI Members to work together for limited periods to perform specific technical work under the direction of an ETSI committee. A similar mechanism has been adopted to support 'funded projects' for the Third Generation Partnership Project (3GPP™) partners and for the R&D projects funded by the European Commission (EC) and the European Free Trade Association (EFTA).

Altogether, 53 STFs and other funded projects were active during 2011, involving about 180 experts of 27 different nationalities and representing a financial investment of 3,3 M€.

In addition, a voluntary contribution equivalent to 900 k€ was provided by experts working free of charge in the STFs, in the R&D projects and in 3GPP Task Force 160.
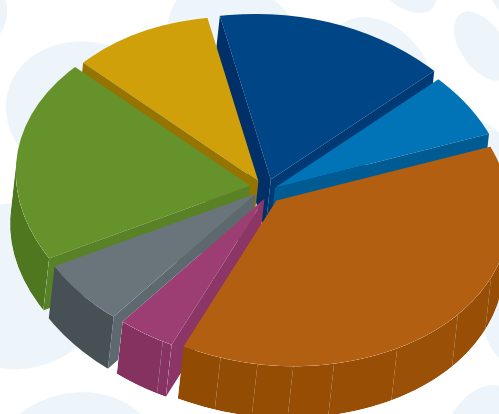
EC/EFTA Funding

2011 saw continued strong relations with the EC/EFTA, with the prompt delivery of the slightly increased Operating Grant for 2011 as well as the acceptance and finalisation of the payments of the 2010 Operating Grant. The EC/EFTA contribution to the ETSI standardisation infrastructure for 2011 was set at just below 3,02 M€ via the Operating Grant. It is anticipated that the 2012 Operating Grant with the EC will be concluded for a similar sum.

ETSI has continued to manage and invoice the action grants received from the EC/EFTA effectively and 2011 saw the finalisation and closure of actions started in 2008 onwards. 2011 saw a reduction in the number and amount of EC/EFTA financing of standardisation actions (less than 1 M€), as fewer requests were made. A number of action grants are foreseen in the first quarter of 2012 to support mandated activity by our Intelligent Transport Systems Technical Committee (TC ITS).

Technical area	Spent (k€)
3GPP TTCN test specifications – 3GPP partners funding	807
Intelligent Transport Systems (ITS)	691
Electronic Signatures & Infrastructures (ESI)	563
Human Factors (HF)	278
IMS Network Testing (INT)	185
R&D projects – EC/EFTA funding	179
Methods for Testing & Specification (MTS)	135
Digital Enhanced Cordless Telecommunications (DECT™)	113
Next Generation Networks (TISPAN)	98
Powerline Telecommunications (PLT)	47
Smart Card Platform (SCP)	46
EMC and Radio Spectrum Matters (ERM)	46
Satellite Earth Stations & Systems (SES)	36
Mobile Standards Group (MSG)	28
Speech and Multimedia Transmission Quality (STQ)	6

*Figures are rounded to the nearest k€.*

Funding sources in 2011

ETSI funding	16%
ETSI voluntary contribution	6%
EC/EFTA Mandates/ICT	38%
EC/EFTA R&D	4%
EC/EFTA voluntary contribution	6%
3GPP Partners funding	20%
3GPP voluntary contribution	10%

Standards Production

In 2011 ETSI published over 3 000 standards and reports. By the end of the year, the Institute had produced a total of almost 30 000 standards, specifications, reports and guides since its establishment in 1988.

Production performance is still excellent. In 2011, we put particular effort into reducing the lead times for producing European Standards (ENs). All of our internal macros have been reviewed and enhanced and some have been entirely redeveloped by our IT service, to help us produce better quality deliverables in a shorter period of time. In addition, staff have been trained to further improve the quality of draft ENs.

