



World Class Standards



# annual report

april 2009



**ETSI is** a producer of globally-applicable standards for information and communications technologies (ICT), including fixed, mobile, radio, converged, broadcast and Internet technologies.

**ETSI is** officially recognised by the European Union as a European Standards Organisation. Its standards help ensure the free movement of goods within the single European market and allow enterprises in the EU to be more competitive. The high quality of its work and its open approach to standardisation has helped it evolve from European roots to extend global branches.

**ETSI is** a not-for-profit organisation with more than 760 member organisations worldwide, drawn from 63 countries and five continents. Members include the world's leading and most innovative companies.

**ETSI is** a world-renowned organisation with a solid reputation for technical excellence. It makes its expertise in interoperability, and the standardisation of some of today's most important technologies, available to its Members and customers through a range of services for growing ideas and enabling technology.

# Annual Report 2008 (published April 2009)



ETSI's purpose is to create value for its Members and value for their customers.

Customers rightly demand good value when they spend the money that supports our industry. And there is ample evidence of a long history of ETSI creating standards to meet customer needs, adding significant value across a broad range of technologies.

Today, in talking to Members I hear that many are feeling the effects of the current economic situation where customers are examining their spending very carefully indeed.

At the same time I see information and communication technologies (ICT) continuing to develop at a phenomenal rate, offering new opportunities to reduce cost and increase efficiency in business processes.

I am delighted to say that in 2008 ETSI made significant progress in addressing new directions dictated by an evolving future. The Board continues to work on your behalf on new strategic initiatives, looking especially at how the ICT industry will emerge from difficult times, to make sure that ETSI will play its part in preparing the right standards for the markets that are to come. I am happy to see an ongoing focus in ETSI on the importance of creating value for customers.

**John Phillips**  
*Chairman of  
the General Assembly*



2008 was characterised by the ongoing achievements of our long-standing flagship projects on one hand and, on the other, investment in new technologies.

Four new Technical Committees have been created to deal with new topics – Reconfigurable Radio Systems, IMS Testing, Machine-to-Machine Communications and Digital Media Content Distribution. The first Industry Specification Group, on Quantum Key Distribution, has also already made remarkable progress. With the initiation of this work, ETSI is building on existing expertise to embark on the important technologies of the future.

At the same time, old committees on which the Institute has built its reputation are developing new aspects of their work, tackling Internet Protocol Television, for instance, developing a new generation of Digital Enhanced Cordless Telecommunications (DECT™) and enabling the smart card platform for use in Near Field Communication applications. 3GPP™ Release 8, which includes the specifications for LTE™, the latest evolution of the 3G mobile system, was frozen in December 2008.

The following pages demonstrate the enormous progress made in a diverse range of technologies. I am delighted to hand over to my successor as Board Chairman an Institute that is tackling the challenges of emerging technologies enthusiastically and effectively.

**Francisco da Silva**  
*Chairman of the Board*



During 2008 ETSI has made enormous progress in ensuring that the Institute remains at the leading edge of new technologies and that our Members can rely on ETSI as the provider of the standards for their future business.

We introduced the Industry Specification Group (ISG) – a new pre-standardisation fast-track mechanism to bring research activities closer to standardisation, and to agree specifications swiftly. This materialised in the first ISG. We initiated the 'Hell's Kitchen' concept to kick-start new activities, and we organised a meeting with CTOs to look into the 'Long Term Vision for ETSI' to better address the challenges ahead.

We increased our links with leading researchers and scientists, helping to close the gap between research and standardisation, and we have seen rising membership numbers, particularly from academia, the research sector and among Small and Medium-sized Enterprises (SMEs) and micro-enterprises. Geographically too the Institute is expanding as it reaches out to emerging markets.

As well as our core standardisation activities, following the launch of Interopolis™ and the regrouping of our standards enabling services, ETSI now offers services for fora support, testing and interoperability that are unrivalled within the standardisation community.

In summary, in 2008 ETSI proved that it remains not only the leading but also the most innovative Standards Development Organisation in the field of ICT.

**Walter Weigel**  
*Director-General*

## Building the Future – 2008 and Beyond



2008 has seen enormous progress in the 'future-proofing' of ETSI to equip and direct the Institute to meet its Members' future business needs.

The achievements of the year include the successes of the long established projects on which the Institute has built its reputation combined with the promise of emerging technologies. New Technical Committees were established to deal with Reconfigurable Radio Systems, Internet Protocol Multimedia Subsystem (IMS) Testing, Machine-to-Machine Communications and Digital Media Content Distribution. All of these projects are expected to open up new constituencies and have already attracted considerable interest worldwide.

A new pre-standardisation fast-track mechanism has been introduced, with the aim of bringing the world of research alongside that of standardisation, leading to faster standards-making. The first such 'Industry Specification Group' (ISG) was established in July, on Quantum Key Distribution.

Links with leading researchers and scientists increased substantially in 2008. The Institute is now participating in a number of research projects under the European Union's Seventh Framework Programme (FP7), notably in the area of Radio Frequency Identification (RFID). Here, ETSI can discuss directly with researchers how to turn research results into standards. Two 'Hell's Kitchen' sessions took place, one of which has led to new co-operation and new work on the concept of the Wireless Factory. Finally, the Institute called together a group to look into the 'Long Term Vision for ETSI'.

Our Intelligent Transport Systems Technical Committee (TC ITS), which was only launched in 2007, is making good progress. A basic set of application requirements is being prepared and the first full set of ETSI ITS standards is expected by the end of 2009.

In parallel, old committees are advancing in new directions, addressing Internet Protocol Television (IPTV), for example, developing a new generation of Digital Enhanced Cordless Telecommunications (DECT™) and using the smart card platform for Near Field Communication (NFC) applications. ETSI's world-

renowned Human Factors Technical Committee is now analysing emerging eServices, to ensure that the ICT products and services of the future are designed to accommodate not just the mainstream consumer but also those whose needs may be different from the majority, such as the elderly and users with disabilities.

But ETSI offers more than just its core standardisation activities. In January 2008 Interopolis™ was launched, ETSI's standards enabling services were restructured, and the Institute is now attracting Members and non-Members alike with its services for support, testing and interoperability.

With over 70 external partnerships and excellent working relationships with the European Commission and other Standards Development Organisations (SDOs), ETSI is well placed both to influence developments and to draw on a valuable pool of expertise as input to its activities.

The widening of the Institute's customer base in 2008 is reflected in increased membership numbers. In particular, the number of academic and research organisations, SMEs and micro-enterprises grew considerably in 2008. All of ETSI benefits from this extended participation. In addition, the Institute is extending its geographic footprint to meet the needs of new markets around the world. Different sectors of industry, where ICT are necessary as enabling technologies, are also now recognising that ETSI, with its global footprint, its direct membership principle and ground-breaking IPR policy, is an excellent choice to standardise ICT.

Despite the global economic crisis, the Institute's finances are stable. Nevertheless the situation is being closely monitored. Action has been taken within the Secretariat to improve ETSI's ability to manage effectively. Increased staff and management training has enhanced the quality of support provided to Members. The Institute has been a pioneer in the use of electronic meetings and good progress is being made with the ETSI Green Agenda.

ETSI has its sights very much set on the future, but it builds on the achievements of its past. 2008 was another year of success to underpin the Institute's ongoing activities.



# Innovation, Research and New Initiatives

A number of proposals for encouraging pre-standardisation activity were developed in 2008.

## Industry Specification Groups

A new pre-standardisation fast-track mechanism has been introduced, designed to align research activities more closely with standardisation, and to accelerate the production of specifications.

The first such 'Industry Specification Group' (ISG) was established in July, on Quantum Key Distribution, as a direct result of the first Infinity Initiative event, co-organised by ETSI and the European Research

Consortium for Informatics and Mathematics (ERCIM). ISG-QKD has the participation of partners from industry, research and academia from all over the world.

## Hell's Kitchen

The concept of 'Hell's Kitchen', established as part of the ETSI Strategy for 2008, has proved very fruitful and will be continued in 2009. Two Hell's Kitchen sessions took place in 2008: one a presentation on 'Quicksan best practices for SDOs' and the other on the Wireless Factory, as a result of which new co-operation has been initiated and a roadmap for wireless factory standards is being developed.

## New Standards in Communication Security – Quantum Key Distribution

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.

During recent years quantum cryptography has seen rapid progress, and it is now extending into a competitive industry with commercial products.

In 2008, ETSI established a Quantum Key Distribution (QKD) Industry Specification Group (ISG-QKD). Many countries outside Europe have already made efforts towards national standardisation for quantum technologies but so far none of these initiatives has moved beyond the identification of a need for

standardisation. ETSI's creation of ISG-QKD is a strategic response to increasing interest in the potential of QKD for secure communications. The Group's task is to transfer quantum cryptography out of the controlled and trusted environment of experimental laboratories into the real world.

