



World Class Standards



annual report 2006



European roots – global branches

ETSI is responsible for the standardisation which has enabled some of the most important Information and Communication Technologies (ICT) today.

- The Global System for Mobile communication (GSM™) was developed by ETSI for Europe, and is now a worldwide success story, with 2,3 billion users in over 200 countries, and 1,3 million new users every day.
- ETSI's Lawful Interception handover standard is being deployed in Europe, as well as in the USA, Australia and elsewhere, and is a growing success.
- Digital Video Broadcasting (DVB) system specifications based on DVB Project proposals have services available on every continent.
- Since Terrestrial Trunked Radio (TETRA) was first deployed in 1997, well over 1000 contracts have been let for TETRA networks worldwide and the technology is now deployed in over 88 countries, of which 53 are outside Europe.
- Digital Enhanced Cordless Telecommunications (DECT™) has now been adopted in over 110 countries. In 2006 about 60 million DECT terminals were sold throughout the world.
- The Subscriber Identity Module (SIM), originally developed for GSM, is the world's most successful smart card application ever, with 4 billion SIMs deployed worldwide.

Founded in 1988 to help develop an integrated communications infrastructure in the newly formed European Market, ETSI is one of the three European Standards Organisations and is recognised by the European Union and the European Free Trade Association (EFTA) as the region's competent body for standardisation in telecommunications and other electronic communications networks and related services.

The Institute was established as a European body and retains European responsibilities. But ETSI has global membership; many of its Members are global players – over 100 of ETSI's Members (nearly 20% of the total membership) have no established operations in Europe.

Why this global interest in a European organisation?

Because ETSI is leading the way in the standardisation of crucial technologies which are shaping the modern world, technologies such as:

- Next Generation Networks (NGN)
- 3G mobile communications and their evolution
- Ultra Wide Band (UWB)
- Electronic Signatures
- Broadband Radio Access Networks
- Voice over Internet Protocol (VoIP)
- Intelligent transport
- Band sharing
- Grid
- Radio Frequency Identification (RFID)
- Low Power Devices
- Emergency communications
- Emergency alerting, eCall
- GSM onboard aircraft
- Communications for Public Safety
- Cable communications
- User accessibility
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ETSI is an independent, non-profit making organisation, one of the largest international technical associations in the field of ICT, including telecommunications and broadcasting. Based in Sophia Antipolis in the south of France, ETSI currently numbers over 650 Members from 62 countries around the world – including manufacturers, network operators, administrations, service providers, research bodies and users – an impressive array of international expertise, all working together towards the ultimate goal of a universal information infrastructure.





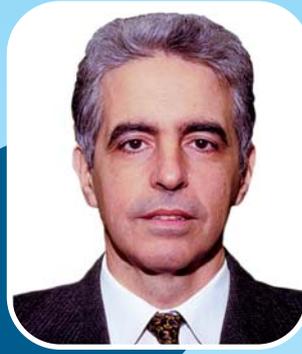
**John Phillips,
Chairman of the ETSI
General Assembly**

"The General Assembly is not just for the administration of the Institute – it's also about industry technical direction and strategic leadership.

ETSI's strengths include system architecture and integration. Other Standards Development Organisations (SDOs) may standardise components but ETSI consistently shows that it can assemble systems that make the components work together. It has unique expertise such as in the Protocol and Testing Competence Centre (PTCC) for conformance standards and the Plugtests™ service for practical interoperability testing.

In 2006 ETSI took its first real steps in eHealth and for 2007 ETSI is looking at work on Radio Frequency Identification (RFID)-based systems. Both of these need ETSI's specialist skills to get interoperable systems to the market.

But there's always more to do for the industry. ETSI will continue to anticipate the needs of current and future members, and serve the industry's evolving needs."

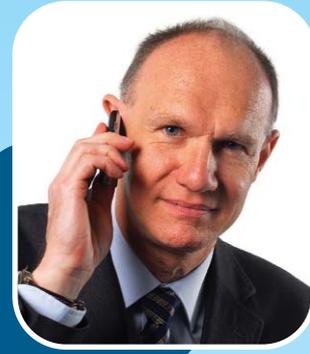


**Francisco da Silva,
Chairman of the
ETSI Board**

"Perhaps ETSI's greatest strength is its membership. It is the commitment and technical skill of individuals that makes things happen, and ETSI is blessed with a membership made up of dedicated and accomplished experts in many diverse fields.

As a result, looking back on 2006, we have seen important developments in communications and IT security which will help make the Internet a safer place to live, work and do business. The establishment of Next Generation Networks moved closer. New products and systems have been enabled in implantable medical devices, vehicle collision sensors and Broadband Satellite Multimedia. And we have seen improvements in the man-machine interface that makes all this technical progress easier for everyone to use.

