

annual report

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World Class Standards



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.



Looking back at 2009, promoting innovation through standardisation was undoubtedly a key issue – and continues to be so in 2010. ETSI can rightly be proud of the way it is responding to the changing needs of its members, particularly in these economically uncertain times, and numerous examples of new initiatives and new areas of standardisation are described on the following pages.

It was also gratifying to see the ever widening reach of ETSI's standards as information and communication technologies become increasingly globalised.

Green issues were uppermost in many people's minds in 2009. ETSI has established a Green Agenda. The Institute has been a pioneer in the use of electronic meeting tools and we are addressing energy consumption within our own IT infrastructure.

But we also have a crucial role to play in producing standards and guides that lead the way in the development of environmentally friendly ICT products and services.

ICT offers many opportunities to reduce costs and increase efficiency in business and to improve life generally. I am delighted to see that in 2009 ETSI embraced the challenges of the new while at the same time recognising its responsibility to the future.

John Phillips
*Chairman of
the General Assembly*



ETSI's reputation has been built on a steady stream of highly successful ICT standards in mobile, fixed, and radio communications and a range of other standards that cross these domains including security, satellite, broadcast, human factors, testing and protocols, smart cards and emergency communications.

Highlights of 2009 include new features added to the New Generation DECT™ specification and publication of the first PDF Advanced Electronic Signature Profile. A complete revamp of the UICC smart card has now been achieved, with the specification of new interfaces and a clear shift for the UICC to become part of the Internet world. Release 2 of the Speech and Multimedia Transmission Quality specifications for Voice over Internet Protocol (VoIP) terminals was completed. There have been major developments to deal with emergency situations. We have continued to support interoperability initiatives. Through the Third Generation Partnership Project (3GPP™), we put LTE™ forward as a candidate for IMT-Advanced.

But new topics are also emerging where ETSI is proving no less successful: Intelligent Transport Systems, Machine-to-Machine communications, Grid and Cloud computing and eHealth, to name just a few.

The potential for the future is limitless – and ETSI is grasping new opportunities as it seeks to support its members in an evolving world.

Mike Walker
Chairman of the Board



In 2009 ETSI focussed not just on maintaining ongoing activities in our world-renowned activities, but on continuing to attract new, future-looking technologies into the world of standardisation.

Among many other innovations, ETSI has now laid the foundation for its work on the 'Future Internet' – the 'Internet of Things', with objects, vehicles, devices etc all interconnected. Several recently created Technical Committees address this trend, for example, Machine-to-Machine Communications, Intelligent Transport Systems, Media Content Distribution and Aeronautics.

In addition to these new technology areas, ETSI has established 'Industry Specification Groups' (ISGs), pre-standardisation fast-track mechanisms designed to bring research activities closer to standardisation, and to agree specifications swiftly. With four new ones created in 2009 to deal with topics such as the Self-managing Future Internet and Internet Protocol Ontologies, we are making rapid progress in new key areas.

In a world where ICT and the Internet come together, ETSI Members can set the agenda for new activities and participate directly in their implementation. At the same time, the free distribution of ETSI standards guarantees the widest possible acceptance: their quality and relevance ensure they are adopted around the world. With its forward-looking, innovative approach, ETSI has set its direction for a productive future.

Walter Weigel
Director-General



The world experienced a year of economic uncertainty in 2009, which affected the information and communications technologies (ICT) industry as much as any other. However, ETSI's finances are stable, membership over the year remained steady and the number of deliverables produced exceeded all previous years, with 2 480 documents published. The total number of standards, specifications, guides and technical reports published to date is now nearly 24 000.

Membership figures are one way to assess confidence in ETSI. Clearly the ICT industry believes that standardisation, coupled with the innovative approach ETSI has adopted, is an appropriate means to counteract the economic downturn. Despite the recession, at the end of the year, ETSI had 717 Members drawn from 62 countries across five continents.

This membership confidence is due in no small part to ETSI's ability to meet market demand and to adapt to change. For example, we have established the concept of the Industry Specification Group (ISG), a pre-standardisation fast-track mechanism designed to bring research activities closer to standardisation, and to agree specifications swiftly. In 2009, in addition to our existing ISG on Quantum Key Distribution, we created four new ISGs to address various aspects of the Internet of the Future: Autonomic Network Engineering for the Self-managing Future Internet (AFI), Measurement Ontology for IP traffic (MOI), Mobile Thin Client (MTC) and Identity and Access Management for Networks and Services (INS).

The success of a Standards Development Organisation (SDO) has to be measured in two ways – first in terms of the technologies and services which have led to significant success in the market. And in the following pages there are examples of the latest developments in the technologies that have earned ETSI its worldwide reputation over the years, such as smart cards, security, speech and multimedia quality, Next Generation Networks, human factors, mobile communications, radio, satellite, broadcasting. 2009 was undoubtedly a year of achievement, with significant progress made on New Generation DECT™, initiatives to deal with emergencies and publication of the first PDF Advanced Electronic Signature Profile. We produced new deliverables to achieve configurability to meet individual users' needs

that represent a major milestone in personalisation and user profiles. As a partner in the Third Generation Partnership Project (3GPP™), we contributed to the further evolution of mobile communications, in particular with the proposal of LTE™ as a candidate for IMT-Advanced.

But the enduring success of an SDO depends equally on the promise it holds for the future – and ETSI is without doubt an attractive SDO for standardising new technologies. We have begun work on the 'Future Internet', the 'Internet of Things', and we are addressing key new areas such as Machine-to-Machine Communications, Intelligent Transport Systems, Media Content Distribution, Reconfigurable Radio Systems, Grid and Cloud computing, Radio Frequency Identification (RFID) and eHealth.

ETSI continues to serve its industry members by creating global standards which are used worldwide. Throughout 2009, co-operation with the BRIC countries – the fast-growing, developing economies of China, India, Russia and Brazil – remained a high priority. Several important partnership agreements were signed in 2009 and, in addition to testing events in China, ETSI organised the second Asian TTCN-3 User conference in Bangalore, India.

We have also offered our expertise to other organisations, providing support in diverse technical areas. For example, Interopolis™ has developed a worldwide reputation as an effective product-enabling service, and in 2009 obtained our first commercial contract in China. Our Centre for Testing and Interoperability (CTI) supports our technical work in the validation of standards through the development of test specifications and by organising interoperability events – which are crucial to the take-up of standards – both at home and around the world. The highly successful Security Workshop was one of a number of key events organised by ETSI in 2009. Now in its fourth year, it attracted around a hundred of the world's top security professionals.

A dominant theme of the year was our Green Agenda. This has coloured both our operational activities and our technical work. We organised a Green Agenda Seminar to raise awareness and identify gaps in standardisation. ETSI is privileged, through its standards, guides and specifications, to be able to influence the development of products and services, and is already working on 'green' standards, in areas such as environmental engineering, and in improving the Quality of Service in videoconferencing, making it a more viable alternative to face-to-face meetings. We are also participating in the new EARTH project to reduce the energy consumption of mobile radio networks.

2009 was a difficult year, but we weathered it with considerable success. We enter 2010 with cautious optimism.

Innovation has been a key theme of recent years. It is a strategy that has served ETSI – and its Members – well. Various internal mechanisms have been adopted to stimulate thinking and ensure that ETSI remains in touch with the latest technological developments.

Industry Specification Groups

ETSI has adopted a pre-standardisation fast-track mechanism, designed to bring research activities closer to standardisation, and to agree specifications quickly – the Industry Specification Group (ISG).

Quantum Key Distribution

The first ISG was established in July 2008, on Quantum Key Distribution (QKD). ISG-QKD has the participation of partners from industry, research and academia from all over the world. Quantum cryptography will bring new levels of confidentiality and privacy to the communications of the future. Due to the astonishing effects of quantum physics, quantum encrypted messages are totally immune from eavesdropping. Quantum cryptography will thus become a driver for the success of numerous services in the fields of eGovernment, eCommerce, eHealth, the transmission of biometric data, Intelligent Transport Systems and many others. ISG-QKD's task is to transfer quantum cryptography out of the controlled and trusted environment of experimental laboratories into the real world. Good progress was made in 2009 and the first QKD specifications are expected early in 2010.

New ISGs in 2009

In 2009 four new ISGs were set up to address various aspects of the Internet of the Future:

- **ISG on Autonomic Network Engineering for the Self-managing Future Internet (AFI)** – to establish a common understanding of autonomic behaviour and how an autonomic/self-managing network should be engineered, and to develop common specifications and engineering frameworks that guarantee interoperability. The first meeting was held in February 2009.
- **ISG on Measurement Ontology for IP traffic (MOI)** – held its first meeting in September, and has begun work on information models and requirements and ontologies architecture for IP traffic measurement.
- **ISG on Mobile Thin Client (MTC)** – will develop ETSI pre-standards and specifications for mobile computing environments and platforms based on the thin client computing paradigm. The ISG held its first meeting in May and has begun to specify use cases, requirements and architecture.
- **ISG on Identity and Access Management for Networks and Services (INS)** – will produce specifications for the application of identity and access management to networks and services. It held its first meeting in September and has begun work on Identity

Management interoperability between operators and Internet Service Providers.