Activities kicked off in October 2008 and the Group met again in December. Initially eight work items are being addressed.

ISG-QKD has attracted partners from industry, research and academia from all over the world. An important goal is to bring together the scientists who are developing quantum cryptography with prospective commercial users so that they can learn from each other what the technology is able to deliver and what is needed for practical application.

This new initiative moves ETSI into exciting new technological realms and opens up participation in its standardisation work to new constituencies.



## Fostering links with Research Projects

Additional outreach to the R&D community has begun.

### EU R&D Projects

Helping to close the gap between research and standardisation, ETSI is actively involved in a number of European Union (EU) R&D projects under the Seventh Framework Programme (FP7): project Walter (Wireless Alliances for Testing Experiment & Research) which is dedicated to UWB testing, and three projects on RFID: the CutelLOOP project (Customer in the Loop), the GRIFS project (Global RFID Interoperability Forum for Standards), and the CASAGRAS project (Co-ordination and Support Action for Global RFID-related Activities and Standardisation), which brings ETSI together with partners in Europe, Hong Kong, China, Japan, Korea and the USA. Here, ETSI can discuss directly with the researchers how to turn research results into standards.

### Eureka Clusters and European Technology Platforms

ETSI is also developing contacts within the CELTIC and ITEA 2 clusters in the European Eureka initiative, which represent a suitable source of input to ETSI standardisation activities. Projects in these clusters tend to

produce research results which are relatively close to market deployment and include participation from a large number of Small and Medium-sized Enterprises (SMEs), with the potential for innovative ideas and strong growth prospects.

ETSI is also participating in relevant research conferences and meetings of European Technology Platforms (for example, NEM (Networked and Electronic Media), the EPoSS platform on smart systems integration, and eMobility).

### Membership Growth in New Areas

The results of this outreach (and of the ETSI Members' decision to reduce their membership fees) can be seen in the number of new applicants for ETSI membership from universities and public research bodies. In 2008 ETSI made a strategic move to extend participation in its work, and the growing interest in membership by Small and Medium-sized Enterprises (SMEs), micro-enterprises, universities and public research bodies is therefore encouraging. Numerically, they now represent almost a third of the Institute's membership. There was a particularly marked rise in the number of micro-enterprises, research organisations and universities.

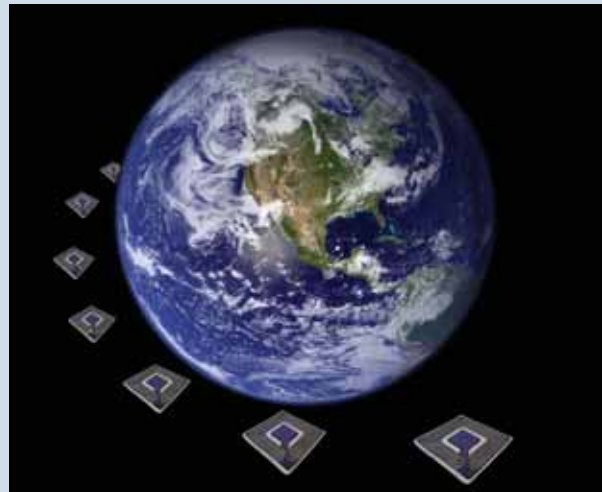
## RFID and Electronic Article Surveillance

The market for inductive devices and Radio Frequency Identification (RFID) and Electronic Article Surveillance (EAS) systems has seen steady growth in many areas. RFIDs are used, for example, in the automotive industry, access control, waste management and animal identification. EAS anti-theft systems are the only real protection against theft in shops and supermarkets. Independent marketing reports point to a dramatic growth in RFID over the next 15 years.

ETSI is at the forefront in the development of RFID. There is considerable momentum to the standardisation of RFID Security and Privacy and ETSI has initiated work on this topic. The Institute organised two RFID workshops in 2008, and hosted two Cluster of European RFID Project meetings. ETSI is also a member of the new European RFID Thematic Network which replaces the European Commission RFID Expert Group (EU REG).

To ensure that adequate spectrum is available to meet future needs, ETSI has prepared a System Reference Document outlining new spectrum requirements for RFID equipment and inductive loop systems operating in the frequency range 9 - 148,5 kHz. At the same time, the related European Standard (EN) is being revised.

A System Reference Document for RFID equipment and Short Range Devices (SRDs) was published in 2008. The spectrum request is under consideration in CEPT. The



related EN was published and a revised version is due in 2009. Installation guidelines have also been prepared.

A successful RFID Plugtests™ event was performed at venues in Germany and the Netherlands during June 2008 to check for interoperability problems when multiple tags manufactured by different vendors are simultaneously present in the same interrogation field. Tests were run to scan clothing tags, stacks of DVDs, pallets containing multiple tagged items passing through a portal and items on a conveyor belt, simulating, for example, airline baggage or tagged goods moving along a production line.

# New Technical Committees

As a result of its new contacts at the leading edge of research and development and in response to identified market needs, four new Technical Committees were created in 2008: IMS Network Testing (TC INT), Machine-to-Machine Communications (TC M2M), Media Content Distribution (TC MCD) and Reconfigurable Radio Systems (TC RRS).

## IMS Network Testing

The Internet Protocol Multimedia Subsystem (IMS) comprises a set of specifications designed to enable network operators to implement IP-based networks that carry services for both fixed and mobile customers. The business model of advanced communications over the next generation network (NGN) can only be delivered if fixed and wireless networks can interconnect. Interoperability is therefore a crucial factor governing the roll-out of IMS and, more specifically, network interconnection between operators. Operators can ensure operational excellence in a multi-vendor and multi-provider environment only via testing in a real life situation.

To boost the roll-out and take-up of IMS services and operators' network interconnections, ETSI has set up a Technical Committee to deal with IMS network testing specifications and interoperability issues. The IMS Network Testing Technical Committee (TC INT) held its first meeting in May 2008.

TC INT is developing specific IMS test specifications for interoperability, conformance and network integration from specifications produced by the Third Generation Partnership Project (3GPP™) and ETSI's Telecommunications and Internet Converged Services and Protocols for Advanced Networks Technical Committee (TC TISPAN). TC INT's work in 2008 focussed on Conformance Test Specifications for the use of Session Initiation Protocol (SIP) and Session Description Protocol (SDP) in IMS core networks and Interoperability Test Specifications for IMS Network-to-Network Interface (NNI) interworking.

TC INT has responsibility for the organisation of IMS interoperability events in association with ETSI's Centre for Testing and Interoperability (CTI) and its Plugtests™ interoperability testing service. In November 2008 in Bled, Slovenia, ETSI held its second highly successful IMS interoperability event. This included the testing of 3GPP IMS Release 7 interworking, roaming, border control and the integration of application servers executing selected multimedia telephony supplementary services.

## Machine-to-Machine Communications (M2M)



Following a six-month strategic review of the demand for M2M standardisation by the ETSI Board, a new Machine-to-Machine Technical Committee (TC M2M) has been set up to develop standards in this fast-growing field. This review attracted worldwide interest from a broad range of industry including experts from telecoms network operators, equipment vendors, administrations, research bodies, as well as M2M specialist companies.

The applications of M2M are diverse; they include, for example, personal health monitoring, intelligent tracking and tracing in the supply chain, smart utility metering, remote control of vending machines, industrial wireless automation and ambient assisted living. It is predicted that, by 2010, some 2 billion machines will be connected. The cellular M2M segment in particular is forecast to produce record growth.

Many disjointed component-level standards already exist, addressing various radio interfaces – a situation which has created fragmentation. Until now, little effort has been made to bring all these pieces together and identify the standardisation gaps which exist. With the establishment of TC M2M, ETSI is now confronting this challenge.

ETSI's broad membership, drawn from the global telecoms and ICT industry, enables it to 'see the big picture'. The collaboration which characterises its working methods and its extensive network of partnerships will facilitate co-operation with other standards bodies and industry fora. In addition, the Institute's expertise in interoperability and testing means it can provide not only the architecture-level standards required, but also the test specifications essential to demonstrate end-to-end interoperability.

TC M2M will support M2M services and promote innovation across the industry. It is expected to play a crucial part in developing standards to allow objects to communicate between themselves and to be connected on the web; its work will produce some of the essential building blocks of the 'Internet of Things'.



## Media Content Distribution



'Content delivery' is the delivery of digital media 'content' such as 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. In response to this market demand, ETSI established a 'Starter Group' in 2008 to assess the Institute's potential role in this developing area. As a result of this review, a new Media Content Distribution Technical Committee (TC MCD) was set up. Its task is to guide and co-ordinate standardisation work aimed at the successful overall development of multimedia systems (television and communication).