Some of our achievements in 2006 are described in the following pages. In other areas we are just beginning. Together we can look forward to exciting new developments in 2007."



**Walter Weigel,
Director-General
of ETSI**

"It is fitting that I should take this opportunity to pay tribute to the work of my predecessor, Karl Heinz Rosenbrock, whose mantle I assumed mid-2006. During his 15 years as Director-General of ETSI, he helped build up the Institute into what it is today – a leader in the field of standards-making, with a world-wide reputation and an impressive list of technical achievements.

ETSI stands now on the threshold of new beginnings. As technologies converge, there are new opportunities. ETSI is very much market-driven, responding to the needs of its Members, and is already well established in the standardisation of developing areas – areas such as Next Generation Networks, Radio Frequency Identification, eHealth, Grid, the Long Term Evolution of mobile communications and the drive to secure information and communication networks.

I am proud to be in a position to help ETSI implement its strategy over coming years, to extend its activities and to push back the boundaries of technological progress still further."

2006 – Progress and New Opportunities

The ETSI Strategy for 2006 outlined three overlapping roles for the Institute: developing standards for the global market; meeting our obligations as a European Standardisation Organisation; and providing services. In all three sectors, ETSI was outstandingly successful in 2006.

ETSI was established originally to develop standards for the European market but, as developing technologies have made the world a smaller place, the benefits of international co-operation and the advantages of globally applicable standards have become apparent. Numerous standards developed by ETSI for Europe have found their way onto the international stage. Some of them are described on the following pages.

Six key technical areas were identified as priorities for 2006 – Grid, Next Generation Networks (NGN), Emergency Telecommunications, Interoperability and Testing, Information Security and Radio Spectrum usage. But this is by no means an exhaustive list of ETSI's strengths. Nor does progress in these areas constitute the sum total of ETSI's achievements in 2006.

The highlights of 2006 include continuing work on 3G mobile communications. ETSI is one of the founding partners of the Third Generation Partnership Project (3GPP™), which was established to develop globally applicable specifications for third generation mobile telecommunications. ETSI and its international partners made solid progress in 2006 on Release 7 of the 3GPP specifications which is due to be frozen in 2007. At the same time, studies into the Long Term Evolution (LTE) of the radio access technology and a simplification of the overall architecture (System Architecture Evolution, SAE) were completed.

New technologies bring new challenges – not least in how to protect users from the unscrupulous and the malicious. Security standardisation has become a priority to ensure the success of the Information Society and the burgeoning e-Economy. Here too ETSI leads the field, with an impressive pedigree of standardisation in areas such as algorithms, lawful interception, electronic signatures and smart cards.

Good progress was also made in Next Generation Networks. Work began in 2006 on TISPAN_NGN Release 2, which will focus on enhanced mobility, new services and content delivery with improved security and network management.

But new topics were introduced too. A new Technical Committee was set up to develop standards for Grid technology. A Starter Group was established to look into aspects of eHealth standardisation and to identify the contributions that ETSI could make to this important initiative. Another important growth area for ETSI standardisation work is Radio Frequency Identification (RFID).



If we are to measure technical achievements by the number of standards and reports produced, then 2006 was indeed a successful year; over 1600 deliverables were published and, by the end of 2006, ETSI had produced a total of nearly 18 000 since the Institute was established in 1988. At the same time, production is among the most efficient of any standards development organisation: an average of 70% of standards are produced faster than targeted.

Or should success be measured by people? Confirming the trend observed last year, ETSI membership evolved positively again in 2006, rising to well over 650. Newcomers have been attracted by the new topics being standardised in ETSI, and in 2006 Members joined from the former Yugoslav Republic of Macedonia, Jordan, Mexico and Qatar, bringing the number of countries and provinces represented to 62, drawn from five continents. Some Members have also substantially increased their financial contribution in recognition of the importance of the work being achieved in ETSI.

In the following pages are reports of the Protocol and Testing Competence Centre and the Plugtests™ service which provide invaluable services in testing and interoperability. Indeed, much of our technical success would not be achieved without the unflagging support of these and our other competence centres: the Mobile Competence Centre (MCC), the Fixed Competence Centre (FCC) and the Radio Competence Centre (RCC). There was also growth in 2006 in Forapolis, which provides services to fora and consortia.

However one measures success – by technical achievement, by the quantity and quality of the standards and reports produced, or by the support and confidence of our membership – 2006 was a year of outstanding success for ETSI.