As intended, these ISGs have seen an encouraging level of active participation from the research community, and considerable progress has already been made towards completing standards in these innovative domains.



The Infinity Initiative

The 2nd Infinity Initiative seminar, organised jointly by ETSI and the European Research Consortium for Informatics and Mathematics (ERCIM), took place in April 2009 at ETSI's headquarters. The Infinity Initiative is a series of high profile events on key research topics which have not yet been introduced into mainstream standardisation within ETSI. The first such event led to the creation of the ISG on QKD. The theme this year was 'Bio ICT – The Heart in the Computer', with a special focus on the modelling and simulation of organs.

Systems Biology, the new science of complexity of living systems, will herald a fundamental change in biological, medical and pharmaceutical research, with life models and simulation systems making possible computer assisted experiments. With the ultimate goal of 'Fusing Research with Standardisation for Knowledge and Business', ERCIM and ETSI believe it is essential that standardisation be considered early in the R&D cycle in order to optimise the markets for European industry.

The Wireless Factory

In October 2009, ETSI launched a Wireless Factory Starter Group to identify standardisation needs and opportunities in the rapidly expanding domain of wireless factory automation (WIFA).

Wireless technologies have been used in the factory and the supply chain for the past couple of decades but these early implementations have taken the form of isolated applications that have delivered one particular function or ability. More recent advances in wireless technology mean that, rather than customers acquiring individual solutions, a wireless Local Area Network (LAN) backbone can provide access to diverse applications and data through one infrastructure.



Much remains to be done on wireless systems and corresponding standards to satisfy the necessary balance of requirements for field devices in terms of latency, data rate, communication reliability, power consumption and also node density and range. In addition, sensor networks using technologies such as Radio Frequency Identification (RFID) and Machine-to-Machine (M2M) communications have entered the factory automation picture. These bring a potential for extensive rationalisation and cost savings but also pose a variety of integration, synchronisation and interworking/interoperability issues.

Technical standards can offer clarity and stability in a diverse and rapidly developing environment and, with its experience in radio standards and its growing momentum in RFID and M2M communications, ETSI is well placed to address the situation.

ETSI Business Innovation Summit

In Brussels in November 2009, ETSI held its first Business Innovation Summit on future wireless networks, examining wireless technologies as they may be implemented five years from now and beyond.

The conference featured the experiences of international network operators. With the European Commission (EC) now putting its weight firmly behind innovation as a vital enabler for European business, key presentations were

also provided by representatives of several EC departments and were supplemented by case studies of EC-funded projects, in particular the results so far of projects carried out under the European Union Framework Programme 7 (FP7).

Innovation is only achieved if research leads to real products and services that are commercially implemented. Standardisation was highlighted as an effective means of bringing research results to the market. Interoperability was also recognised as a key factor to achieve business success. The feedback from participants was very positive, and the announcement of the second ETSI Business Innovation Summit, scheduled for 5-6 October 2010, was warmly welcomed.

Hell's Kitchen

As ETSI prepared to define its strategy for 2010 and beyond, a 'Hell's Kitchen' session was held in June 2009 to stimulate discussion on the Internet Protocol Multimedia Subsystem (IMS) and Web 2.0. The relationship between Web 2.0 and IMS has now been adopted as a strategic topic for 2010. The concept of the 'Hell's Kitchen' to discuss emerging issues has proved very fruitful and will be continued in 2010.

Collaboration with R&D

As well as encouraging the participation of research bodies and academia in its own activities and attending key research-based events, ETSI is actively involved in a number of R&D initiatives including HITCH, which addresses eHealth issues. The Institute provided testing expertise to the WALTER Project and participated in two research projects related to Radio Frequency Identification (RFID) and the Internet of Things, GRIFS and CASAGRAS.

ETSI is also a partner in a large EC FP7 project which will start in 2010, EARTH: Energy Aware Radio and Network Technologies, which seeks to develop technologies to enable a reduction in the energy consumption of mobile radio networks.

Innovation in Technologies – some examples

The Internet of Things

Standardisation of the 'Future Internet' is characterised by merging ICT and web technologies, much like the merger between telecommunications and IT. Building on its reputation as a leader in ICT standardisation, ETSI has established a focus for its work on this 'Future Internet'.

The Future Internet is perceived as an 'Internet of Things', a complex world of numerous interconnected devices and services. ETSI has set up several new Technical Committees to address this trend and keep pace with new developments; in the last three years alone, Machine-to-Machine Communications, Intelligent Transport Systems, Media Content Distribution, Reconfigurable Radio Systems, eHealth and Aeronautics have been added.

The Human Element

Innovation is a significant factor in the success of future products and services. Novel user interaction

technologies are often seen as both the enablers of new product possibilities and also as a key selling point in the marketplace. However, history shows that the rapid introduction of a new technology often has unwanted and unexpected negative consequences necessitating the rapid redesign and re-launch of products.

To avoid this, ETSI's award-winning Human Factors Technical Committee (TC HF) is working on an ETSI Guide and an accompanying Technical Report that take a forward look at the use of new user interaction technologies in eServices. The aim is to identify the major strengths and weaknesses of these technologies and to ensure that elderly or disabled users, for example, are not excluded from using products that adopt the technologies. The availability of such supporting information prior to the major adoption of these new technologies should allow industry to avoid mistakes that could be both costly and embarrassing.

The Harvest of Recent Innovations

New activities established in recent years have started to deliver.

Intelligent Transport Systems

Intelligent Transport Systems (ITS) embrace a wide variety of communications-related applications intended to increase travel safety, minimise environmental impact (in terms of CO₂ emissions and fuel consumption), improve traffic management and maximise the benefits of transportation to both commercial users and the general public. The potential applications include vehicle-to-vehicle as well as vehicle-to-roadside communication and the networks behind this communication. They will provide driver assistance and hazard warning, emergency services, co-operative traffic efficiency with traffic control, fleet and freight management and location-based services.

ETSI's ITS work is actively supported by a large variety of stakeholders and companies including car-makers, the automotive supply industry, silicon vendors, network operators, research organisations and test houses.

In 2009 the Institute further developed its roadmap of the standards required to support basic applications and, in close co-operation with relevant European R&D projects, is now developing a common communication architecture for ITS. This will define the future direction of ITS and how different elements should be built up and co-ordinated to ensure global acceptance.

ETSI is addressing co-operative vehicle-to-vehicle and vehicle-to-roadside communication for ITS for safety and road traffic efficiency using various access technologies including 5.9 GHz ITS radio. During 2009, the first stage of work was completed on 'GeoNetworking', the protocol which allows the routing of data packets in ad hoc vehicle networks without the co-ordination of a communications infrastructure. Work also progressed well on security issues and mechanisms to ensure the protection of user privacy in the presence of attackers at the radio interface for the 5 GHz modes. The first full set of ETSI standards for co-operative intelligent transport systems is expected to be finalised in 2010.

In October 2009, the EC issued Mandate M/453, defining a framework for ITS standardisation for co-operative systems over the next two to three years; this mandate is aligned closely with ETSI's own standardisation roadmap. Six proposals for EC funding have been accepted and three ETSI Specialist Task Forces (STFs) will be established in 2010 to address various key issues including local dynamic maps, the classification and management of applications, conformance testing of Co-operative Awareness Messages (CAM) and Decentralised Environmental Notification Messages (DNM), GeoNetworking standards and mitigation techniques to avoid interference in the 5 GHz band.

The harmonisation of ITS standards at the international level is a growing issue and ETSI is playing a prominent part in discussions. In a further example of its leading role on the international scene, in February 2009, ETSI held a very successful workshop on ITS, which attracted over 120 experts from throughout Europe, plus Japan, South Korea and the USA.

Meanwhile ETSI's Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM) is making good progress with Ultra Wide Band (UWB) automotive radar applications.

Other ITS work in ETSI is being addressed from the human factors perspective; a Technical Report is being prepared on the use of communication services while in a vehicle, which aims to make the use of ICT in cars safer and more satisfying for both drivers and passengers.

Grid and Clouds

ETSI is addressing issues associated with the convergence of Information Technology (IT) and telecommunications, paying particular attention to scenarios where connectivity goes beyond the local network. This includes not only Grid computing but also the emerging commercial trend towards Cloud computing which places particular emphasis on ubiquitous network access to scalable computing and storage resources. The vision is to evolve towards a coherent and consistent general purpose infrastructure, made up of interoperable elements ranging from small devices up to supercomputers, connected by global networks and capable of supporting communities embracing individuals or whole industries, and with applications in business, public sector, academic and consumer environments.

In 2009, ETSI published Technical Reports (TRs) identifying interoperability gaps and existing interoperability solutions, and an ETSI Technical Specification (TS) offering a new interoperability testing framework. A set of Technical Specifications for the Grid Component Model (GCM) was also completed.

In December 2009, the Institute organised an event on 'Grids, Clouds and Service Infrastructures' which included both an interoperability demonstration and a workshop with invited speakers from industry (telecommunications and IT), research and standardisation.

New work in this area in 2010 will focus on the standardisation requirements for Cloud services.