The number of deliverables published, for each of the years 1990 - 2011 and the prediction for 2012
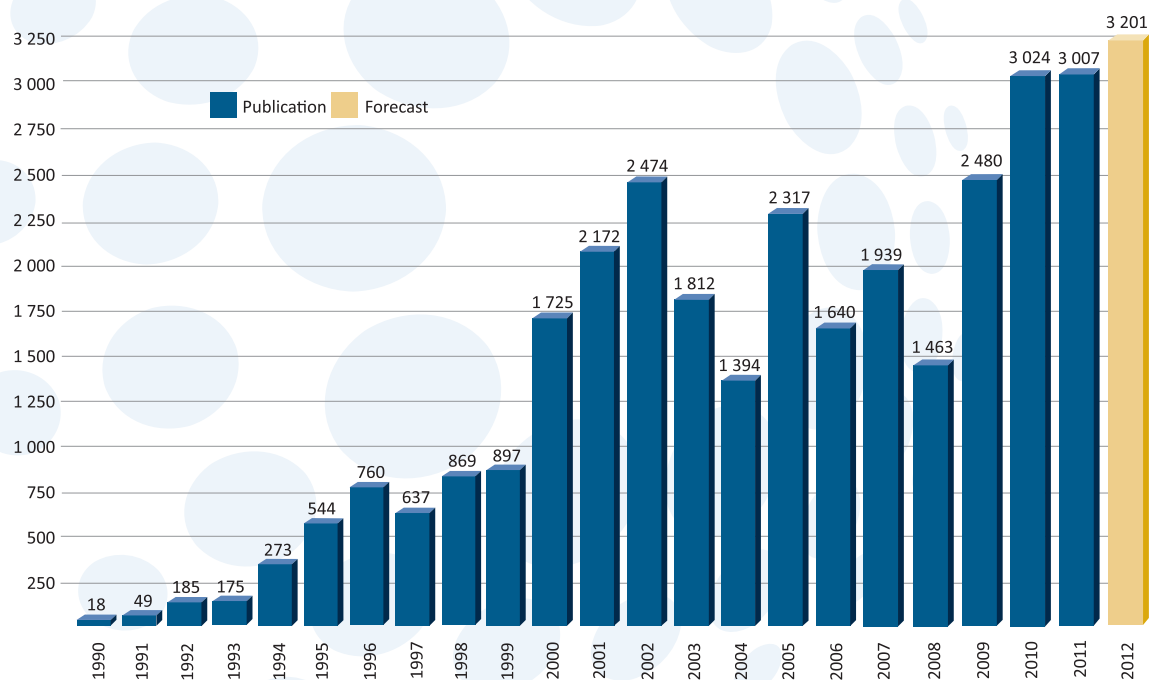
Distribution by type of published document

	In 2011	Total since 1988
Technical Specification (TS)[1]	2 676	21 810
Technical Report (TR)[2]	212	2 615
ETSI Standard (ES)	19	661
European Standard (telecommunications series) (EN)[3]	81	4 450
ETSI Guide (EG)	7	231
Special Report (SR)	6	70
Group Specification (GS)	6	17
TOTAL	**3 007**	**29 854**

[1] Includes GSM™ Technical Specification (GTS)

[2] Includes old deliverable types: Technical Committee Reference Technical Report (TCR-TR), Technical Committee Technical Report (TC-TR) and ETSI Technical Report (ETR)

[3] Includes amendments and old deliverable types: European Telecommunication Standard (ETS), Interim ETS (I-ETS) and Technical Basis for Regulation (TBR)

Membership

ETSI Membership increased slightly in 2011 and, by the end of the year, the Institute had a total of 739 Members. This total is made up of 598 Full Members, drawn from 40 European countries, 117 Associate Members and 24 Observers. Overall Membership (all categories) is drawn from 62 different countries and provinces, from across five continents. 180 of ETSI's Members are Small or Medium-sized Enterprises (SMEs), of which 74 are Micro-Enterprises.

The European Commission and the European Free Trade Association Secretariat, which hold special roles as Counsellors, attend the General Assembly and the ETSI Board and continue to play an active part in ETSI's work.