Security for today – and tomorrow



New technologies bring new security challenges. As technology becomes more powerful, so too do those who seek to exploit it for dishonest gain or make malicious attacks on companies and individuals. As new opportunities unfold, the potential damage which can be wrought by the criminal escalates. Security failures are no longer just an inconvenience; they can directly affect the value of companies, cause serious public embarrassment and have legal consequences. They undermine public confidence in new technology and hinder its take-up.

Standards are essential for interoperability, ensuring the compliance of products with adequate levels of security. Information security standardisation helps protect individuals, organisations and nations against serious security breaches.

ETSI has extensive experience in security standardisation, with a proven track record in creating security specifications across a wide range of technical areas including:

- Public Safety and Security
- Mobile and Wireless Security
- Algorithms
- Smart Cards
- Next Generation Networks (NGN) Security
- Lawful Interception
- Electronic Signatures

ETSI is developing standards to enable the new technologies emerging today, but it also focuses on tomorrow. The Institute is addressing the future challenges of Product Proofing against Crime, Digital Rights Management (DRM) and Retained Data.

Public Safety and Security

The need for emergency telecommunications includes many scenarios ranging from a minor road traffic accident to a major incident like a passenger train crash, a terrorist incident or a natural disaster such as an earthquake or tsunami.

EMTEL

ETSI's Special Committee EMTEL is responsible for the creation of requirements concerning emergency communication services. In 2007, the committee expects to complete its full set of specifications governing communications in times of emergency, covering communication of citizens with authorities, from authorities to citizens, between authorities and amongst citizens.

New reports on the suitability of the Short Message Service (SMS) and Cell Broadcast Service (CBS) for emergency messaging and on the requirements for emergency communications network resiliency were also published in 2006. A study of emergency calls and Voice over Internet Protocol (VoIP) is well underway and is expected to be finalised by the middle of 2007.

Project MESA

Project MESA (Mobility for Emergency and Safety Applications) is a transatlantic partnership project, established by ETSI and the North American Telecommunications Industry Association (TIA). Membership has expanded since it was first established, and Project MESA now also has members from Canada, China, India, Korea, Australia and Japan. Its charter is to produce user requirements and technical specifications for a digital

Security Workshop

To identify new security threats – and conceive ways of tackling them – in January 2006 ETSI organised a security workshop on 'Future Security – the Risks, Threats and Opportunities', bringing together security experts from key organisations all over the world. The event, which was sponsored by Vodafone and the United Kingdom Department of Trade and Industry (DTI), was so successful that the workshop has now been established as an annual event.

Over 70 people involved in security standards attended to hear presentations from experts from the European Commission, the International Telecommunication Union (ITU), the European Committee for Standardisation (CEN), the European Network and Information Security Agency (ENISA) and ETSI's own security-related technical committees.

The workshop identified a number of key areas of standardisation requiring further work and co-operation and, where appropriate, these were built into ETSI's work plans for the year. The areas identified included:

- Handset design for security
- Digital Rights Management (DRM)
- Network security, security assurance and service protection
- Emergency Telecommunications (EMTEL)
- Smart Cards
- Electronic Signatures
- Lawful Interception
- Biometrics
- eHealth security aspects
- Radio Frequency Identification (RFID)

mobile broadband system which will revolutionise the efficiency of first responders and rescue squads during an emergency or a disaster.

Project MESA had previously produced a Statement of Requirements and a System Overview which together provide a very high level understanding of the MESA network and its 'System of Systems' approach. Using these documents as guidelines, the industry members have been invited to propose their technical solutions.

In 2006, there were five technical proposals submitted by industry participants illustrating how user requirements can be met. The proposals, which cover technologies such as cdma2000® EVDO, W-CDMA, variations of 802.11, 802.16 and satellite technologies, will form the basis for the specifications and standards which will now be developed. The suitability of these technologies will be evaluated in 2007, to produce a High Level Project MESA Network Architecture depicting all necessary interconnections: identification and evaluation of performance criteria; technical evaluation of proposed technologies; and a gapping analysis of proposed technologies. This will then form a solid foundation for the next step – developing a draft technical specification. Additional proposals may also be included in this process.



3GPP™

The Third Generation Partnership Project deals with a number of 3G services dedicated to public safety: the Priority Service and Multimedia Priority Service, the Voice Group Call Service (VGCS) for public authority officials, the transferring of emergency call data and the Public Warning System.

3GPP specifications already support the high-level requirements identified for Priority Service, and 3GPP is now augmenting the existing standards for Multimedia Priority.

VGCS is essentially complete. The high level requirements for the transferring of emergency call data have been completed. The next stage will involve industry consultation.