The Starter Group attracted considerable interest, and drew participants new to ETSI. TC MCD includes representatives of the content provision industry such as broadcasters, studios and TV channels. Broadcast operators, network suppliers and operators, Internet Service Providers (ISPs), device manufacturers, consumer electronics and the smart card industry are also participating.

TC MCD will address interoperability issues in a converged environment supporting Internet Protocol TV (IPTV), mobile TV and broadcast TV. As most of the manufacturing in this industry is undertaken outside Europe, TC MCD will not limit its liaisons to Europe but will involve consumer equipment manufacturers worldwide. The ultimate goal is the adoption of a consistent set of worldwide solutions.

TC MCD will provide a platform where use cases and business models can be discussed in the context of economics and global dynamics in order to assess the viability of a given standard. A framework and roadmap for service interoperability will be produced and gaps identified to highlight the challenges in the end-to-end delivery of content.

The deliverables planned include the definition of use cases (content portability, interactivity portability, service interoperability, content distribution), and of implementations and 'best practice' for service interoperability. This will involve an analysis of current and future business dynamics. The Committee will then co-ordinate standardisation activities to realise this MCD framework vision and foster the co-ordinated development of standards for digital media distribution across unicast, multicast and broadcast networks. TC MCD will also identify regulatory issues produced by convergence effects.

## Reconfigurable Radio Systems

Born out of a Workshop on Software Defined Radio (SDR) and Cognitive Radio (CR) which ETSI hosted in February 2007 and aimed at attracting the results of European collaborative R&D projects, after a period of intense discussion, investigation and planning, ETSI launched its new Reconfigurable Radio Systems Technical Committee (TC RRS) in 2008 to examine the possible standardisation of RRS.

RRS are intelligent radio devices 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, other users etc. They can scan for unused frequency, opening up the opportunity to negotiate the use of unused spectrum. The establishment of TC RRS extends recent research into Software Defined Radio and Cognitive Radio, and demonstrates ETSI's commitment to respond to the latest technological innovations.

The Committee held its first meeting in March 2008, attracting over 50 manufacturers, operators, regulators and other interested parties.

TC RRS is tasked with answering three key questions: why should RRS be standardised, what should be standardised and how should RRS be standardised.

The Committee is charged with completing its reports on these topics within 18-24 months. Work progressed well in 2008 and the first ETSI Technical Report, a reference architecture for SDR mobile devices, was scheduled for approval in February 2009.



# Intelligent Transport Systems

Intelligent Transport Systems use ICT to provide services to improve the safety, reliability, efficiency and quality of transport. But two aspects of ITS service provision make it particularly important: the safety of road users through the reduction of death and injury (in Europe, over 40 000 deaths occur on our roads every year and there are more than 1,25 million injuries); and the efficient use of transport systems to minimise pollution emissions such as CO<sub>2</sub> and to optimise fuel consumption.

The potential applications of ITS are numerous and exciting. They include vehicle-to-vehicle as well as vehicle-to-roadside communication and the networks behind this communication, police and emergency services, traffic controls, signs in cars and parking services.

ITS service provision, especially the more advanced services, relies on communications – both wireless communications with and between vehicles and backbone system telecommunications. This makes ITS an area of strategic relevance to ETSI and one where ETSI leadership is required, particularly in relation to the European requirements for the provision of ITS services.

The work of ETSI's Intelligent Transport Systems Technical Committee (TC ITS) is actively supported by a large variety of companies including car-makers, the automotive supply industry, silicon vendors, network operators, research organisations and test houses.

The initial focus of TC ITS is on the overall architecture for ITS including detailed applications, networks, media and security/privacy issues, in particular for co-operative vehicular communications to provide interoperability. Great attention is therefore being paid to creating commonly agreed standards for the network architecture, protocols and transmission formats to help achieve global interoperability and the harmonisation of ITS services and applications. ETSI's work also has clear relevance to multi-modal types of transport and travelling – railways, aviation and the maritime sector.

ETSI is addressing vehicle-to-vehicle and vehicle-to-roadside communication for ITS for safety and road traffic efficiency using 5,9 GHz ITS radio. Major progress was achieved within the regulatory environment with the European Commission's decision to designate a 30 MHz bandwidth in the 5,9 GHz frequency band for ITS road safety applications. An additional 20 MHz band has been identified for the future and a frequency band of 20 MHz has also been identified for non-safety ITS applications which will be important for commercial services in support of safety-related services. ETSI's standardisation work for co-operative ITS is now based on this regulation.

ETSI's main task in this area in 2008 was the preparation of a roadmap of the standards required to support basic applications. A basic set of application requirements is



being prepared which will be published as an ETSI Technical Specification (TS) in 2009.

In close co-operation with European R&D projects, ETSI is also developing a common communication architecture for ITS. This work will define the direction of ITS and how different elements should be built up and co-ordinated to meet global acceptance.

A routing protocol – 'GeoNetworking' – is being developed which allows the routing of data packets in ad hoc vehicle networks without the co-ordination of a communications infrastructure, and TC ITS has almost completed a European profile standard for the 5,9 GHz band as well as specifications for Transmitter Power Control (TPC).

Security issues and mechanisms to assure the protection of user privacy in the presence of attackers at the radio interface for the 5 GHz modes are being pursued.

The first full set of ETSI ITS standards is expected by the end of 2009.

The spectrum implications of ITS are addressed by ETSI's EMC and Radio Spectrum Matters Technical Committee (TC ERM). In 2008 TC ERM produced a Harmonised Standard which enables the automotive industry to introduce radio systems for 'smart' vehicle communications systems (so called 'co-operative' systems). Such systems enable one car to 'talk' to another and to road infrastructure providers, using wireless communication technology. Warning other drivers of adverse road conditions or of a crash which has just happened are just two examples of possible uses for this technology. The European Commission has already allocated a single European Union (EU)-wide frequency band to be used for these purposes. This new Harmonised Standard completes the set of legal and regulatory instruments required for introducing ITS across the EU.

# Smart Cards – Telecoms and Much, Much More

The use of smart card platform specifications revolutionised mobile communication systems. In particular, it allowed users access to global roaming, irrespective of the radio access technology used. But these specifications also provide a true multi-application platform (called the UICC) not just for mobile communication systems but for all applications using a smart card. This means that interoperability between different applications based on the smart card platform can be assured.

The major achievement of 2008 was the conclusion of work on the use of the smart card platform for Near Field Communications (NFC) – a short-range high frequency wireless communication technology which enables the exchange of data between devices over about a 10 centimetre (around 4 inches) distance. The technology combines the interface of a smart card and a reader into a single device which can communicate with other smart cards and readers, as well as with other NFC devices, and is thereby compatible with existing contactless infrastructure already in use for public transportation and payment. The potential applications are diverse – and far removed from the smart card's original purpose in telecommunications: they include ticketing and access control for public transport and access control to premises as well as payment by credit card or an electronic purse residing on the UICC.

Work on the lower layers, the Single Wire Protocol (SWP), which had been published in 2007, continued in 2008 with the usual improvements resulting from the first implementations. The management level, the so called Host Controller Interface (HCI), was finalised in 2008 with the selection of an option which provides an architecture and placeholders for a potential (interoperable) extension of the specification. It also includes a mechanism for the UICC to proactively request the terminal to interact with the user so that, for example, the result of a transaction or the remaining balance for an e-purse can be displayed.

Completion of the HCI specification brought ETSI's work on Release 7 of the Smart Card specifications to an end. The elaboration of requirements for Release 8 has also been completed, and the first requirements for Release 9 have already been approved.

As part of Release 8, ETSI has delivered a comprehensive secure channel technical solution that allows the encryption of all communication on an application-to-application and a platform-to-platform basis. Maintenance of this specification following initial implementations has produced a very robust specification, which is now being used to help secure the Open Mobile Alliance (OMA) Mobile Broadcast Services Enabler Suite (BCAST), the open global specification for mobile TV and on-demand video services.



Running alongside this technical development, ETSI is dealing with the increasing demand for test specifications for new features and functions.

Digital content distribution and services on mobile phones are expected to be the next business driver for the mobile industry. Collaboration with the OMA in 2008 resulted in a number of new features and functions for the Smart Card Web Server as well as in the elaboration of requirements for the use of the UICC for Secure Removable Media (SRM). The technical realisation of having digital rights stored and managed in the UICC will form part of Release 9.

The work on reduced-capability terminals (e.g., no screen or keypad), requested by GCF (the Global Certification Forum), was completed in 2008, enabling proper type approval of those devices including all the features of the Card Application Toolkit (CAT). These tests are important with regards to creating standards-based machine-to-machine (M2M) devices. 'Standard' SIMs have been used for specific M2M applications, such as metering, for some time. Other applications may, however, require special functionality and different hardware properties such as an extended temperature range or a new form factor. The requirements and use cases for M2M smart cards were agreed in late 2008, and their technical realisation is due for completion as part of Release 9.