Aeronautics

The new Aeronautics Technical Committee, TC AERO, held its first meeting in September 2009. Attendees included representatives from the European Organisation for Civil Aviation Equipment (EUROCAE), the European Aviation Safety Agency (EASA) and NATO, the European Commission and the Single European Sky ATM Research Joint Undertaking. Set up primarily to support European initiatives in the Air Traffic Management sector, by November, the TC had completed its work on a new European Standard (EN) for the Advanced Surface Movement Guidance and Control System (A-SMGCS), which enables enhanced surveillance and control functionalities, providing a display to controllers with accurate and unambiguous identity and position information for all suitably equipped aircraft and vehicles on the entire manoeuvring area.

Media Content Distribution (MCD)

'Content delivery' describes the delivery of digital audio, digital video or computer software and games over a delivery medium such as broadcasting or the Internet. With the convergence of broadcast, Internet and telecommunications technologies, standardisation and interoperability are essential for the success of digital media distribution.

ETSI's new Media Content Distribution Technical Committee (TC MCD) held its first meeting in January 2009 and has made excellent progress in a short time. Its major task in 2009 was the drafting of a multi-part ETSI Technical Report to provide a framework for MCD. By the end of the year, the first three parts were drafted, providing respectively an overview of different interest areas, the views and needs of content providers, and regulatory issues, social needs and policy matters. They are expected to be published early in 2010. Good progress was also made on parts to address use cases, needs and standardisation work within and outside ETSI.

At the end of the year, new work began on the content distribution infrastructure and improving the interfaces to interactive systems. A Report is being drafted on 3D gaming graphics delivery, and two Reports are being prepared on the distribution of Electronic Programme Guide (EPG) and subtitling information. Other new work for 2010 includes an ETSI Technical Specification on Content Delivery Network (CDN) interconnection.

IMS Network Testing

The Internet Protocol Multimedia Subsystem (IMS) constitutes a major step in the evolution of telecommunication networks and their convergence with the Internet. IMS provides a platform and architecture framework for providing services across wireless as well as wireline terminals. But advanced communications over the next generation network (NGN) can only be realised if fixed and wireless networks can interconnect. Interoperability is therefore crucial and IMS network testing is an essential element to ensure the successful

operational delivery of IMS enabled networks. ETSI plays a key role in enabling a market for this networking technology by developing numerous test specifications for the automated testing of IMS core networks based on testing technologies such as TPLan and TTCN-3.

In 2008 ETSI set up a dedicated IMS Network Testing Technical Committee (TC INT) to deal with IMS network testing specifications and interoperability issues. Its aim is to boost the roll-out and take-up of IMS services and operators' network interconnections. The committee is developing specific IMS test specifications for interoperability, conformance, network integration etc from specifications produced by the Third Generation Partnership Project (3GPP™). In 2009 TC INT published its first specifications.

In October 2009 ETSI organised its third IMS interoperability event, in Lannion, France. The event was a major success, attracting a significantly larger number of IMS core vendors than previously and confirming a high level of interoperability between components of advanced future telecommunications networks. The interoperability of IMS core networks with legacy Public Switched Telephone Networks (PSTNs) was also checked for the first time. Feedback from the evaluation was submitted to 3GPP to further refine and improve IMS base specifications.

Reconfigurable Radio Systems

Estimates such as those of the Wireless World Research Forum suggest that by 2017 there will be 7 trillion wireless devices serving 7 billion users. To meet these expectations with the limited radio spectrum, more flexible ways to share radio frequencies amongst multiple services and radio networks are needed – and Reconfigurable Radio Systems (RRS) offer the solution.

Based on technologies such as Software Defined Radio and Cognitive Radio, RRS are intelligent radio devices (mobile devices and infrastructure equipment) which offer significant potential for maximising the use of scarce and expensive spectrum by sensing – and acting upon – their environment. For example, they can adjust for location, time, frequency and other users. They can scan for unused frequency, opening up the opportunity to negotiate the use of unused spectrum, including UHF White Space bands.

Following the completion of a phase of feasibility studies, standardisation of RRS is now under way. In 2009, ETSI published a series of seven Technical Reports that examine standardisation needs and opportunities. They include architectural and implementation aspects of RRS, as well as specific user requirements in the context of public safety communications. The principal report in the series summarises the feasibility studies carried out by ETSI's Reconfigurable Radio Systems Technical Committee (TC RRS) and presents its recommended topics for standardisation.

Machine-to-Machine Communications (M2M)



With a potential market of over 50 billion devices of all types to be connected, of which only 50 million are currently connected, the M2M market offers astonishing opportunities as well as unique challenges. 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 were not designed for this sort of use and standardisation is needed in order to deliver cost-effective M2M solutions, to allow the market to take off. ETSI's Machine-to-Machine Communications Technical Committee (TC M2M) has been established to develop the necessary standards.

Through this committee, ETSI will provide an end-to-end view of Machine-to-Machine standardisation needs, bring together the many disjointed component-level standards that have already been created and identify the standardisation gaps.

The new TC's first meeting was attended by delegates from Europe, the US, Japan and South Korea. A broad industry representation included experts from telecoms network operators, equipment vendors, administrations, research bodies and M2M specialist companies. Meetings then followed thick and fast throughout 2009 as the TC has sought to address pressing market needs.

TC M2M has only been operational since January 2009, but already it has attracted worldwide recognition. For example, in June 2009 in its Communication on the 'Internet of Things – An action plan for Europe', the European Commission (EC) highlighted the role of TC M2M: "Particular attention will be given to the machine-to-machine workgroup of the European Telecommunications Standards Institute (ETSI) ... in the area of discovery services".

The first release of M2M standards was completed by the end of 2009 and will be available early in 2010. It contains the service requirements and system architecture along

with the protocol at the interface, in five areas: smart metering (in response to EC Mandate M/441), eHealth, city automation, consumer applications and car automation. An ETSI Technical Report on 'use cases' has been drafted for each area.

In addition, two ETSI Technical Specifications are being prepared, one on the service requirements, and the other covering functional architecture requirements. In 2010, the protocol requirements will be added. A Technical Report has also been drafted with a catalogue of M2M-specific definitions to ensure consistent use of terminology across all of the TC's deliverables.

To promote the TC's work, presentations were made at three conferences in 2009, and an M2M Workshop, hosted in ETSI, is being planned for 2010.

Smart Metering

Smart Metering represents a major step in blending information and communication technologies and electricity networks. In March 2009, the EC issued its Smart Metering Mandate (M/441) to ETSI and the other two European Standardisation Organisations, the European Committee for Electrotechnical Standardisation (CENELEC) and the European Committee for Standardisation (CEN). The aim of this work is to generate European Standards for smart meters, ie machines that allow consumers of energy (electricity, gas, heat and water applications) to monitor their usage – and hopefully then adjust their consumption, thus optimising energy usage. Standardisation will ensure the interoperability of technologies and applications within a harmonised European Energy Market.

In response to this mandate, new work has also been initiated in ETSI's Powerline Telecommunications Technical Committee on a specification for powerline networks using low voltage and possibly medium voltage communications between the electricity companies and meters in the home. The aim is to increase consumers' awareness of their electricity consumption in real-time. The benefits of smart electricity meters could be considerable; studies suggest that 10% of power might be saved if consumers were aware of how much they are using.



ETSI has established a Green Agenda to address issues that have risen to the fore in recent years over the health of the environment. The Institute's input to the Green Agenda is threefold: electronic working tools, technical standardisation activities and the promotion and identification of requirements via Green Agenda seminars.

Firstly, we need to address our own working methods. For example, already a pioneer in the use of electronic working tools and virtual standardisation meetings, we developed our tools still further in 2009.

As a standardisation organisation, ETSI is also well placed to produce guides and specifications to ensure that products and services are developed with green issues in mind. Indeed much of our technical work is already focused on the development of 'green' standards. Key topics that ETSI is developing include Smart Metering and Intelligent Transport Systems. Other examples are given below.

To stimulate a debate, ETSI organised a Green Agenda Seminar in November 2009. The objectives were to raise awareness of ETSI's activities, to ensure collaboration between ETSI and other standards bodies working on energy efficiency and environmental issues, and to identify any gaps in standardisation which ETSI might fill. Some key issues were identified and a number of recommendations have been put to the ETSI Board, which will be considered during 2010.

Environmental Engineering

ETSI's Environmental Engineering Technical Committee (TC EE) has a particularly important role to play as the world seeks to improve energy efficiency. In 2009, highlights of its work on eco-environmental issues, power management and energy reduction included the publication of a new Technical Specification on the power consumption of wireless access equipment. Work also began on the production of the necessary standards to determine the energy efficiency of transport equipment, router and switching network equipment, and for access network equipment.

Other important activities over the year included the standards necessary to implement the European Commission's (EC's) Energy Using Products (EuP) Directive, which covers equipment with standby and off-mode and complex set top boxes. In particular, ETSI is developing a European Standard on the measurement methods of end-user equipment to verify compliance with the requirements of the new EC regulation on standby and off-mode in office equipment, which has been created under the EuP Directive.

Other current projects include a new specification on the limits for the energy consumption of end-user broadband equipment, and Life Cycle Assessment (LCA) for telecommunication products, which will help

manufacturers determine the environmental impact of a telecommunication product from the raw material/components until the end of its life. When completed in 2010, this will be the first such tool designed specifically for use in the telecommunications field.