Progress was made in 2006 in support of the European Commission (EC) eSafety initiative, eCall, an in-vehicle emergency call service which will allow data generated during a road traffic accident or similar incident to be routed to a Public Service Access Point (PSAP) as part of an emergency call automatically instigated by the vehicle. This work has involved liaison with ETSI's Mobile Standards Group Technical Committee (TC MSG).

New work has been started on the Public Warning System and has progressed well, with support from all regions following several natural disasters around the world. This feature will allow public authorities a reliable means of

passing messages and instructions to users of cellular terminals, to warn of impending disasters.

As a result of the 2006 security workshop, and in response to the need for effective methods of dealing with the consequences of downloading and activating a virus on a mobile telephone, new work began on the Selective Disabling of User Entity (UE) Capabilities. This work is expected to be finalised in 2007 and will be included in 3GPP Release 7.

TETRA

Terrestrial Trunked Radio (TETRA) is another global ETSI success story. Since it was first deployed in 1997, well over 1000 contracts have been let for TETRA networks worldwide. Compared with 2005, in 2006 TETRA experienced a 37% growth in the number of contracts let and a 15% increase in the number of countries where TETRA is deployed – now in over 88 countries worldwide, of which 53 are outside Europe. The fastest developing regions are Latin America and Asia Pacific.

The main market for TETRA continues to be national public safety organisations deploying TETRA for shared networks, the largest being a national network for Germany, which was announced at the end of 2006. Besides public safety, TETRA has been and continues to be deployed in all other traditional Professional Mobile Radio (PMR) markets, such as transportation, utilities, industrial and Public Access Mobile Radio (PAMR), as well as in the military sector for peace-keeping and other non-tactical activities. Though still numerically low, the fastest growing markets are Commerce & Industry and Utilities, which have grown 95% and 68% respectively compared with 2005.

A significant area of progress in 2006 was the completion of the Air-Ground-Air (AGA) solution to extend the range of TETRA Trunked Mode Operation (TMO), enabling frequency spectrum efficient communication between users on the ground and in light aircraft. Cross-border AGA communication for public safety organisations in Europe has also been made possible by the CEPT-ECC Decision of 7 July 2006 on the harmonised frequency bands to be designated for AGA operation of the Digital Land Mobile Systems for the Emergency Services.

TETRA Release 1 and the core of the TETRA Release 2 standard are already complete; standardisation work on the TETRA Enhanced Data Service (TEDS), the Peripheral Equipment Interface (PEI) and the TEDS Designer's Guide continues and is expected to be finalised in the first half of 2007.

Another significant area of progress in 2006 was the completion of the feasibility study into the implications of using a 'Tuning Range' concept for the operation of TEDS for public safety applications in the 380-400 MHz, 410-430 MHz and 450-470 MHz bands.

ETSI also revised several of the TETRA standards in 2006 to take into account user feedback from field experience. This sort of feedback continues to play a significant part, particularly with regard to new features and facilities that will need to be developed and incorporated into future

releases of the TETRA standard as additional requirements are identified and technological innovations offer new possibilities. The evolution of the TETRA standard is therefore expected to continue for some time to come.

Satellite emergency communications

New work has also been initiated on satellite emergency communications.

Mobile and Wireless Security

With the trend towards internationally distributed core networks and the introduction of Internet Protocol (IP) as the network layer in the backbone network, mobile telecommunications are facing a whole new set of threats and risks.

The emergence of fixed broadband access to the IP Multimedia Subsystem (IMS) has led to special focus being put on an IMS signalling protection solution that traverses Network Address (and Port) Translation (NA(P)T) and firewall devices. 3GPP has also been studying the requirements – and solutions – for Next Generation Networks (NGN) which are not covered by ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN), such as media protection in IMS. 3GPP is also working on IMS security in conjunction with solutions for secure access to the core network which are independent of access networks and applications.

To protect the core network signalling protocols in 3G and fixed broadband systems, security solutions are being developed for both Signalling System No. 7 (SS7) and IP-based protocols.

Algorithms

ETSI is a world leader in creating cryptographic algorithms and protocols to prevent fraud and unauthorised access to Information and Communication Technologies (ICT) and broadcast networks, and to protect customers' privacy.

ETSI's Security Algorithms Group of Experts (SAGE) specifies cryptographic algorithms for use in standardised telecommunications systems. In recent years most of its work has been for mobile telephone standards (GSM™, General Packet Radio Service (GPRS), Enhanced Data for GSM Evolution (EDGE), the Universal Mobile Telecommunications System (UMTS™)), but the group has also provided algorithms for TETRA and Digital Enhanced Cordless Telecommunication (DECT™).