Release 9, which is expected to be closed by the end of 2009, will include the definition of use cases where Radio Frequency Identification (RFID) applications may require the use of a UICC, the technical solution for confidential applications and the requirements for CAT access on modem interfaces. Mobile modems are becoming a significant sector of the mobile communications market and the support for CAT in these devices is currently limited by the lack of standards defining how CAT should be extended to clients interfacing with the modem. The completion of the test specifications for the Contactless Interface will allow the smooth introduction of services on the UICC using NFC.

# LTE™ – The Culmination of 10 Years of Achievement in 3GPP™

Each Release of 3GPP system specifications for cellular telecommunications provides mobile operators and equipment manufacturers with a stable reference platform to build networks and terminal equipment. Release 8, which includes the specifications for LTE, the latest evolution of the 3G mobile system, was functionally frozen in December 2008.

In completing the LTE specifications, a wholesale revision of the radio interface and core network architecture has been undertaken, taking end-to-end packet switching to its logical conclusion with the elimination of any need for circuit switched elements (apart from interworking with legacy systems). Release 8 represents effectively the most comprehensive overhaul of 3GPP's technical output to date.

## What is in Release 8?

- Release 8 contains a new radio access network (the Evolved UTRAN Radio Access Network – E-UTRAN) and a new Systems Architecture (System Architecture Evolution – SAE) which offer average user throughput of three to four times previous High Speed Downlink Packet Access (HSDPA) levels in the downlink (100 Mbps), and two to three times previous High Speed Uplink Packet Access (HSUPA) levels in the uplink (50 Mbps). Together E-UTRAN and SAE form the basis of LTE.
- LTE is IP-based; it brings reduced latency, better spectrum efficiency and flexibility, larger and more efficient cell sizes and access independence.
- Release 8 provides for full inter-working with legacy standards (GSM, the Universal Mobile Telecommunication System (UMTS™), Code Division Multiple Access (CDMA), Time Division Synchronous CDMA (TD-SCDMA)).

The first quarter of 2009 will see the finalisation of these specifications and, in parallel, work on Release 9 will gather momentum, preparing the way for LTE-Advanced, the 4th generation technology which will be an evolution of LTE.



## 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.

In 2008, 3GPP celebrated its tenth anniversary. 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 is supported by ETSI's Mobile Competence Centre (MCC).

Further information at: [www.3gpp.org](http://www.3gpp.org)

## LTE takes off



The LTE radio technology, known as E-UTRAN, is the latest evolution of 3GPP radio access interfaces. It uses Orthogonal Frequency Division Multiple Access (OFDMA) to provide several key benefits, including significantly increased peak data rates, increased cell edge

performance, reduced latency, scalable bandwidth, co-existence with GSM/EDGE/UMTS systems and reduced capital and operating expenditure.

Users benefit from lower latency, and higher capacity and throughput. LTE will deliver peak downlink data rates above 100 Mbps at reduced cost per Gigabyte, and it can use existing 2G and 3G spectrum as well as new spectrum allocations.

A high performance air interface demands a high performance core network. Running parallel with the development of E-UTRAN, 3GPP's core network has undergone System Architecture Evolution (SAE), with the development of a framework for a migration of the 3GPP system to a higher data-rate, lower latency system, optimised for packet mode and in particular for the Internet Protocol Multimedia Subsystem (IMS).

3GPP has been developing SAE with an emphasis on cost-efficient deployment and operations for mass-market usage of IP services as well as improvements in the integration of non-3GPP access technologies.



One of the big pluses with LTE is that operators can stay with their current technology if they so choose – upgrading with EDGE or with HSPA equipment. There is a strong business case for operators to upgrade existing equipment, while installing LTE-ready parts in the network at the same time. This way the eventual switch to LTE will be virtually seamless. LTE is attracting global industry support. It is a natural evolution choice for GSM/HSPA network operators and is also the next generation mobile broadband system preferred by many leading CDMA operators.

## Other Developments

### Evolved EDGE (EDGE+)

EDGE+ reached full maturity with the completion of 3GPP Release 8 in December 2008. With its increased spectral efficiency, better coverage and data rates, EDGE compares favourably with 3G networks. Analysts predict that EDGE subscribers will grow in parallel with HSPA and LTE deployments in the coming years.

### Evolved High-Speed Packet Access (HSPA+)

HSPA was an upgrade to existing UMTS radio access networks, employing new modulation techniques, reduced radio frame lengths and new functionalities within radio networks. As a result, throughput increased and latency has been reduced. By the end of 2008, specifications for HSPA+ were completed in Release 7 and Release 8 of the Standard – providing the potential for a three-fold increase on bit rate delivered by early HSPA equipment.

### Femtocells

Considerable effort was expended in 2008 on the Home Node B (also known as Femtocell) specification, which will allow relatively inexpensive improvements in network coverage by placing what amounts to a UMTS (or LTE) base station on customer premises to provide radio coverage for a single household. Backhaul to the core network is via the customer's existing ADSL connection. Although simple in concept, the practicalities of Home Node B realisation are far from trivial, and substantial analysis of architecture, signalling traffic patterns and security is being undertaken.

### Interworking

The interworking and handover between the various radio access technologies (GSM/EDGE, UMTS, HSPA, LTE, ...) is crucial and is receiving considerable attention in 3GPP. Similarly, the interworking between circuit-switched and packet-switched domains – including between the Mobile Application Part of Signalling System No. 7 and connections based on the Session Initiation Protocol (SIP) – is currently being addressed.

## IMS

Originally designed to deliver Internet Protocol (IP) multimedia to mobile users, IMS is becoming a core component within 3G, cable TV and next generation fixed telecommunications networks. Following agreement between 3GPP and ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN) on the harmonisation of a common core IMS, the transfer of the IMS specification work from TC TISPAN into 3GPP was completed during 2008. This will ensure that IMS continues to develop without fragmentation of the system.

## LTE-Advanced



With the ITU's call for systems beyond 3G (IMT-Advanced), 3GPP has agreed a set of requirements for enhancements to LTE to deliver a 4th generation radio interface technology. Work is now starting on detailed specifications, with most of the output expected in 3GPP Release 10.



# Next Generation Networks

Next Generation Networks (NGN) are a response to the convergence of fixed and mobile telecommunications services and data networks. The general idea behind the technology is 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.

At the core of the harmonised 'All-IP' NGN is the IP Multimedia Subsystem (IMS), developed by the Third Generation Partnership Project (3GPP™), which provides an 'access independent' platform for a variety of access technologies.

The market needs to avoid proprietary NGN solutions, fragmentation and interworking problems and looks to ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN) for standards-based answers. TC TISPAN has the backing of operators, vendors, service providers and research and government representatives. It provides the definition of NGNs principally from a European viewpoint, but 20% of participants come from outside Europe. ETSI's NGN specifications are now widely considered as *the* global NGN solution.

The TC's major achievement of 2008 was completion of NGN Release 2, with specifications for Internet Protocol Television (IPTV), corporate networks and home networks.

## IPTV

ETSI's activities on IPTV cover the critical elements of the IPTV ecosystem – the customer network, the service provider network and media content distribution – with the aim of ensuring interoperability and interworking between equipment vendors, network service providers and media content distributors.

Release 2 includes specifications for the integration of IPTV services in the NGN architecture. Two possible solutions have been defined. In the first, a Dedicated IPTV Subsystem focuses on the integration of existing market solutions in an NGN environment. With this, network service providers benefit from the cost advantages of an NGN network without the need for significant modification of their current IPTV service. The second solution, IMS-Based IPTV, allows the blending of TV services with other telecommunication services (such as voice, presence and data services), enabling network service providers to reap the full benefit of the IMS architecture while providing key end-user services.

In 2008 ETSI set up a new Media Content Distribution Technical Committee (TC MCD) to address issues of fragmentation of content distribution across platforms such as IPTV, web TV and mobile TV.

## Corporate Networks

TC TISPAN completed its work on corporate networks, publishing specifications for hosted enterprises and business trunking services and defining the interaction scenarios between core and enterprise networks. A guide has been produced to ease the implementation of these services.

## Home networks

With the completion of work on Customer Premises Networks in 2008, all key features are now defined to allow NGN to be deployed into the home in an interoperable manner. The latest specifications approved allow first the connection of the Customer Premises Network to an NGN and then the enabling of IPTV services in the Customer Premises Network.

## IMS

In 2008, following agreement between TC TISPAN and 3GPP on the harmonisation of a common core IMS functionality, specification of the IMS was successfully transferred from TC TISPAN to 3GPP. This will ensure that IMS continues to develop without fragmentation of the system.