In 2009, ETSI published a Technical Report on alternative energy sources such as wind, solar and fuel-cells. It is now being updated in the light of further analysis, and the respective advantages of the various sources are being compared.



The Green Agenda for Business

Electronic tools for conferences and meetings are an important means of reducing both paper and travelling. As part of its work on speech and media transmission quality, ETSI is developing standards to improve the Quality of Service and Quality of Experience of such tools. Building on previous work on users' experience of real-time communication services, a workshop on the quality of electronic tools for teleconferencing is being organised for 2010.

In the area of human factors, ETSI has been working on the use of videoconferencing to replace face-to-face meetings and has produced guidelines related to a range of real-time services. These guidelines are supported by web access that allows easy and flexible navigation.

Access, Terminals, Transmission and Multiplexing

Among the highlights of 2009 in the standardisation of access, terminals, transmission and multiplexing, ETSI completed various Technical Specifications and Reports on the energy efficiency of broadband networks and deployment. A report is also being drafted to help manufacturers apply the EuP Directive to cable network apparatus and customer premises equipment.

Mobile Phone Chargers

Currently, specific chargers for mobile phones are sold together with specific mobile phones. Users who want to change their mobile phones must usually acquire a new charger and dispose of the old one, even if this is in perfect condition. This consumes raw materials unnecessarily and creates significant amounts of electronic waste. In 2009 ETSI started production of a new European Standard aimed at the introduction of universal chargers.

The Future is Now for Mobile Telecommunications

2009 was another busy year for 3GPP with the development of the 78 Features and Studies of Release 9. That Release was frozen in December. Originally envisaged as mainly a rounding off of the LTE™ functionality defined in Release 8, Release 9 includes a large number of relatively small technical enhancements, but it also covers topics such as Value-Added Services for Short Message Service and Personal Area Network support, as well as studies on self-organising (self-optimising, self-healing) networks, which will reduce network maintenance costs and improve the end-user experience. A large number of system improvements such as Local-Call-Local-Switch, aimed at optimising the use of network equipment, were also covered.

A description of all Release 9 features (and, indeed, those of the other Releases) can be found at www.3gpp.org/ftp/Information/WORK_PLAN/Description_Releases/.

After a great deal of standardisation activity, the first 'Home Node B' (HNB) products appeared on the market during the second half of 2009. These small base stations, positioned in private homes and in business premises and connected to the core network via an Asymmetric Digital Subscriber Line (ADSL), give improved coverage for the Universal Mobile Telecommunications System (UMTS™) inside buildings, forming tiny 'femto cells' with access limited to the household (or company) members' mobile terminals. At the expense of some increase in network signalling, these HNBs are improving coverage for users at little cost for operators – and will be followed soon by enhanced versions for LTE technology.

System enhancements, measured in terms of approved change requests (CRs) to existing technical specifications, were at an all time high at over 10 000 during 2009 – 60% up on the previous year, which itself was 20% up on 2007. At the same time, CR implementation error rates fell from 3 per thousand to a little over 2 per thousand during the year.

By the end of 2009, taking account of all active Releases, 3GPP was maintaining some 4 500 technical specifications and reports of which over 1 000 relate to Release 9.

The Birth of the 4th Generation

LTE-Advanced will deliver a 4th generation radio interface technology. Study reports in Release 9 have opened the door to the detailed specification of LTE-Advanced radio technology, work on which was well under way by the end of 2009, with nearly 70 Release 10 Features and Studies being addressed.

ETSI and 3GPP

ETSI is one of the founding partners of the Third Generation Partnership Project (3GPP™) in which the Institute comes together with five other regional standardisation organisations in Asia and North America, plus market associations and several hundred individual companies. ETSI is the preferred partner through which European companies can participate in this collaborative activity.

Established to develop globally applicable specifications for third generation mobile telecommunications (the International Telecommunication Union's (ITU's) IMT-2000 family), 3GPP is also responsible for the maintenance and evolution of the specifications for the enormously successful Global System for Mobile communication (GSM™), which was defined by ETSI, and for transitional technologies, including the General Packet Radio Service (GPRS), Enhanced Data for GSM Evolution (EDGE) and High Speed Packet Access (HSPA). 3GPP's scope was later extended to develop radio access solutions beyond 3G, and thus encompasses LTE™ and its evolution towards true 4G technology, LTE-Advanced.

Since it was established in 1998, 3GPP has completed eight Releases of 3GPP system specifications for cellular telecommunications, with each Release providing mobile operators and equipment manufacturers with a stable reference platform to build networks and terminal equipment.

Today there are nearly 5 billion mobile devices in the world, of which 3GPP technology has about an 85% market share.

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

Further information at: www.3gpp.org

IMT-Advanced radio technology promises order of magnitude improvements over Release 8 LTE, and as such constitutes true 4th generation communications. Download rates routinely exceeding 100 Mbit/s are envisaged. IMT-Advanced will be specified in Release 10, the freezing of which is scheduled to coincide with the planned timescales for the ITU's Radio Standardisation sector (ITU-R) IMT-Advanced. 3GPP's technology is one of the two proposed to meet the ITU requirements for IMT-Advanced (the other being the IEEE's 802.16m), and 3GPP made detailed submissions to the Dresden meeting of ITU-R SG5 Working Party D in October 2009, at which a number of 'Independent Evaluation Groups' were established to verify the calculated performance of these technologies. At a workshop in Beijing in December 2009, presentations of the 3GPP LTE-Advanced radio interface were given, supporting the findings of internal evaluation that the technology does indeed meet or exceed the ITU's specification. Most Independent Evaluation Groups attended and presented their plans for evaluation of the technology, with the intention of reporting back to the ITU in 2010. ETSI has established itself as one of the Independent Evaluation Groups.



What next?

LTE networks are now rolling out – in December 2009 the world's first LTE services were launched in Sweden and Norway and the Global mobile Suppliers Association (GSA) anticipates that a further 17 LTE networks will enter commercial service during 2010. Dozens of LTE trials are being undertaken in all regions of the world and, in the coming months, these are likely to lead to a wave of further commitments to deploy LTE. LTE is needed to accommodate the huge growth in data traffic with High Speed Packet Access (HSPA) and HSPA Evolution (HSPA+) systems, and to fully address the mass market. LTE boosts network throughputs significantly, reduces latency and improves spectrum and other operational efficiencies and performance – it represents the next step in the user experience.

LTE networks will be used primarily for data in the first instance but, thanks to the new GSM Association VoLTE (Voice over LTE) initiative, native voice support is assured and can be expected in time for the mass roll-out of LTE networks in 2011 and beyond. LTE is the natural migration choice for operators currently employing 3GPP2 technology (the CDMA-2000 family). The evolution to LTE-Advanced networks will not require operators to scrap existing LTE equipment but will enable them to make a smooth transition to 4G services, rivalling – and even exceeding –

fixed network over fibre-optic speeds, for a fraction of the capital outlay. Fibre-to-the-home (FTTH) service will enable Home eNodes B for LTE-Advanced to yield their full potential.

For the future, the watchword is convergence. Operators and vendors will eventually have to bite the fixed-mobile convergence bullet, even if, due to the different technologies and – more importantly – different philosophies, the actors are content for the time being to 'interwork' rather than 'integrate'. With this in mind, dialogue between 3GPP and the Broadband Forum (BBF) has already been initiated.

Related work in the standardisation of human factors is aimed at ensuring that users can take advantage of the new features and functions offered by the latest developments in mobile communications as easily as possible. ETSI has produced a new Technical Report on generic user interface elements for mobile devices, services and applications, which provides a bedrock of familiarity to underpin design innovation. The aim is to standardise basic operations so that users will not have to relearn how to do everything when they buy a new device but only how to use any new features.

Public Protection

Work to improve the safety of citizens and to support the emergency services is undertaken in many of ETSI's committees. ETSI's Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM), for example, is involved in various aspects of public safety and security including the development of location tracking standards to pinpoint people trapped in burning or collapsed buildings.

Following the granting of the necessary spectrum for 5 GHz Broadband Disaster Relief applications, ETSI has produced a Harmonised Standard to enable equipment to be deployed in hotspots in disaster situations.

The generic standard covering radio equipment operating in the 1 - 40 GHz frequency range was updated in 2009 to accommodate antenna requirements for the ground-based synthetic aperture radar (GBSAR) application, which can be used in bridge construction and maintenance, and for monitoring landslides, volcanoes and earthquakes.

TC ERM completed a new standard for higher frequency navigational satellite devices. These devices offer huge potential in emergency situations and the standard was developed at the request of public safety agencies which want the ability to gather information about an incident by satellite access, even before leaving their base, thus improving response times.

ETSI's Emergency Telecommunications Committee (EMTEL) is updating its documents on the core aspects of communications in an emergency situation. In addition, in a major new initiative, EMTEL is taking a leading role in a project funded by the European Commission (EC) for a European Public Warning System (PWS). The aim is to produce a Technical Specification which captures specific European requirements for a PWS for broadcasting national emergencies using the Cell Broadcast Service. The specification will then be used to provide input to 3GPP for inclusion in the 3GPP PWS specification which currently only contains PWS requirements from outside Europe.