Membership fee review

During 2011 ETSI undertook a review of its Membership fee structure. Many of the Institute's most recent standardisation projects are related to the application of Information and Communications Technologies (ICT) in new areas of industry, and new Members often come from outside the traditional telecommunications sector. In addition, the method of calculating Membership fees has led to significant differences in fees payable by companies of similar size, industrial sector, market penetration and product offering.

At the end of the year, Members unanimously approved a new method of calculating membership fees, applicable from 2012. This change will distribute the financial contribution to ETSI more clearly and justifiably between Members, and make it easier for Members to assess their appropriate level of Membership fee.

Membership by type

	01-01-2011	31-12-2011
Full Members	579	598
Associate Members	116	117
Observers	26	24
Total	**721**	**739**

Full and Associate Membership by category
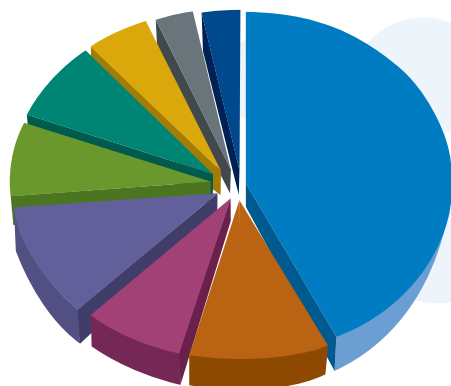
Manufacturers	302	(42%)
Network operators	71	(10%)
Administrations	60	(8%)
Research bodies	89	(13%)
Service providers	60	(8%)
Consultancies	58	(8%)
Users	31	(5%)
Others	25	(4%)
Other Government bodies	19	(3%)

Overall Membership by country/province

Albania	1
Andorra	1
Australia	5
Austria	12
Belgium	28
Bosnia Herzegovina	2
Brazil	2
Bulgaria	4
Canada	7
China	8
– Taiwan (Province of China)	14
Croatia	3
Cyprus	2
Czech Republic	5
Denmark	15
Egypt	1
Estonia	2
Finland	13
Former Yugoslav Republic of Macedonia	1
France	76
Georgia	1
Germany	113
Greece	7
Hungary	4
Iceland	1
India	5
Indonesia	1
Iran	1
Ireland	10
Israel	7
Italy	34
Japan	5
Jordan	1
Korea	4
Latvia	1
Lesotho	1
Lithuania	1
Luxembourg	5
Malaysia	2
Malta	2
Netherlands	31
Norway	11
Poland	9
Portugal	2
Qatar	2
Romania	7
Russian Federation	11
Serbia	1
Singapore	1
Slovakia	4
Slovenia	4
South Africa	3
Spain	20
Sweden	21
Switzerland	23
Turkey	8
Ukraine	2
United Arab Emirates	3
United Kingdom	116
United States of America	50
Uzbekistan	1
Yemen	1
62 countries or provinces in total	**739**

Evolution of ETSI Full Membership

Year	Members
2011	598
2010	579
2009	580
2008	574
2007	520
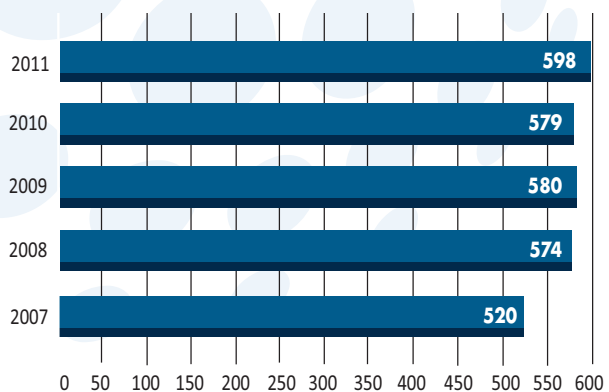
Financial Situation

The management of the finances of ETSI is described by
• the budget report
• the financial statements (balance sheet and income and expenditure statement) which are established according to French laws and regulations.