## Release 3

Work has now started in earnest on Release 3. Its main features are likely to include consolidation of Voice over IP (VoIP) (including Quality of Service, security and interworking), evolution of the IPTV Service (blended services), Ultra Broadband (fixed and wireless) access to the NGN, interconnect (naming, numbering) of both the IMS and non-IMS, and network harmonisation. Release 3 may also offer increased network resilience and robustness.

Good progress was achieved in 2008 on the specifications for new IPTV services, network interconnection and RFID security. For example, TC TISPAN has already defined the new services' requirements for IPTV which include Peer-to-Peer, advertising, IMS enabled IPTV Roaming/Mobility, User Generated Content (UGC), Personalised Channel (PCh)/User oriented content and Content Delivery Network (CDN) architecture.

Network interconnection work also began in 2008. It has been agreed with interested parties that ETSI should co-ordinate and supervise standardisation work related to NGN interconnection, and that the GSMA IPX (IP Exchange) model for the inter-operator IP backbone should be taken as a reference model. 3GPP will define everything related to IMS while ETSI is responsible for NGN aspects. TC TISPAN has now embarked on hierarchical work which will provide an overview and analysis of the topic. Further collaboration with other fora, especially the GSM Association (GSMA), is foreseen to meet commercial requirements.

# The Consumer is King

With the steady development of information and communications technologies (ICT), new and diverse applications are flooding the market. ICT in the home are now becoming more complex than the office; on-line gaming, social networking, freeware and Open Source systems for hobbies, for example, are opening up exciting new opportunities for social and leisure use – and the market is booming.

In the past, technical innovation tended to originate in the military and academic arenas; now, in a complete reversal, consumer demand is leading the drive for new products and services. The customer is playing a more collaborative role in new developments. Inevitably this raises issues for human factors. Security and personalising the way users connect with products, for example, are critical in achieving eInclusion and eAccessibility, particularly when users' needs are different from those of the majority.

ETSI's activities in this area are the responsibility of its Human Factors Technical Committee (TC HF) which strives to ensure that the needs of all users, including those who are older, young or disabled, are considered. The Committee has developed an international reputation for its work.

TC HF is working on general user profile management, aimed at producing a standard on settings, values and operations related to personalisation. This is targeted at developers and manufacturers which provide services and devices that can be personalised by their customers. A Technical Specification is also being prepared on architectural issues related to networks, terminals and smart cards.

ETSI supports the European Commission (EC) in its concern for the human aspects of ICT as it affects equality and diversity in building society. Specific issues tackled in 2008 include the collaborative work between ETSI, the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) to examine the impact of EC Mandate 376 on procurement and the accessibility of ICT.

With ever greater numbers of ever younger children now accessing the Internet on a daily basis through a host of new applications, children's use of ICT is a major concern. In 2008 ETSI made a significant contribution to the safeguarding of children and young people with the publication of a guide to provide advice on the delivery of services to children.

ETSI's ongoing work on health and care services is also now focussing on the personalisation of services. In parallel with its general user profile management activities, ETSI is working on user profile management specifically for health and care services.

Work also continues on multicultural studies, aimed at removing or reducing cultural barriers that can exclude people from communicating.

Standardised communication with assistive mobile devices improves the quality of life for millions of disabled citizens in the European Union, and opens up opportunities for Small and Medium-sized Enterprises (SMEs) producing such devices. In August 2008, ETSI published a Technical Specification which sets out the requirements for a number of Assistive Technology commands that can be used to enable assistive devices to interwork with mobile terminals.

Work is also being undertaken on ICT and cars, examining how we use communication services while in a vehicle and identifying where guidelines are needed. This project addresses the potential dangers of driver distraction and the consequential impact that this can have on road safety. Although the focus is on users' needs and applications in this area, the work is also expected to open up new service opportunities.



Work is now beginning on eServices – increasing access to new user interaction technologies. In the past, the needs of people with disabilities have always lagged significantly behind the initial availability of innovative new technologies which have tended to be developed for and targeted at mainstream consumers and frequently at closed target groups of early adopters. Subsequent measures to accommodate users with impairments have been late and costly. Unless a different approach is taken, the introduction of emerging interaction technologies such as ambient intelligence and ubiquitous communications and others enabled by next generation mobile networks could follow the same pattern. As with all devices and services, the aim is to have the specific requirements of elderly users and users with disabilities taken into account prior to the large-scale introduction of the technologies, in a true 'Design-for All' approach.

However, current guidance to device manufacturers and service providers focuses on existing technologies. ETSI is therefore embarking on an analysis to anticipate the demands of emerging technologies and is developing appropriate guidelines.



# Technical Breakthroughs

## Electronic Signatures

In 2008, ETSI completed its work on digital accounting in support of the European Commission's drive to establish cross-border public services in the Single Market. Digital accounting is fundamental to boosting the advent of paperless accounting documentation (such as eInvoicing), and will increase business efficiency and reduce the potential for fraud.



Work on Registered e-Mail (REM), aimed at providing a framework for origin authentication, proof of delivery and long term availability, is progressing well. This work offers enormous potential with varied applications.

Work aimed at creating a new version of the specification on the interoperability framework for XML Advanced Electronic Signature (XAdES) began in April 2008. This will aid interoperability for the mutual recognition of advanced electronic signatures, help achieve their widespread use and address new technological developments such as the use of e-signatures in mobile communication. The work is being undertaken in co-operation with the Electronic Commerce Promotion Council (ECOM) of Japan.

In a major new initiative, ETSI is developing a profile for a basic variant of advanced electronic signatures in PDF which is compatible with the existing features of PDF signatures. PDF, the most widely used digital document format, with its new ISO 32000 standard status, has been recognised as a valid file format for qualified signatures (PDF/A) in several European Member States and in Japan. ETSI is creating a new specification which will represent a general consensus on the use of these signatures and hence provide a reliable basis for maximising interoperability.

## Grid

With the publication of two specifications and a report on ICT Grid interoperability gaps, ETSI's Grid Technical Committee (TC GRID) produced its first deliverables in 2008. Grid technology embodies a vision of interoperable elements ranging from small devices up to supercomputers, connected by global networks and capable of supporting communities ranging from individuals to whole industries. Standardisation is essential to enable many different pieces of hardware, software, operating systems, data storage systems, networks etc. to interoperate in the delivery of complex applications. ETSI's experience in interoperability is proving invaluable in Grid standardisation.

## Railway Telecommunications

The spread of GSM-R – the new wireless communications platform developed specifically for railways, based on GSM™ – continued unabated in 2008, rolling out across all five continents. The technology has now reached 60% of the rail lines in Europe, where it covers 140 000 kilometres of track. 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 opportunities for new services to users. With roaming agreements in place in France, the Netherlands, Germany and Belgium, cross-border freight traffic is running freely in Europe. By 2010 GSM-R on border-crossing trains will also be available on passenger trains all over Europe.

Continuing work on Direct Mode Operation (DMO) within GSM-R is a major breakthrough evolution of GSM-R; it answers not only the requirements of railways identified in the European Directive on Safety in Railway Tunnels but also offers the possibility of fulfilling PMR requirements for the emergency services.

After major developments with GSM-R in recent years, there was an emphasis in 2008 on ensuring the compatibility of equipment, particularly to ensure the interoperability of communications on the trans-European rail system. As well as expanding geographically, GSM-R is adding new features to cope with the growing demands of users, and frequency bands are being extended.

On the spectrum front, ETSI produced a Technical Report which provides information on additional Private Mobile Radio (PMR)/Public Access Mobile Radio (PAMR) spectrum required for use by railway operators in the duplex frequency band 873 - 876 MHz paired with 918 - 921 MHz. One of the applications requiring additional spectrum resources is the European Train Control System (ETCS), which releases the train driver from a number of control activities, thereby reducing the risk of human error. A request for appropriate spectrum is now under consideration.

## Improving Air Traffic Management

In close collaboration with the European Organisation for Civil Aviation Equipment (EUROCAE), ETSI is working on new 'Community Specifications' intended to ensure an interoperable European Air Traffic Management Network (EATMN). Community Specifications are European Standards that may be used to give presumption of conformity to the Single European Sky (SES) Interoperability Regulation. In 2008, the first of these specifications, Part 1 of a four-part EN on Advanced Surface Movement Guidance and Control System (A-SMGCS), was completed; work is ongoing for the other three parts. Work also continues on a specification for Airport Collaborative Decision Making (A-CDM), aimed at improving airport operations by ensuring that airport partners (such as airports, airlines and air traffic controllers) all receive relevant and accurate information on time. It is envisaged that a new technical committee will be created in 2009 to address aeronautical matters.