ETSI's Mobile Standards Group Technical Committee (TC MSG) is co-operating with 3GPP to produce Technical Specifications for the EC's eSafety initiative, eCall. This in-vehicle emergency call service will automatically relay data about an accident from the vehicle involved to the emergency services, providing faster and more effective emergency responses.

Enhancements were made to the Terrestrial Trunked Radio (TETRA) standards in 2009. The main market for TETRA continues to be national public safety organisations deploying TETRA for shared networks. Another well known ETSI success story, TETRA was first deployed in 1997, and is now used in over 114 countries worldwide.

Other work in ETSI is addressing safe acoustic levels.



Smart Cards

ETSI's main task in the standardisation of smart cards is to expand and maintain the smart card platform specifications for mobile communication systems. In particular, this provides the basis for global roaming, irrespective of the radio access technology used, and manages the security of the access and user data.

The smart card specifications are not, however, bound to usage in the telecommunications sector. They are generic and application agnostic and may thus be used as a (secure) platform for any application designed to reside on a smart card. An important aspect of the work of ETSI's Smart Card Platform Technical Committee (TC SCP) is the provision of test specifications for both the core specifications and the various interfaces provided by the smart card platform. This way, interoperability between applications implemented on this true multi-application platform (called the UICC) is achieved.

Following the completion of the specifications for the use of the smart card platform for Near Field Communication (NFC) applications, ETSI has approved the test specifications for the lower layers, the Single Wire Protocol (SWP), and the UICC part of the management level, the so called Host Controller Interface (HCI). ETSI is now developing test specifications for the high speed interface between the smart card and a terminal, which is based on the InterChip USB specification.

In 2009 TC SCP closed all work on Release 8 of the Smart Card specifications and the definition of the requirements for Release 9. The Release 9 requirements include service migration to the new high speed interface based on InterChip USB and the definition of use cases and requirements for Radio Frequency Identification (RFID) services based on the UICC.

Establishing the UICC as a fully fledged part of the Internet has moved on a step with the definition of the remote management of the UICC using IP protocols terminating in the UICC. This will augment and eventually replace the current smart card technique of using Application Programming Data Units (APDUs) across the Subscriber Identity Module (SIM) interface, transforming the information onto other protocols across the access network. Furthermore, an Application Programming Interface (API) for the Smart Card Web Server (SCWS) has been defined to allow applications on the UICC to

interact with the user, using the device browser, in an ongoing web session managed by the SCWS.

'Standard' SIMs have been used for specific Machine-to-Machine (M2M) applications such as metering for quite some time. Other applications may, however, require special functionality and different hardware properties such as an extended temperature range or a new form factor. Except for the definition of the M2M form factor specific for use in M2M applications, the technical specification of these requirements has now been completed. The whole topic is expected to be finalised and approved early in 2010.

Release 8 also provides the necessary adaptations to the specifications to aid the testing of interoperability of the interfaces between the UICC and terminals with reduced capabilities, for instance terminals not supporting a keypad or a display, such as M2M modems and PC data cards.

In recent years, a complete revamp of the UICC has thus been achieved, with the specification of new interfaces and a clear shift for the UICC to become part of the Internet world. In undertaking these developments, however, the fundamental security attributes of both the UICC itself and its interfaces have been a paramount consideration; indeed, without these attributes, the other developments would be of minimal value. It is the UICC's ability to manage security, and the fact that this has not been compromised, which has justified its place in the Third Generation Partnership Project (3GPP™) architecture for over 20 years.

Speech and Multimedia Transmission Quality

ETSI's Speech and Multimedia Transmission Quality Technical Committee (TC STQ) is now recognised worldwide as one of the most important sources of expertise in Quality of Service (QoS) and Quality of Experience (QoE) in communications. For example, many other organisations base their certification of mobile phones and networks on TC STQ's standards, and the TC's subgroup on mobile quality brings together all the major mobile network operators to discuss and standardise the QoS aspects of mobile networks.

A workshop was held in July on the QoS implications of Next Generation Network (NGN) architectures. Feedback from the event contributed to a Technical Report which provides a list of gaps in standardisation and will serve as a roadmap for future activities.

Other highlights of 2009 include completion of the work on Release 2 of the specifications for Voice over Internet Protocol (VoIP) terminals, including new parameters for high quality terminals and taking into account background noise rejection and double talk behaviour.

Next Generation Networks

Next Generation Networks (NGN) are a response to the convergence of fixed and mobile telecommunications services and data networks, based on the principle that one network will transport all information and services (voice, data and all sorts of media) by encapsulating them into packets in the same way as they are on the Internet. In effect, NGN add mobility to Triple Play services (Voice, Internet and TV) and the opportunity for further bundling of high revenue services for customers.

ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN) is producing standards to address market needs while avoiding proprietary NGN solutions, fragmentation and interworking problems. ETSI's NGN specifications are now widely considered as the global NGN solution.

Good progress was made in 2009 on Release 3 of the NGN specifications. IPTV was a key topic of the year, with the definition of additional services (for example advertising, mobility, user generated content and personalised channels).

Other work included enterprise networks, network interconnection, Quality of Service (QoS) in the Customer Premises Network (CPN) to manage the resources inside the home network, Radio Frequency Identification (RFID) security, NGN security enhancements, energy monitoring in the CPN, regulatory issues, testing, network management, resource and admission control, and numbering and addressing. Most of the Release 3 service and architecture aspects were defined in 2009; work on the protocol implementation will continue in 2010.

TC TISPAN is also looking into the use of NGN and CPN to support ETSI's initiatives in smart metering.



UWB Sensors

ETSI's Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM) is working on applications of Ultra Wide Band (UWB) sensors. Location tracking standards are being developed for use by the emergency services to enable them to pinpoint people

trapped in burning or collapsed buildings. A report was completed on location tracking and centre applications for auto and transportation environments, for use, for example, in the payment of tickets. In 2009 the TC revised its Harmonised Standard on UWB equipment operating in the frequency band 2,2 - 8 GHz, which is used for the analysis and classification of building materials, to enable construction workers to pinpoint supports in walls. A new European Standard on object discrimination will have safety applications in DIY tools.

Digital Enhanced Cordless Telecommunications (DECT™)

ETSI's DECT specification is the leading standard worldwide for digital cordless telecommunications for both cordless voice and broadband home communication. The system has been adopted in over 110 countries and every year more than 100 million new devices are sold. In 2009 DECT sales grew by 13,6% compared with 2008. DECT products have reached a 73% share of the world market, which is forecast to rise to 76% in 2010. For many years the leading cordless system in Europe, DECT is now also number 1 in the USA, and negotiations are under way to allow the introduction of DECT in Japan.

Voice over Internet Protocol (VoIP) and IP-based value-added services are generating new services for the end-user – and new revenues for suppliers and operators. As the dominating technology for in-home distribution of voice services, DECT is also moving to a new generation especially scaled for next generation communication networks – 'New Generation DECT'. In close co-operation with the DECT Forum, ETSI is working to drive the standardisation, development and market preparation for New Generation DECT technology and appropriate products.

New features added to the New Generation DECT specification in 2009 include the no-emission mode where all transmissions from the base station are switched off during idle periods, headset management and enhanced security that includes early encryption and re-keying during a call. Light data services have been added to enable, for example, HTTP-based applications, binary content download and software for product upgrades to be downloaded over a radio link. As a result, users can now upgrade their system to enjoy the latest technological developments, and obsolescence of the hardware is minimised. Testing specifications were also developed.

ETSI is now embarking on the next step in New Generation DECT specifications with Release 2010, which will meet the demand for additional features for wideband speech and energy saving. ETSI is co-operating with the DECT Forum and the Home Gateway Initiative (HGI) since it is believed that in the future New Generation DECT will be embedded in home gateways and ADSL routers in a similar way to WiFi radios today.

Satellite Communications

Satellite technology is an important delivery platform for diverse services such as direct-to-home TV and mobile, high-speed Internet access. Satellite services are particularly useful for rural and outlying regions, where other systems are difficult to deploy on a commercial basis. They can therefore play a crucial role in ensuring that all Europeans can access high quality information services.

It is important that satellite networks offer Internet Protocol (IP) network services comparable and competitive with terrestrial services, especially to support multimedia applications and general interoperability. In 2009, ETSI produced a set of Technical Specifications and a Technical Report on the defined aspects of IP interworking which will enable service providers to identify and support common service platforms, and manufacturers to design competitive solutions. The specifications will encourage the provision of high bandwidth satellite communications which can be used to provide the full range of digital information services such as eCall, eGovernment, eHealth and eLearning.

Good progress was also made in 2009 with the technical specifications to enable the provision over Europe of digital radio broadcast systems by satellites, which will deliver hundreds of high-quality audio channels via satellite and complementary terrestrial transmitters in the L- and S-bands. The ETSI Satellite Digital Radio deliverables that specify the radio interface functionality enable interoperable implementations in equipment and components. In 2009, European Standards (ENs) were drafted based on the existing ETSI specifications.

ETSI also completed the Harmonised Standards covering the IMT-2000 frequency bands allocated to Mobile Satellite Services, and a Technical Report analysing advanced mobile satellite system architectures in the context of Beyond 3G and 4G systems.