Mr Philippe Aumeras, whose auditor's mandate had been renewed by the 55th General Assembly, has audited the 2011 ETSI accounts and certified that the annual financial statements are true, sincere and give a fair view of the activities carried out during the past financial year.

Budget Maintenance

In total, compared with 2010, income decreased by 1,8% and expenditure by 2,7% or 0,6 M€. The result of the year is a surplus of 154 k€ compared with a deficit of 47 k€ in 2010.

The key points of the budget management are the following:

Expenditure – Secretariat costs were 0,2% over budget but decreased by 2,7% compared with 2010, mainly due to the ongoing savings policy (travel, telecommunications, promotion...) and resources reallocation, to adjust to the level of Members' contributions and commercial activities converted into partners' services on a cost recovery basis. 4 M€ were spent on experts' costs for Specialist Task Forces and other standardisation related technical experts.

Income – Members' contributions were stable compared with 2010. 58% of the budget was funded by Members' contributions (13 M€). EC/EFTA payments amounted to 4,8 M€ to cover expenses related to the operation of the European standardisation platform and standardisation projects. Income generated by support services supplied to fora and consortia (Forapolis™ and Interopolis™) amounted to 1,4 M€ (a 7,5% decrease).

2011 Budget Statements

Income	k€
Members' contributions and Observer fees	13 035
EC/EFTA contracts	4 783
3GPP™ Partners	1 746
Voluntary contributions	102
Forapolis/Interopolis	1 417
European Friends of 3GPP	625
Sales	237
Plugtests™	223
Financial income	132
Other income	172
TOTAL INCOME	**22 472**

Expenditure	k€
Secretariat staff costs	11 510
Other Secretariat costs	5 774
Special Projects	331
European Friends of 3GPP	461
Provision and losses	309
Experts costs	3 933
TOTAL EXPENDITURE	**22 318**

In 2011, there was a surplus of 154 k€.

Financial Statements for the Year 2011

The final accounts and the balance sheet are summarised below. The fiscal accounting period is 1 January 2011 – 31 December 2011.

Statement of Income and Expenditure Year 2011

	Income (€)	Expenditure (€)
Income	22 315 052	
Purchases		10 120 687
Expenses		12 173 077
Investment management	140 064	7 861
Extraordinary income & expenses	15 940	15 471
TOTAL	**22 471 056**	**22 317 096**

There was a surplus of 153 960 € in 2011.

Summary of the Balance Sheet

Assets

Net amounts at:	31 Dec 2010 (€)	31 Dec 2011 (€)
Fixed Assets	6 199 196	5 818 725
Debtors	15 317 665	14 464 476
Securities/cash	9 389 105	6 252 695
Adjustment accounts	211 666	131 962
TOTAL ASSETS	**31 117 630**	**26 667 858**

Liabilities

Net amounts at:	31 Dec 2010 (€)	31 Dec 2011 (€)
Equity	8 278 661	8 278 661
Provisions	78 000	89 855
Balance carried forward	-86 890	-133 980
Result of the year	-47 091	153 960
Creditors	9 858 877	4 805 243
Adjustments	13 036 073	13 474 119
TOTAL LIABILITIES	**31 117 630**	**26 667 858**

Figures are rounded to the nearest €.

World Class Standards

- Air Traffic Management
- Automotive Radar
- Autonomic Systems
- Broadband Wireless Access
- Broadcast
- Cloud Technology
- DECT™
- Digital Mobile Radio
- eHealth
- Electromagnetic Compatibility
- Electronic Signatures
- Emergency Communications
- 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
- Next Generation Networks
- Powerline Communications
- Protocols
- Quality of Service
- Quantum Key Distribution
- Radio
- Railway Communications
- Reconfigurable Radio Systems
- Regulation & Legislation
- Safety
- Satellite Communications
- Security
- Smart Cards
- Smart Grids
- Smart Metering
- Testing
- Terrestrial Trunked Radio (TETRA)
- Wireless Medical Devices