## Radar Level Gauging

ETSI has produced a new Technical Report on radar level gauging applications in still pipes, covering the application of Tank Level Probing Radar for use in 'floating roof tanks'. Floating roof tanks are often used in petroleum refineries and storage plants. Measurements of oil quantities must be accurate to ensure accurate billing. The Report demonstrates that the radar energy propagating inside the pipe has limited leakage to the outside of the tanks, and conformance to applicable standards can be achieved. Work has now begun to develop the requirements and a Technical Specification is expected to be completed in 2009.

A new EN governing the use of radar to measure, for example, the water level in rivers, is also being developed. A spectrum request has already been submitted to CEPT.

## Satellite Communications

In 2008, ETSI was at the centre of work on important new standards for worldwide applications using satellite for mobile and fixed communications.

Activities in this area included completion of a significant update to the GMR-1 Release 2 technical specifications (Geo Mobile Packet Radio Service (GMPRS-1)) and a new specification for the Connection Control Protocol (C2P) for Digital Video Broadcasting – Return Channel by Satellite (DVB-RCS). Work has now started on a new set of GMR-1 Release 3 specifications (GMR-1 3G) and is proceeding well with the preparation of specifications for the 'Family SL' satellite radio interface.

Harmonised Standards concerning the IMT-2000 frequency bands allocated to Mobile Satellite Services are nearing completion; this work has been extended to include both wideband and narrowband systems. In addition, a technical report containing a detailed analysis of advanced mobile satellite system architecture in the context of Beyond 3G and 4G systems has been initiated.

## New Generation DECT™

ETSI is responding to the evolution of the fixed communication network which is moving to a new generation – Next Generation Networks (NGN). Voice over Internet Protocol (VoIP) and IP-based value-added services are already generating new services for the end-user – and new revenues for suppliers and operators. As the dominating technology for the in-home distribution of voice services, Digital Enhanced Cordless Telecommunications (DECT) is also moving to a new generation especially scaled for Next Generation communication networks – 'New Generation DECT'.

In 2008, ETSI finalised Part 3 of the New Generation DECT specification. This includes a number of additional features, such as several supplementary services and a new 'no emission' mode, which provides the ability to deactivate all radio transmissions. Part 3 also offers improved audio quality, easy pairing (it works like a sort of 'plug and play' for DECT), and multiple calls and multiple lines for more complex systems. New Generation DECT will become an integral part of home gateways, so interoperability is an important driver for these standardisation activities.

New long term work on DECT-Advanced began in 2008, preparing specifications for the International Telecommunication Union (ITU) for the evolution of New Generation DECT. DECT-Advanced will offer even more services, which require higher speed and throughput for transmission, video will have higher resolution and real-time services will be available. A completely new physical layer is required for DECT which will provide much higher bit rates and greater efficiency, fulfilling the requirements of IMT-Advanced.

# Testing and Interoperability

The ultimate aim of standardisation in information and communications technology is interoperability. This issue cannot be addressed simply at the end of the standards-making process; it is a thread that should run through the entire standards development process, and testing provides vital feedback into standardisation activities.

ETSI's approach is to produce base standards and test specifications in parallel, with the base standards designed with interoperability in mind. There are two complementary forms of testing: conformance testing and interoperability testing.

In 2008 ETSI's Centre for Testing and Interoperability (CTI) consolidated its leading position in the provision of support to ETSI with the development of test specifications and the organisation and running of Plugtests™ interoperability events.

CTI provided hands-on technical support to ETSI's technical bodies in the production of test specifications for ETSI Detect and Avoid (DAA) standards, Third Generation Partnership Project (3GPP™) handsets (air interface), Next Generation Networks (NGN) (IMS/SDP and IMS/NNI), HiperMAN/WiMAX and Intelligent Transport Systems (ITS). Other activities included the

development of a testing framework for GRID technologies and contributions to Model-Based Testing methodologies (MBT).

CTI also organised 15 ETSI Plugtests events in areas ranging from the IP Multimedia Subsystem (IMS) and security (XAdES), through aeronautics (Air Traffic Management – Voice over IP (VoIP)) to Business-2-Business (B2B) and automotive (V2X) communication. The XAdES Plugtests event represented a particular landmark – it was the Centre's first truly remote event with all participants logging in to an ETSI server to perform the various testing scenarios.

Under the ETSI Interopolis™ brand, CTI also provided commercial customer services related to testing, including the organisation of three interoperability events.

## Sharing Expertise

ETSI's core work is the creation of standards for both the European and global markets, a task that has led to the accumulation of an enormous wealth of expertise in supporting diverse technical areas. In addition to making this expertise available to its own Members, ETSI has a commercial service-providing role, and makes its expertise available to other organisations as well.



Forapolis was established within ETSI to provide effective support to any forum or consortium involved in relevant technical specification activities

– whether with the participation of ETSI Members or not. Its services 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'.

In 2008, in a move which demonstrated its customers' satisfaction with its services, a number of contracts were revised and enhanced. Forapolis' customer and service portfolio now includes:

- Open Mobile Alliance (OMA)
- The Home Gateway Initiative (HGI)
- Next Generation Mobile Networks (NGMN)
- The Global Certification Forum (GCF)
- The Open IPTV Forum
- ECC (ERO – European Radiocommunications Office)

Sales activities became more proactive in 2008. Several new proposals were offered and contact was established with about 15 other potential customers. However, the current general economic situation and the poor Euro-Dollar exchange rate did not provide a favourable sales climate in 2008 and, with the industry experiencing a difficult financial situation too, this seems unlikely to improve much in 2009.



The strategy of presenting Forapolis together with its

companion service, Interopolis, has proved particularly effective, as many fora which do not use Forapolis for management services are seeking the services of Interopolis. There are few other organisations that can match ETSI's expertise in this area and Interopolis is already highly regarded.

Interopolis complements Forapolis and 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); and technologies validation.

The Interopolis family of services was only born at the beginning of 2008, but all aspects of the service were in demand during the year and several offers were made. One key achievement was the successful negotiation of a contract on test methodology platforms. This was a new activity introduced to the Interopolis portfolio, building on ETSI's reputation for test suite development and the organisation of interoperability events, which once again in 2008 proved extremely successful with key customers.

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



# Co-operation, Collaboration and Outreach

## 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 the best way to ensure coherence between the standards produced by ETSI and those of others and to avoid the duplication of effort. At the same time it ensures that its standards are of a consistently high quality and are widely accepted and implemented.

ETSI currently has over 70 such Partnership Agreements. During 2008, the Institute undertook a review of its partnership activities, and its portfolio was extended. New Memoranda of Understanding (MoUs) were signed with the Continua Health Alliance, the WiMedia Alliance, the Near Field Communication (NFC) Forum and SatLabs, the Institute entered into a Co-operation Agreement with the Fixed Mobile Convergence Alliance (FMCA) and a Letter of Intent (LoI) was signed with the Software Defined Radio (SDR) Forum. The partnerships with the NATO Standardisation Agency, the Asia Pacific Telecommunity, ERTICO ITS-Europe, the China Communications Standards Association (CCSA) and ECMA International were also renewed. Some of these new agreements are the direct result of ETSI's diversifying technical interests which are attracting attention in new quarters.

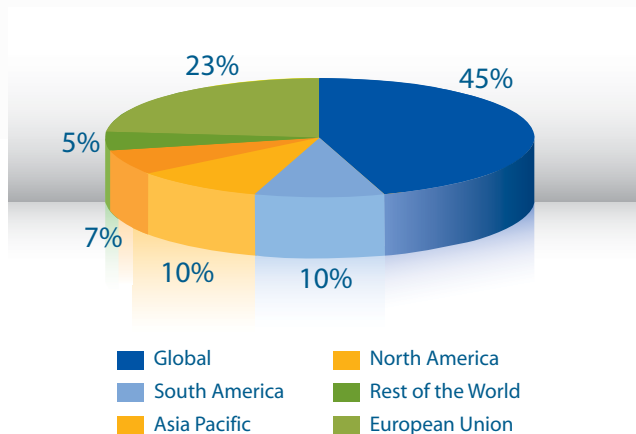
Together with its sister European SDOs, the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC), ETSI also signed an MoU with the Pan American Standards Commission (COPANT), and a Framework Co-operation Agreement with the Standardisation Administration of the People's Republic of China (SAC).

## Extending ETSI's Geographical Footprint

The dialogue with Asia, and with China in particular, continued to be high on ETSI's agenda in 2008. The agreement with SAC brought to three the number of collaborative partnerships in the region (along with the China Communication Standards Association (CCSA) and the China Electronics Standards Institute (CESI)). Following the signature of the MoU with CESI in 2007, in October 2008 ETSI organised a one-day meeting, followed by a workshop on 'RFID - the Internet of Things' in Beijing in November, under the aegis of the EU-China Information Society Project. Further activities are now planned.