Work began on two new topics related to emergency communications: the first covers flexible encapsulation of alert messages over satellite links, while the second addresses the use of satellite communications for linking an emergency communication cell to a remote permanent infrastructure.

Electronic Signatures

In 2009, ETSI's Electronic Signatures and Infrastructures Technical Committee completed its work on Registered e-Mail (REM), aimed at providing a framework for origin authentication, proof of delivery and long term availability. An ETSI Technical Specification on REM interoperability profiles, which was published in October 2009, will achieve harmonisation and ensure interoperability among REM Service Providers and REM domains. New work was initiated on the e-mail Interchange between REM systems based on different transmission protocols.

A major step forward was taken with the publication of the first PDF Advanced Electronic Signature Profile in 2009.

New work has now begun in response to the European Commission (EC) Electronic Signature Standardisation Mandate.

Broadcast

ETSI made significant progress in 2009 with broadcasting standards to meet a rapidly developing market. A highlight of the year was the publication of the European Standard on DVB-T2 for the second generation of digital television, which introduces the latest modulation and coding techniques to enable the efficient use of valuable terrestrial spectrum for the delivery of audio, video and data services to fixed, portable and mobile devices.

Work has also been started to define how broadcasters can add digital signals to their existing analogue broadcasts, providing the capability for an eventual transition to digital only transmission.

ETSI's Electromagnetic Compatibility and Radio Spectrum Matters Technical Committee (TC ERM) is working on cognitive interference mitigation techniques for use by PMSE (Programme Making and Special Events) devices – the wireless microphones, in-ear monitors, talk-back links, audio links etc, used to support multimedia productions in TV broadcast, stage shows, theatre productions and sporting events. The PMSE market urgently needs access to new spectrum resources to satisfy existing and future demand, following the advent of the Digital Dividend and the Digital Switch-Over from analogue to digital television. As an alternative to the allocation of new spectrum, ETSI is investigating the possibility of using cognitive spectrum access methods to allow usage of hitherto unavailable spectrum and to facilitate spectrum sharing.

Railway Telecommunications

The spread of GSM-R – the wireless communications platform developed specifically for railways, based on GSM™ – continued in 2009. The technology has now reached 70% of the rail lines in Europe and is rolling out across all five continents. Australia is introducing GSM-R in the 1 800 MHz band, with the intention of using it mainly for suburban transport.

ETSI is adding new features to GSM-R to cope with the growing demands of users, and frequency bands are being extended.

In Europe, GSM-R is being combined with the General Packet Radio Service (GPRS) to form the basis of an Intelligent Transport System to offer railways the means to improve the efficiency of their operations and provide new services to users.

Configurability – Satisfying the Consumer makes for Success in the Marketplace



In the past, people were grateful for any support from information and communication technologies (ICT) systems in their daily tasks. Nowadays expectations are much higher. A major theme of most of today's technological successes is that they seamlessly support what users want to do in exactly the ways that they want to do it. Products that require users to adapt their behaviour to fit the ways designers imagine they should be used are no longer attractive to the mass market. In particular, 'one-size-fits-all' solutions are almost impossible to sell today. The work of ETSI's Human Factors Committee (TC HF) provides support to help industry meet users' needs and expectations. The advantages are twofold: users benefit from products and services that are easy to use; manufacturers and operators are more successful in the marketplace.

Users now demand that products on which they rely every day must be personalised to their own needs and preferences – which requires configurability. However, a large number of highly configurable products and services can easily result in a setup nightmare for the user. ETSI addressed this problem directly in 2009 with two documents that represent a major milestone in its programme of work on personalisation and user profiles: an ETSI Technical Specification which provides an architectural framework for personalisation and user profile management and an ETSI Standard on the profile content.

The approach embodied in these documents allows all of the user's devices and services to be automatically configured to meet the preferences expressed in the user's personal 'user profile'. It also supports adaptation of the behaviour of devices and services according to the user's current context, taking into account, for example, location, the presence of other people, time or other factors significant to the user. Once personalisation is a standard feature of devices and services, it becomes much easier to support the needs of smaller market segments, including the speakers of minority languages and people with disabilities.

The TC is extending its personalisation work into wider fields, for example, in eHealth, with a new ETSI Standard, which will enable users to personalise eHealth systems to meet their individual needs in different situations, and in Intelligent Transport Systems, where a new Technical Report aims to make the use of ICT in cars safer and more satisfying for both drivers and passengers.

Widening access to ICT

ETSI helped advance the spread of ICT products and services significantly in 2009 with a major update of its standard on the core set of spoken commands in ICT devices and services that use speaker-independent speech recognition. In this latest version, the number of languages covered has been extended to the 30 languages most commonly used within Europe. This means that speech recognition built into devices and services can be offered as a valuable feature to a much wider range of customers within Europe and beyond. Although the new standard was only published in August, one major ICT company is already using it to produce a new range of products.



ETSI also updated its 'Design for All' guidelines for ICT products and services. This ETSI Guide helps industry to create products that address the needs of all users, including those with disabilities and older people who expect to use all the latest features but experience decreasing human abilities. At the same time the Guide also helps manufacturers to avoid unnecessary and costly product re-launches to correct features that were designed without attention to fundamental user needs in a diverse marketplace.

A new ETSI Standard on relay services for text telephony widens access for deaf people. The standard gives European operators the information needed to provide a quality service in which deaf people can use their text telephones to communicate with the rest of the world who use voice telephony. This work will be extended in 2010 to mobile text telephony over IP, which will enable deaf and hard of hearing users to use a standard mobile terminal as a text communication device.

The main aim of standardisation is to enable interoperability in a multi-vendor, multi-network, multi-service environment. With converging technologies and the globalisation of technology, ICT systems are becoming more and more complex. In many cases, the multiple standards that specify these technologies are often delivered by different standards bodies. This can lead to non-interoperability.

ETSI believes that validation and testing are key tools to deliver interoperable standards and products. Its Centre for Testing and Interoperability (CTI) supports ETSI's technical committees in the validation of standards through the development of test specifications and by organising interoperability events.

Recent activities include the development of a methodology for Automated Interoperability Testing and the creation of Interoperability Test Specifications for IMS Network-to-Network Interface (NNI) interworking. In 2009 CTI organised 15 interoperability events, two conferences and a workshop in a wide variety of areas reflecting many aspects of ETSI's work, including IMS NNI interoperability, Grid and Cloud computing, electronic signatures and powerline telecommunications co-existence. Other highlights of 2009 include two events in China, on Radio Frequency Identification (RFID) and Gigabit-capable Passive Optical Networks (GPON), and a remote event on behalf of the European Commission (EC) for Trusted Site Lists (TSL).

A key part of the ETSI strategy for testing and interoperability is the global dissemination and use of the standardised testing language, TTCN-3. In 2009 ETSI held two international TTCN-3 user conferences – one at ETSI's headquarters in France, the other in Bangalore, India.

In partnership with the EC Joint Research Centre in Italy, CTI has completed a prototype ePassport test platform based on TTCN-3. In 2010 this will be developed into a fully functional implementation. The ultimate aim of this project is to enable technologies for the faster processing of passengers at airports and improvements to global border security.

In 2009 CTI started preparations to participate in the IHE Connectathon in April 2010, where a TTCN-3 test tool will be used for testing HL7-based eHealth applications. Other plans for 2010 include the first Universal Mobile Telecommunications System (UMTS™) Femtocell Plugfest and an interoperability event on air traffic management.

Under ETSI's Green Agenda, CTI is actively investigating potential relationships between interoperability and energy efficiency. The Centre is participating in the EC's FP7 project EARTH (Energy Aware Radio and Network Technologies), which aims to enhance the energy consumption of mobile systems by a factor of at least 50%, focussing particularly on LTE™ and LTE-Advanced systems.



Sharing Expertise

In addition to its core work that is the creation of standards for both the European and global markets, ETSI continues to offer its expertise to other organisations, providing support in diverse technical areas through its industry services, Forapolis and Interopolis™.



Today Forapolis offers effective support to any forum or consortium, with a broad range of services that include process management and support for IT, logistics, meetings, legal and financial requirements, marketing and communications. In this way, Forapolis serves as a facilitator for 'growing ideas'.

The service stabilised in 2009 with five customers, all of which have several ETSI Members involved in their work.



ETSI established Interopolis to complement Forapolis; it serves as a product-enabling service offering customers:

- Test methodology & development
- Test tool engineering
- Pragmatic operational interoperability initiatives (including Plugtests™ interoperability events)
- Training (for example in testing methodologies and best practice)
- Technologies validation

There are few other organisations that can match ETSI's expertise in this area and, as a result, Interopolis has developed a worldwide reputation; its customers include a Chinese organisation which it supports with the development of test methodology platforms.

Together, Forapolis and Interopolis offer complete 'Idea to Product' solutions to support standardisation activities, from initial concept to placing products or services on the market.

Partnership Agreements

ETSI believes that international futures are built around international partnerships and has therefore built up a portfolio of agreements with partners ranging from fora and consortia, to international and regional Standards Development Organisations (SDOs). The Institute has long recognised that working with others is also the best way to ensure coherence between the standards produced by ETSI and those of other bodies, to avoid the duplication of effort and to ensure that its standards are widely accepted and implemented.