In 2006, ETSI was responsible for a major development which will help protect users of mobile telecommunication services. The current radio interface protection algorithms for UMTS – UEA1 for encryption and UIA1 for the integrity of signalling messages – were designed by SAGE back in 1999. No weakness has been discovered in these algorithms, and there is no indication that a weakness is likely to be found. However, to prepare for such an eventuality, 3GPP and the GSM Association had asked SAGE to specify a second set of algorithms, UEA2 and UIA2. Apart from the obvious requirements on speed and

implementation complexity, the main design criterion for these new algorithms was that they should be fundamentally different in nature from UEA1 and UIA1. That way, if an advance in cryptanalytic theory ever threatens one set of algorithms, it will be unlikely to affect the other. SAGE delivered the UEA2 and UIA2 specifications in January 2006.

Smart cards

Smart cards – micro-processor equipped tokens which can store and process information – have diverse applications including banking and healthcare, as well as telecommunications and IT.

ETSI has a well established pedigree in the standardisation of smart cards, dating back to its specification of the Subscriber Identity Module (SIM) for GSM – the world's most successful smart card application ever, with 4 billion SIMs deployed.

ETSI's Smart Card Platform Technical Committee (TC SCP) is responsible for creating a series of specifications for a smart card platform on which other bodies can base their system-specific applications to achieve compatibility between all applications resident on the smart card.

Early achievements with the SIM have evolved to the Universal Integrated Circuit Card (UICC) – from a standardised application offering secure value added services to a true multi-application security platform providing the user with a wealth of opportunities. The UICC provides a standardised security platform on which specific applications can be realised using today's interface to the outside world. Logical channels allow applications to run in parallel, applications may share standardised security functions or they may have their own security functions and attributes. The new high speed interface currently being standardised will allow the smart card to be used for Digital Rights Management (DRM), stream ciphering (Pay TV) and as a mass storage device.

During 2006, ETSI approved a number of new smart card specifications including one containing the conformance tests for the Card Application Toolkit (CAT), which defines a toolbox for creating applications such as mobile banking, location based services and ticketing access control.

A large number of new features and functionality were also introduced into the Release 7 version of smart card specifications.

To support some of the new functionality and to be able to use smart cards for mass storage and as a device in the Internet world, it had previously been agreed to specify a new high speed protocol between the UICC



and the terminal. In November 2006, after much debate, the decision was taken to use USB IC (Inter Chip) technology as the basis for this new high speed protocol. The technical realisation of this now begins.

Another topic about to be completed is the technical realisation of the USSM, the UICC Security Service Module, which could add significant value to DRM, secure e-mail, payments, banking and application download (to both the card and the terminal device). New features and functions for Release 8 form part of the ongoing work.

The aim is to turn today's mobile phone into a multipurpose terminal, a lifestyle tool and personal security device by establishing a second, contactless communication channel. Typical applications are ticketing and access control for public transport as well as payments using an electronic purse on the UICC. This contactless interface is now being standardised in ETSI.

Next Generation Networks

ETSI is producing the standards necessary to enable Next Generation Networks (NGN) to support multimedia services and interworking with legacy networks and services.

In 2006 ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN) began work on TISPAN_NGN Release 2, which has a focus on enhanced mobility, new services and content delivery with improved security and network management.

Lawful Interception

Lawful Interception (LI) plays a crucial role in helping law enforcement agencies to combat terrorism and serious criminal activity. It is therefore an essential part of the infrastructure supporting electronic transactions. As such, it is a key factor in the growth and development of the Information Society.

The providers of public telecommunications networks and services are legally required to make available to law enforcement authorities the information necessary to enable them to monitor telecommunications traffic in support of investigations of criminal activities.

The main focus of ETSI's Lawful Interception Technical Committee (TC LI) is now on the handling of Internet Protocol (IP) traffic and the handover protocol via IP delivery. The generic handover interface specification and the IP-based handover interface specification were created in 2006 and a set of service-specific details for IP services interception has been produced.

In 2006 the Terms of Reference of TC LI were extended to include work on Retained Data and the committee has

started work on two relevant specifications: one on requirements and a second on the Retained Data Handover Interface.

Electronic Signatures

An electronic signature is data in electronic form that is attached to or logically associated with other electronic subject data and serves as a means of authentication.

ETSI's Electronic Signatures and Infrastructures Technical Committee (TC ESI) is responsible within ETSI for standardisation in the area of electronic signatures and Public Key Infrastructure (PKI) to support electronic commerce in open environments.

After having successfully completed work to align the European with the US Federal Bridge Certification Authority (FBCA) policy on certificates, the committee is now concentrating on two main activities: Registered E-Mail (REM) and digital accounting.