Activities in China have been supported by the Seconded European Standardisation Expert in China, who is well established now and is successfully promoting CEN, CENELEC and ETSI, the European Commission (EC) and the European Free Trade Association (EFTA). A European Union/China Standards Information Portal is also being considered.

## Partnerships by region in 2008



Elsewhere, resources were focussed on emerging market regions such as India and Brazil. The MoU with COPANT in particular positions ETSI in the rising pan-American standards market and gives the Institute an important partner in the area. A similar partnership with the Standardisation Association of MERCOSUR (AMN) is expected to enter into force in 2009.

The Third Generation Partnership Project (3GPP™) held a Project Co-ordination Group/Organisational Partner (PCG/OP) meeting in another emerging market in 2008 – this time in Moscow, Russia. The meeting and the associated workshop attracted huge interest and have laid a solid basis for future activities in this fast growing country.

## Research & Development

ETSI is also looking to develop new partnerships with research and academic institutions; involvement in R&D at the earliest stage puts the Institute in an ideal position to identify new standardisation needs. The MoU with the European Research Consortium for Informatics and Mathematics (ERCIM) connects ETSI to a network of European research institutes and helps build strong links with the research community. ETSI is also working with the EC's Joint Research Centre (JRC).

## Outreach

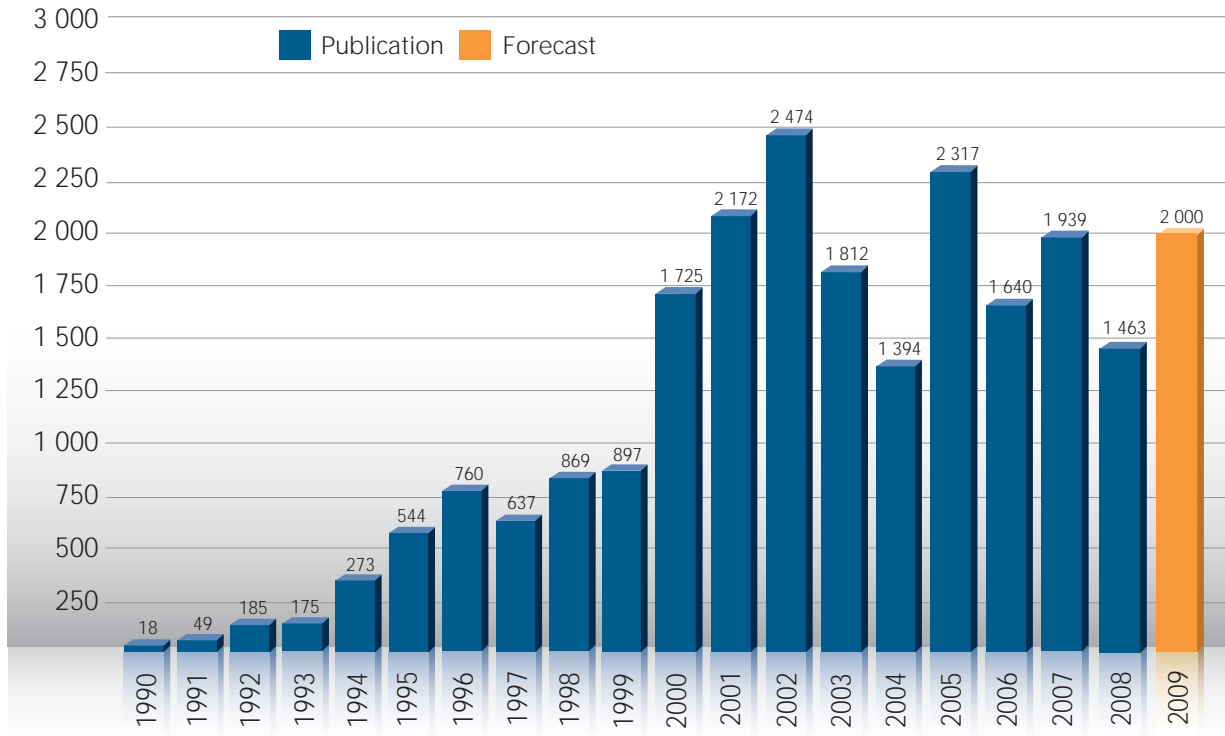
Support of events and communications activities continued, despite the challenging effects of the current global economic climate. Some 40 external events were supported in 2008, with an exhibition stand, the provision of speakers or endorsement. In addition, ten workshops were organised during the year on a variety of topics from RFID to NGN standards, the Wireless Factory to the Single European Sky and including ETSI's major annual Security event in January 2008.

A third edition of the ETSI White Paper 'Achieving Technical Interoperability – the ETSI Approach' was published in April 2008 and a second edition of the Security White Paper was produced in October 2008.

# Standards Production

1 463 standards and reports were published in 2008. By the end of the year, ETSI had published a total of over 21 000 standards, specifications, reports and guides since the Institute was established in 1988.

The number of deliverables published, for each of the years 1990 – 2008 and the prediction for 2009.



## Distribution by type of published document

	In 2008	Total since 1988
Technical Specification (TS) <sup>1</sup>	1 215	14 280
Technical Report (TR) <sup>2</sup>	87	2 009
ETSI Standard (ES)	97	584
European Standard (telecommunications series) (EN) <sup>3</sup>	52	4 208
ETSI Guide (EG)	8	205
Special Report (SR)	4	57
<b>TOTAL</b>	<b>1 463</b>	<b>21 343</b>

<sup>1</sup> Includes GSM Technical Specification (GTS)

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

<sup>3</sup> Includes amendments and old deliverable types: European Telecommunication Standards (ETs), Interim ETs (I-ETs) and Technical Bases for Regulation (TBRs).

# Specialist Task Forces and other Funded Projects

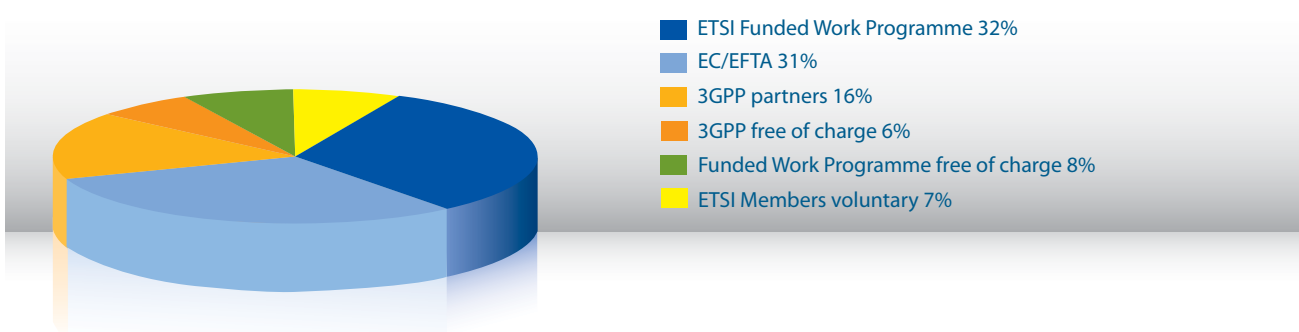
Specialist Task Forces (STFs) are groups of highly skilled experts sent by ETSI Members to work together for limited periods to perform specific technical work under the direction of an ETSI committee. A similar mechanism has been adopted to support 'funded projects' for the Third Generation Partnership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

Altogether, 55 STFs and other funded projects were active during 2008, involving 155 experts and representing an investment of over 4,6 M€.

## Technical areas in which resources were invested

TECHNICAL AREA	k€
Human Factors (HF) (EC/EFTA funding)	940
3GPP TTCN test specifications (3G partners funding)	750
Broadband Networks (ETSI/WiMAX Forum co-funding)	667
FP7 projects (EC/EFTA funding)	111
Next Generation Networks (TISPAN)	504
Electronic Signature Infrastructure (ESI)	189
Digital Enhanced Cordless Telecommunications (DECT™)	138
Grid	137
Satellite Earth Stations & Systems (SES)	108
Methods for Testing & Specification (MTS)	107
Smart Card Platform (SCP)	63
Other areas	266
<b>TOTAL FUNDED</b>	<b>3 980</b>
3GPP experts free of charge (equivalent value)	290
ETSI Members experts free of charge (equivalent value)	370
<b>TOTAL EFFORT</b>	<b>4 640</b>

## Funding sources in 2008



## EC/EFTA funding

The EC and EFTA contribution to the ETSI standardisation infrastructure for 2008 was set at 2 722 k€ via the Operating Grant.

The EC/EFTA contribution for specific standardisation contracts under their 2008 budget line provided funding of more than 2 M€ to support the EC's ICT 2008 Standardisation Work Programme: the different actions will be performed from 2009 through into 2011. Ten successful proposals were made in 2008 and the related action grants were all signed between October and December 2008.