ETSI currently has over 80 such Partnership Agreements. During 2009, new Memoranda of Understanding (MoUs) signed included the IEEE Standards Association (IEEE-SA), the European Patent Office (EPO), the Broadcast Mobile Convergence Forum (bmcoForum), the Global Platform, the European Smart Metering Industry Group (ESMIG) and the Open IPTV Forum (OIPF). Letters of Intent (LoI) were signed, among others, with the Japanese Association of Radio Industries and Businesses (ARIB) and the Next Generation Mobile Network (NGMN). Most of these new agreements are the direct result of ETSI's increasingly diversified technical activities which are attracting interest in new quarters. In addition, the partnerships with the Open Mobile Alliance (OMA), the GSM Association (GSMA), the ICT Standards Advisory Council of Canada (ISACC) and the TETRA Association were renewed.

Building with BRICs

Throughout 2009, co-operation with the BRIC countries – the fast-growing, developing economies of Brazil, Russia, India and China – remained a high priority.

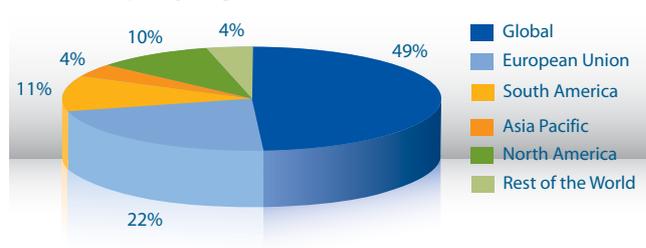
China

The new Europe-China Standards Information Platform (CESIP) was launched in October, as a joint initiative by the EU/EFTA, ETSI, the European Committee for Standardisation (CEN), the European Committee for Electrotechnical Standardisation (CENELEC) and the Standardisation Administration of China (SAC). CESIP provides bi-lingual information on regulations and standards in China and Europe to assist companies in export markets and to encourage a dialogue on standards development.

Throughout 2009, ETSI continued to collaborate with its other Chinese partners, the China Communication Standards Association (CCSA) and the China Electronics Standards Institute (CESI). The dialogue with CCSA was re-launched and a joint workshop was held in Beijing in December when the updated ETSI-CCSA MoU was signed. This collaboration is expected to be particularly fruitful in areas such as IPTV/content delivery.

ETSI co-organised two Plugtests™ testing events in Beijing. The first, in April, in collaboration with CESI, was the first ever interoperability event for Radio Frequency Identification (RFID) to be held in China. The five-day

Partnerships by region in 2009



event aimed to ensure an effective worldwide application of RFID in postal applications and was an excellent example of European and Chinese co-operation. In November, ETSI and the Full Service Access Network Group (FSAN) together organised a Plugtests event on Gigabit Passive Optical Networks (GPON).

In April, ETSI was awarded its first commercial contract with a Chinese customer from the China Academy of Telecommunication Research (CATR). The contract involves assistance with the implementation of a TTCN-3 conformance test tool capable of executing test suites for evolving communication networks.

Activities in China have been supported by the Seconded European Standardisation Expert (SESEC) project, which in 2009 was renewed for a further three years.

India

ETSI has signed a Letter of Intent with the newly established Global ICT Standardisation Forum for India (GISFI), anticipating a sharing of best practices and the identification of areas for co-operation in standardisation. Both ETSI and GISFI share several high priorities for standardisation, including the 'Internet of Things', convergent technologies, future radio access technologies and 'green' issues.

In October 2009, the second Asian TTCN-3 User conference was held in Bangalore, India, jointly organised by ETSI and ISQT, a local training and consultancy company. The decision to hold the event in India is a reflection of the huge interest in the region in this powerful software language developed by ETSI. In 2010 the conference will be held in China.

Russia

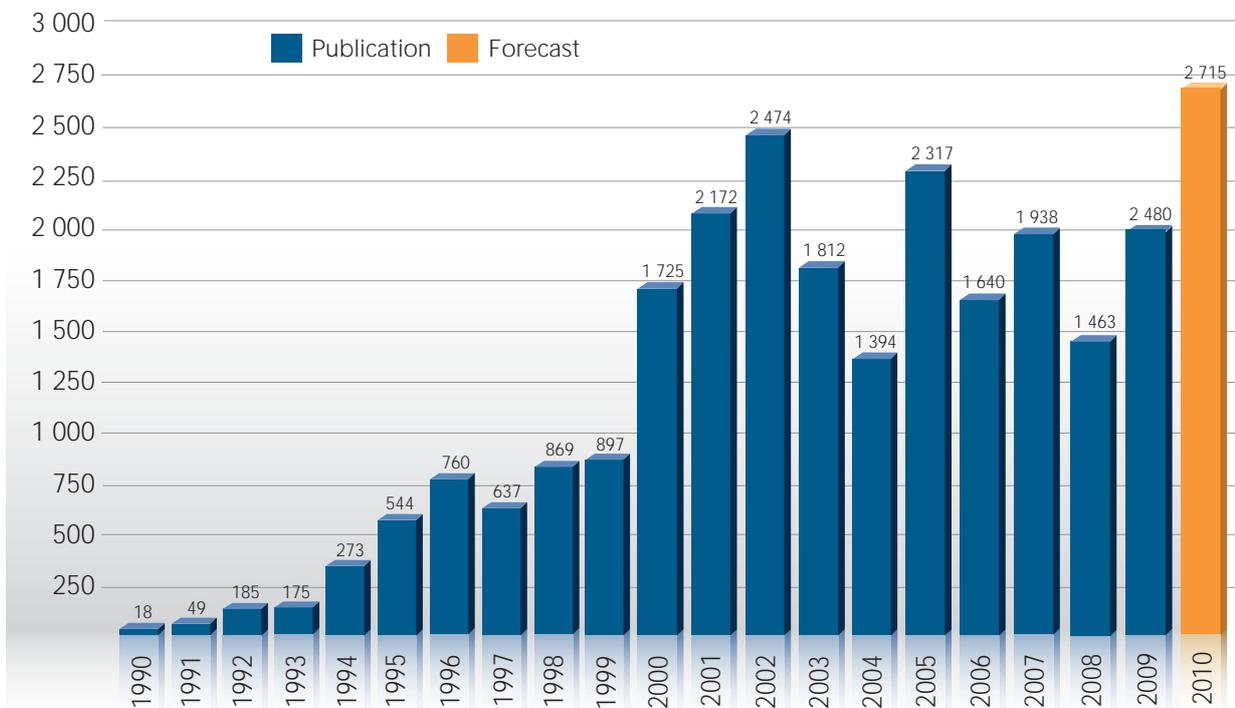
ETSI contributes regularly to the EU-Russia Information Society Dialogue which aims to promote the liberalisation of the electronics communications sector. As a result, more than a third of all ETSI Harmonised Standards (especially in the field of electromagnetic compatibility and radio spectrum use) now serve as a basis for Russian Technical Regulations in information and communication technologies.

ETSI also supported regional events on various technologies in which it is involved, including Terrestrial Trunked Radio (TETRA) and LTE™ mobile communications.

Standards Production

Standards production in 2009 reached an all-time high; 2 480 standards and reports were published. By the end of the year, ETSI had produced a total of almost 24 000 standards, specifications, reports and guides since the Institute was established in 1988.

The number of deliverables published, for each of the years 1990 - 2009 and the prediction for 2010.



Distribution by type of published document

	In 2009	Total since 1988
Technical Specification (TS) ¹	2 192	16 471
Technical Report (TR) ²	191	2 200
ETSI Standard (ES)	26	610
European Standard (telecommunications series) (EN) ³	58	4 266
ETSI Guide (EG)	10	215
Special Report (SR)	3	60
TOTAL	2 480	23 822

¹ Includes GSM Technical Specification (GTS)

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

³ Includes amendments and old deliverable types: European Telecommunication Standards (ETSS), Interim ETSS (I-ETSS) and Technical Bases for Regulation (TBRs).

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 FP7 projects funded by the European Commission (EC) and the European Free Trade Association (EFTA).

Altogether, 54 STFs and other funded projects were active during 2009, involving more than 190 experts of 24 different nationalities and representing an investment of over 4,2 M€.

Technical areas in which resources were invested

TECHNICAL AREA	k€
3GPP TTCN test specifications – 3G partners funding	1 037
Human Factors (HF) – EC/EFTA funding	535
Intelligent Transport Systems (ITS)	299
Broadband Networks (BRAN) – ETSI/WiMAX Forum co-funding	259
Methods for Testing & Specification (MTS)	258
Next Generation Networks (TISPAN)	251
FP7 projects – EC/EFTA funding	210
User Group	193
Digital Enhanced Cordless Telecommunications (DECT™)	190
Electronic Signatures & Infrastructures (ESI)	159
IMS Network Testing (INT)	150
Satellite Earth Stations & Systems (SES)	110
Grid	104
Smart Card Platform (SCP)	99
Others	380
TOTAL FUNDED	4 234



EC/EFTA funding

The EC and EFTA contribution to the ETSI standardisation infrastructure for 2009 was set at 2 845 k€ via the Operating Grant.