Registered E-Mail (REM) activities aim to provide a framework for origin authentication, proof of delivery and long term availability. This project has a huge number of potential applications and is bringing together several areas of Information Technology, telecommunications and postal business.

Digital accounting is fundamental to boosting the advent of paperless accounting documentation (such as eInvoicing), which will increase efficiency for companies and reduce the possibilities for fraud. TC ESI is focusing on two critical aspects: the requirements for trust service providers and electronic signatures profiles.

In parallel, TC ESI is also updating the 'Algo paper', an assessment of cryptographic algorithm specifications to be used within the Electronic Signatures framework.

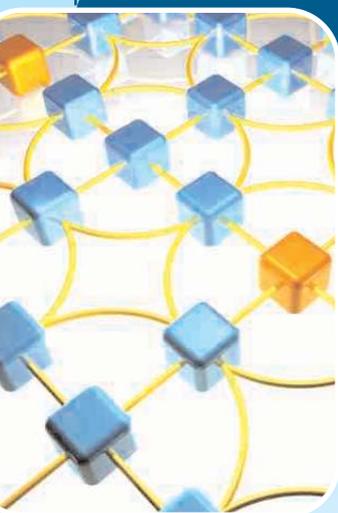
TC ESI's work is increasingly influencing the international scene; in particular, after ETSI's electronic signatures standards were adopted for eCommerce in Japan, the committee is collaborating closely with the Electronic Commerce Promotion Council of Japan (ECOM).

Proofing Products against Crime

A new area with significant potential for new standards, Proofing Products against Crime involves integrating or embedding crime-prevention features into products – to reduce their potential to become targets of criminal activity (such as theft, fraud or damage), as well as preventing their use as instruments of crime.

The term 'product' encompasses physical objects, electronic information, electronic services and computer software. The European Commission has requested action from the European Standards Organisations on this topic.

ETSI's first contribution is a White Paper on Proofing Products against Crime, due for publication early in 2007, which will present some of the key concepts of crime proofing and include recommendations for key areas requiring further work.



ETSI – a Service Providing Organisation

ETSI's Strategy for 2006 recognised the Institute's role in providing a professional service, both to its Members and to others. With its wealth of expertise in diverse technical areas, ETSI is able to provide attractive and competitive services to fora and consortia through Forapolis. ETSI also has many years' experience in interoperability testing and verification.

Interoperability and Testing

There is an ever-increasing awareness that mass-market development requires interoperability based on open standards. In addition, the end-user appreciates more choice, but expects certainties. The main aim of standardisation is to enable interoperability in a multi-vendor, multi-network, multi-service environment.

ETSI has taken a number of initiatives to enable the production of interoperable standards. These include the appointment of a Champion for Interoperability within the ETSI Board, and the organisation of a series of interoperability workshops. Central to ETSI's work on interoperability and testing are its Methods for Testing and Specification Technical Committee (TC MTS), the ETSI Protocol and Testing Competence Centre (PTCC) and the ETSI Plugtests™ service.

ETSI TC Methods for Testing and Specification

As standards and interoperability become crucial factors in market success, the way that standards are written gathers increasing importance. ETSI's aim is always to produce documents that are clear, easy to understand and easy to use. TC MTS provides the frameworks and methodologies necessary to achieve this goal.

2006 was a particularly successful year for activities in Internet Protocol Testing (IPT). The highly successful test specification language, Testing and Test Control Notation version 3 (TTCN-3), was developed further. The continued uptake of TTCN-3 is very encouraging and has extended both outside the telecommunications sector and to an ever-widening geographical area. For example, there is a strong interest in TTCN-3 in China and the standard has been translated into Chinese.

The Protocol and Testing Competence Centre



The PTCC is a unique resource available to ETSI committees for the application of leading-edge specification, validation and testing techniques in ETSI standards and reports.

In 2006 specific technical assistance was offered to TC MTS with its guidelines on a Generic Interoperability Testing Framework and other related methodologies, and the Board Ad-hoc interest group on Internet Protocol Multimedia Subsystem (IMS) testing and testbeds. Work on IMS Network-to-Network Interfaces (NNI) interoperability test specifications has begun, and the PTCC prepared an overview of different IMS testing initiatives.

The co-operative testing activity with WiMAX, run on behalf of ETSI's Broadband Radio Access Networks Technical Committee (TC BRAN), has led to a general interest from the

wireless world in the activities of the Centre. Support also continued in 2006 in traditional areas such as the Third Generation Partnership Project (3GPP™) conformance testing, IPv6, Digital Mobile Radio (DMR)/Private Mobile Radio (PMR) and TISPA/OSA Parlay.