The new Framework Partnership Agreement has been negotiated with the EC and will be signed by both parties in early 2009.



# Membership

Continuing the trend of recent years, ETSI Membership increased again in 2008 to bring the total number of Members to 724. This represents a rise of over 7% on 2007, reflecting in part the widening range of activities being undertaken in ETSI. The growth in the number of research bodies joining ETSI is particularly significant.

At the end of the year, ETSI had 574 full Members drawn from 41 European countries. The total number of countries represented in all categories of Membership is 62, drawn from five continents. In 2008, Associate Membership stood at 117, representing 22 non-European countries and provinces, and there were 33 Observers.

## Membership by type

	01-01-2008	31-12-2008
Full Members	520	574
Associate Members	118	117
Observers	37	33
<b>TOTAL</b>	<b>675</b>	<b>724</b>

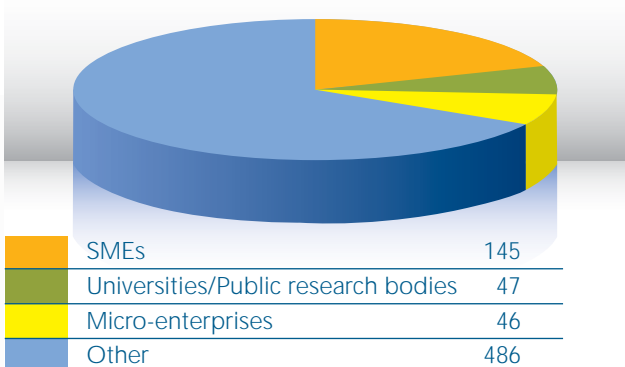
While Associate Members are mainly interested in major work areas such as Next Generation Networks and mobile telecommunications, in 2008 there was an influx of Full Members keen to participate in new activities in, for example, Reconfigurable Radio Systems and Quantum Key Distribution.

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.

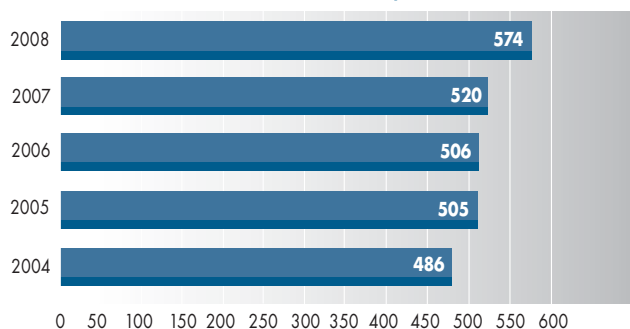
## Widening membership

In 2008 ETSI adopted a strategic policy to extend participation in its work, and the growing interest in membership by Small and Medium-sized Enterprises (SMEs), micro-enterprises, universities and public research bodies is therefore encouraging. Numerically, they now represent almost a third of the Institute's membership. There was a particularly marked rise in the number of micro-enterprises, research organisations and universities.

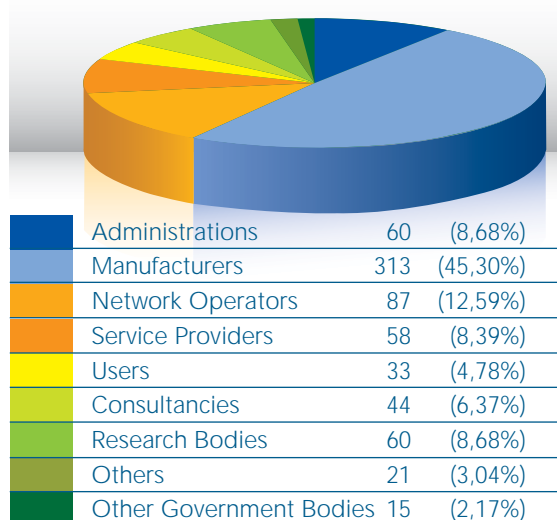
## Participation of SMEs, micro-enterprises, universities and public research bodies



## Evolution of ETSI Full Membership



## Full and Associate Membership by category



## Overall Membership by country/province

Albania	1	Jordan	1
Andorra	1	Korea	1
Australia	2	Latvia	1
Austria	11	Lesotho	1
Belgium	22	Lichtenstein	1
Bosnia Herzegovina	2	Lithuania	1
Brazil	3	Luxembourg	6
Bulgaria	3	Malaysia	2
Canada	9	Malta	2
China	7	Netherlands	26
- Taiwan (Province of China)	12	Norway	10
Croatia	4	Poland	6
Cyprus	2	Portugal	2
Czech Republic	5	Qatar	1
Denmark	19	Romania	4
Egypt	1	Russian Federation	8
Estonia	2	Serbia	1
Finland	15	Singapore	1
France	78	Slovakia	3
Former Yugoslav Republic of Macedonia	1	Slovenia	4
Georgia	1	South Africa	3
Germany	101	Spain	19
Greece	7	Sweden	22
Hungary	6	Switzerland	26
Iceland	1	Turkey	6
India	5	Ukraine	3
Iran	1	United Arab Emirates	2
Ireland	14	United Kingdom	117
Israel	6	United States of America	61
Italy	34	Uzbekistan	1
Japan	6	Yemen	1

62 COUNTRIES OR PROVINCES IN TOTAL

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# 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 2008 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 2007, income and expenditure increased by 13% or 2,9 M€. However the result of the year is a deficit of 97 k€ due to high expenses in IT software development which were not initially fully budgeted.

The key points of the budget management, compared with 2007, are the following:

**Expenditure** – Secretariat costs increased by 16% (but were 0,8% less than budgeted) mainly due to IT software developments and the recruitment of additional staff for technical organisation support. As in 2007, 5 M€ were spent on experts' costs for Specialist Task Forces and other standardisation related technical experts.

**Income** – Members' contributions increased by 8% due to new Members joining and existing Members increasing their contribution. 57% of the budget was funded by Members' contributions (13,3 M€). The contribution of the 3GPP™ Partners (1,7 M€) remained constant. EC/EFTA payments amounted to 5,3 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 2,6 M€ (a 20% increase).

## Financial Statements for the Year 2008

The final accounts and the balance sheet are summarised below. The fiscal accounting period is 1 Jan. – 31 Dec. 2008.

### Statement of Income and Expenditure Year 2008

	Income (€)	Expenditure (€)
Income	24 737 652	
Purchases		12 565 996
Expenses		12 756 705
Investment management	452 716	30 771
Extraordinary income & expenses	72 664	6 176
<b>TOTAL</b>	<b>25 263 032</b>	<b>25 359 648</b>

There was a deficit of 96 616 € in 2008.

### Summary of the Balance Sheet

#### Assets

Net amounts at:	31 Dec 2007 (€)	31 Dec 2008 (€)
Fixed Assets	6 908 609	6 658 696
Debtors	14 641 812	14 562 019
Securities/cash	6 741 469	9 764 255
Adjustment accounts	145 329	172 858
<b>TOTAL ASSETS</b>	<b>28 437 219</b>	<b>31 157 826</b>

#### Liabilities

Net amounts at:	31 Dec 2007 (€)	31 Dec 2008 (€)
Equity	8 278 661	8 278 661
Provisions	150 000	200 000
Balance carried forward	0	-96 616
Creditors	6 930 785	8 872 141
Adjustments	13 077 773	13 903 640
<b>TOTAL LIABILITIES</b>	<b>28 437 219</b>	<b>31 157 826</b>

Figures are rounded to the nearest €.

## 2008 Budget Statements

Income	k€
Members' contributions and Observer fees	13 291
EC/EFTA contracts	5 312
3GPP Partners	1 686
Voluntary contributions	498
Forapolis/Interopolis	2 626
European Friends of 3GPP	711
Sales	300
Plugtests™	223
Financial income	418
Other income	198
<b>TOTAL INCOME</b>	<b>25 263</b>

Expenditure	k€
Secretariat staff costs	11 816
Other Secretariat costs	7 355
Special Projects	213
European Friends of 3GPP	497
Provision and losses	439
Experts costs	5 040
<b>TOTAL EXPENDITURE</b>	<b>25 360</b>

In 2008, there was a deficit of 97 k€.



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- Machine-to-Machine Communications
- Maritime Communications
- Media Content Distribution
- Medical
- Mobile
- Next Generation Networks
- Open Service Access
- OSS
- Powerline
- Protocol Specification
- Quality of Service
- Quantum Key Distribution
- Radio
- Reconfigurable Radio Systems
- Regulation & Legislation
- Safety
- Satellite
- Security
- Smart Cards
- Testing
- Terrestrial Trunked Radio (TETRA)



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