The EC/EFTA contribution for specific standardisation contracts under their 2009 budget line provided funding of more than 1 585 k€ to support the EC's ICT 2009 Standardisation Work Programme: the different actions will be performed from 2010 through into 2012. Ten successful proposals were made in 2009 and eight of the related action grants were signed in December 2009. Two further action grants will be signed during the first half of 2010.

Membership

Despite the global economic crisis, ETSI Membership remained fairly constant; at the end of 2009 the Institute had a total of 717 Members. There was a minimal decrease in the number of Associate Members and a larger fall in Observers (a number of whom changed their status to Full Member in 2009, in order to become more actively involved). Overall the number of Full Members grew, reflecting wider interest in some of ETSI's new activities.

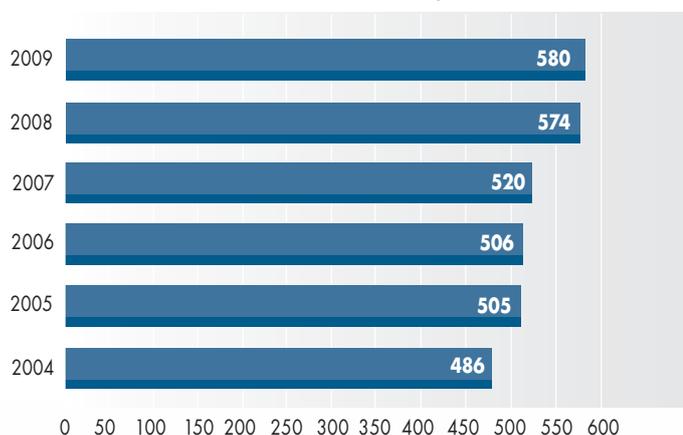
At the end of the year, ETSI had 580 Full Members drawn from 40 European countries. The total number of countries represented in all categories of Membership is 62, drawn from five continents.

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.

Widening membership

The number of research bodies rose significantly from 60 to 77 in 2009, continuing the trend observed in 2008. They now represent 11% of the Membership (compared with 8,68% in 2008). This is particularly encouraging in the light of ETSI's initiatives in some of tomorrow's new technologies.

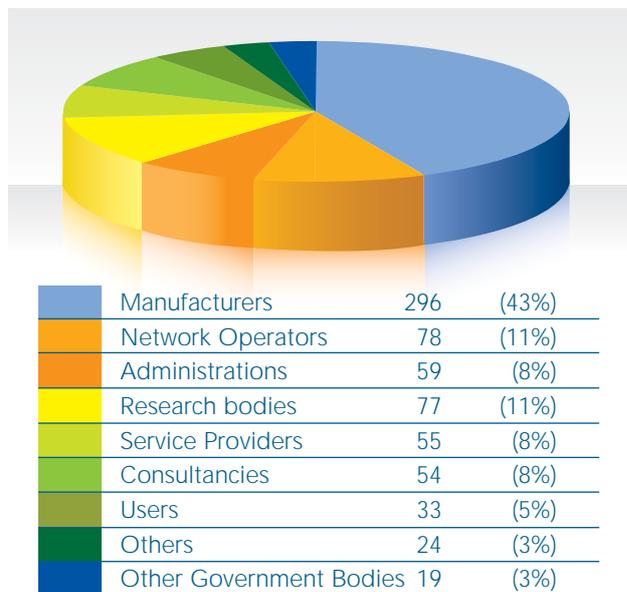
Evolution of ETSI Full Membership



Membership by type

	01-01-2009	31-12-2009
Full Members	574	580
Associate Members	117	115
Observers	33	22
TOTAL	724	717

Full and Associate Membership by category



Overall Membership by country/province

Albania	1	Japan	7
Andorra	1	Jordan	1
Australia	3	Korea	1
Austria	10	Latvia	1
Belgium	24	Lesotho	1
Bosnia Herzegovina	2	Lithuania	1
Brazil	2	Luxembourg	7
Bulgaria	4	Malaysia	2
Canada	9	Malta	2
China	8	Netherlands	27
- Taiwan (Province of China)	14	Norway	8
Croatia	3	Poland	6
Cyprus	2	Portugal	2
Czech Republic	5	Qatar	1
Denmark	15	Romania	5
Egypt	1	Russian Federation	7
Estonia	2	Serbia	1
Finland	13	Singapore	1
Former Yugoslav Republic of Macedonia	1	Slovakia	3
France	76	Slovenia	4
Georgia	1	South Africa	3
Germany	106	Spain	23
Greece	8	Sweden	24
Hungary	6	Switzerland	25
Iceland	1	Turkey	7
India	5	Ukraine	3
Indonesia	1	United Arab Emirates	2
Iran	1	United Kingdom	113
Ireland	13	United States of America	50
Israel	7	Uzbekistan	1
Italy	32	Yemen	1
62 COUNTRIES OR PROVINCES IN TOTAL		717	

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, nominated auditor by the 43rd General Assembly, has audited the 2009 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 2008, income and expenditure decreased by 5% or 1,3 M€. The result of the year is a surplus of 10 k€ compared with a deficit of 97 k€ in 2008.

The key points of the budget management, compared with 2008, are the following:

Expenditure – Secretariat costs decreased by 7% and were 6% less than budgeted mainly due to savings introduced to limit the consequences of the financial crisis (e.g. staff costs, travel) and a downturn in commercial activities. As in 2008, about 5 M€ were spent on experts' costs for Specialist Task Forces and other standardisation related technical experts.

Income – Members' contributions increased by 2% due to new Members joining and existing Members increasing their contribution. 56% of the budget was funded by Members' contributions (13,6 M€). EC/EFTA payments amounted to 4,7 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 2,2 M€.

Financial Statements for the Year 2009

The final accounts and the balance sheet are summarised below.
The fiscal accounting period is 1 January 2009 – 31 December 2009.

Statement of Income and Expenditure Year 2009

	Income (€)	Expenditure (€)
Income	23 959 538	
Purchases		11 022 494
Expenses		13 040 746
Investment management	98 162	42 706
Extraordinary income & expenses	59 919	1 948
TOTAL	24 117 620	24 107 894

There was a surplus of income over expenditure of 9 726 € in 2009.

Summary of the Balance Sheet

Assets

Net amounts at:	31 Dec 2008 (€)	31 Dec 2009 (€)
Fixed Assets	6 658 696	6 306 930
Debtors	14 562 019	14 225 680
Securities/cash	9 764 255	7 130 159
Adjustment accounts	172 858	157 012
TOTAL ASSETS	31 157 826	27 819 781

Liabilities

Net amounts at:	31 Dec 2008 (€)	31 Dec 2009 (€)
Equity	8 278 661	8 278 661
Provisions	200 000	234 000
Balance carried forward	-96 616	-96 616
Result of the year		9 726
Creditors	8 872 141	6 710 928
Adjustments	13 903 640	12 683 082
TOTAL LIABILITIES	31 157 826	27 819 781

Figures are rounded to the nearest €.

2009 Budget Statements

Income	k€
Members' contributions and Observer fees	13 629
EC/EFTA contracts	4 666
3GPP Partners	1 835
Voluntary contributions	150
Forapolis/Interopolis	2 211
European Friends of 3GPP	568
Sales	266
Plugtests™	244
Financial income	80
Other income	468
TOTAL INCOME	24 117

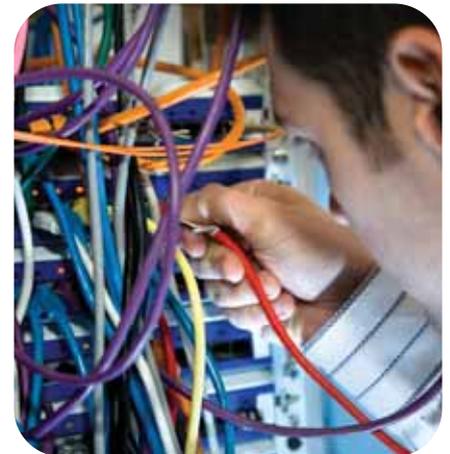
Expenditure	k€
Secretariat staff costs	12 042
Other Secretariat costs	5 848
Special Projects	407
European Friends of 3GPP	417
Provision and losses	499
Experts costs	4 894
TOTAL EXPENDITURE	24 107

In 2009, there was a surplus of income over expenditure of 10 k€.



World Class Standards

- Air Traffic Management
- Broadband Wireless Access
- Broadcast
- DECT™
- Digital Mobile Radio
- eHealth
- Electromagnetic Compatibility
- Emergency
- Environmental Aspects
- Fixed-line Access
- Grid and Cloud
- Human Factors
- Identity
- IMS Network Testing
- Intelligent Transport
- Internet
- Interoperability
- Machine-to-Machine Communications
- Maritime Communications
- Media Content Distribution
- Medical
- Mobile
- Next Generation Networks
- Powerline Communications
- Protocols
- Quality of Service
- Quantum Key Distribution
- Radio
- Reconfigurable Radio Systems
- Regulation & Legislation
- Safety
- Satellite
- Security
- Smart Cards
- Smart Metering
- Testing
- Terrestrial Trunked Radio (TETRA)



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