The PTCC co-authored the third in the series of ETSI White Papers, on 'Achieving Technical Interoperability – the ETSI Approach', published in October 2006.

The ETSI Plugtests Service



The ETSI Plugtests service specialises in organising and running interoperability test events for a wide range of converging standards for telecommunications, Internet, broadcasting and multimedia. Plugtests events are open to all types of companies, whether or not they are ETSI members; standardisation bodies, fora and interest groups also attend.

Companies that participate in Plugtests events find they help to improve both the quality and features of their implementations, accelerating time to market, thanks to early product debugging. The events provide a unique opportunity to meet partners and competitors, whilst the feedback obtained is extremely valuable to the standardisation process.

In 2006, the Plugtests Service organised 13 successful interoperability events. These included the first Lawful Interception interoperability event and a WiMAX Plugfest. Other highlights included participation in the IPv6 Summit in Beijing, a Speech Quality test event and the NGN@home – Triple Play event at which 122 participants representing 40 companies tested broadband access technologies and Triple Play applications. The third edition of GRID@work gathered together Grid experts from all over the world.

Forapolis



Forapolis was established within ETSI to provide support services on a profit basis to fora involved in relevant technical specification activities. In 2006, the unit saw significant growth, with the number of clients rising from three to six, the income increasing by 23% to over 2 M€, and the recruitment of additional staff.

This increase in workload led to a reorganisation in July 2006 to provide a more efficient service. There are now two teams: Forapolis OMA Document Support Office (DSO), servicing the Open Mobile Alliance (OMA), and Forapolis Customer Support Office (CSO), which takes care of all other customers:

- The Home Gateway Initiative (HGI)
- Linux Phone Standards (LiPS) Forum
- Next Generation Mobile Networks (NGMN)
- The Global Certification Forum (GCF)
- Plus one undisclosed client

Indications are that continued growth can be expected in 2007 with an expanded service portfolio and a further increase in both the customer base and income.

Mobile Telecommunications – the Third Generation

ETSI and the Third Generation Partnership Project

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 the USA, plus market associations and several hundred individual companies. 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) and Enhanced Data for GSM Evolution (EDGE).

Further information at:
www.3gpp.org



Release 7

Each Release of the Third Generation Partnership Project (3GPP™) system specifications for third generation cellular telecommunications provides mobile operators and equipment manufacturers with a stable reference platform to build networks and terminal equipment. The next Release, Release 7, has had the longest development period of any Release so far. Begun shortly before the freezing of Release 6 at the end of 2004, Release 7 is due to be frozen during 2007. The work has involved the usual enhancements to the system, designed to bring new revenue-producing potential to network operators and cost reduction to equipment suppliers – aspects vital in an era of falling revenue per subscriber.

Long Term Evolution

3GPP endeavours to ensure the continued competitiveness of 3GPP systems over the longer term (typically a 10 year timeframe) and is constantly looking for economically sound solutions that will provide greater bitrates, maximise the use of the radio spectrum and offer increased flexibility for the delivery of future services. The purpose is to identify and then standardise the evolutionary path for 3GPP technology, in the same way that GSM has been evolved from a basic voice system to GPRS and EDGE.

Throughout 2006, therefore, a great deal of effort was directed at advance studies towards what has become known as the Long Term Evolution (LTE) of the radio access technology and a simplification of the overall architecture (System Architecture Evolution, SAE). These developments are being made possible by the increasingly stable and ever widening applicability of the Internet Protocol (IP) Multimedia Subsystem (IMS).

3GPP's work aims to minimise the number of technical solutions to ensure interoperability, reduce any redundant 'mandatory' features and support mobility between the different access networks that exist in the real world.

Developments in the Radio Access Network are crucial. By 2010, the 3GPP radio access technology should allow at least a ten-fold increase in data rates compared with the original Universal Mobile Telecommunications System (UMTS™) capability, maximised for slow-moving terminals, but presenting respectable service even at high-speed train rates (350 to 500 km/h). With enhancements to High Speed Packet Access (HSPA), the 3GPP radio access technology will be highly competitive for several more years to come. However, to ensure competitiveness in an even longer timeframe, issues such as reduced latency, higher user data rates, improved system capacity and coverage and future additional 3G spectrum allocations are being addressed. Feasibility studies conducted on LTE started in 2004 and culminated in 2006 with conclusions on the functionality to be standardised. The resulting technical specifications should be stable by the end of 2007.

Future enhancements to the radio interface need also to be reflected in upgrades to the core network architecture, so that the full benefits of system evolution can be realised. The developments will also be aligned with work (in ETSI and elsewhere) on Next Generation Networks, to maintain the current drive for fixed-mobile convergence towards an all-IP core network.

Progress in 2006

Recent progress has been substantial, with the studies on LTE and SAE being completed during 2006. This in turn has allowed detailed specification work for LTE and SAE to start, with a view to completion in the Release 8 timeframe – that is, by the end of 2007.

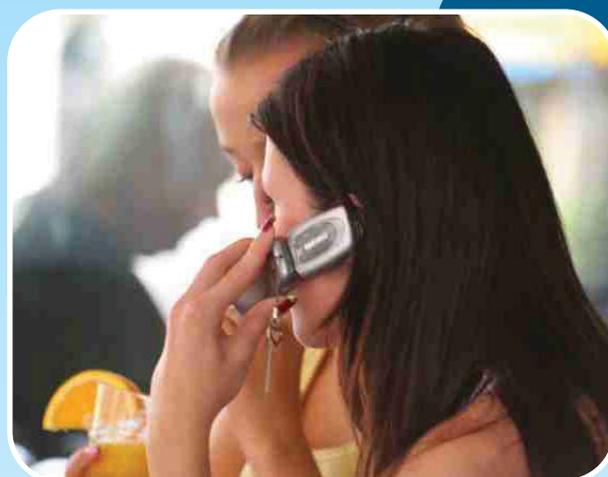
Increasing confidence in the stability of Releases up to Release 5 has enabled a quickening of network roll-out, with 3G networks providing demonstrably more attractive services compared with 2G. Meanwhile, substantial resources have been utilised to enable reliable handover between 2G and 3G services.

Additionally, much effort has been expended on handover between 3G and WiFi networks to enable secure and seamless Voice Call Continuity (VCC). This allows graceful transition, imperceptible to the user, between the public 2G or 3G network and corporate WiFi networks or public hotspots, addressing the technical challenge of handover between circuit- and packet-switched domains.

The success of the IMS, developed by 3GPP to allow a new model of network service provision in an all-IP environment, has proved such a winning solution that it is being adopted by ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN) in its specification of its Next Generation (fixed) Network. This gives a real boost to the goal of convergence between fixed and mobile networks – the long-talked-of convergence is really just around the corner. Indeed, convergence has been experienced from initially unimagined quarters, with the principally North American cable TV operators agreeing to use IMS in their new networks. This initiative has now spread to the European cable TV operators, which traditionally use different technology to their American counterparts. Finally, the WiMax community is considering using IMS as its core service provision technology. Towards the end of 2006, a workshop was held in conjunction with the 3GPP plenary

meetings in Palm Springs, California, in which all these parties came together for the first time and committed themselves to working towards a single IMS specification.

Throughout the year, 3GPP has been supported by ETSI's Mobile Competence Centre (MCC). In particular in 2006, the MCC compiled detailed reviews of the new and improved features of Releases 99, 4, 5 and 6, bringing together information formerly spread across hundreds of meeting contributions and reports.



Over 100 separate Features are being incorporated in Release 7 and others have already been identified for Release 8. Among the more significant are:

- Improvements to location-based services made possible by the availability of the Galileo satellite specifications will enable an Advanced Global Navigation Satellite System (A-GNSS) in systems based on both the GSM/EDGE Radio Access Network (GERAN) and the UMTS Radio Access Network (UTRAN).
- eCall, the in-vehicle emergency call service being developed in co-operation with ETSI's Mobile Standards Group Technical Committee (TC MSG), which will automatically relay data about a road accident from the vehicle involved to the emergency services, providing a faster and more effective emergency response.
- Multiple Input/Multiple Output (MIMO) antenna systems have figured in the 3GPP work plan since 2001, but progress had hitherto been slow. Finally, in 2006, real advances were made in the light of companies' continuing development work in relation to High Speed Packet Access (HSPA).
- A Public Warning System will allow public authorities a reliable means of passing messages and instructions to users of cellular terminals, to warn of impending disasters.
- The Short Message Service (SMS) has proved immensely popular over the years, with usage exceeding initial estimates by several orders of magnitude. In Release 7, the feature 'Routeing of Mobile Terminated Short Message Service (MT-SMS) via the Home Public Land Mobile Network (HPLMN)' allows the SMS receiving terminals' home network to control the flow of SMS messages even when the receiving terminal is roaming in other networks. This will enable the operator to have greater ability to filter out spam and spoof messages. It will also allow it greater control over delivery costs and enable new services such as SMS forwarding.
- Another feature giving operators more control over traffic flow during periods of potential congestion is Access Class Barring and Overload Protection (ACBOP). Networks can experience unexpectedly high traffic levels, for example during traffic jams, demonstrations etc, resulting in cell-level or even wider area congestion. The mechanisms being developed are applicable to both 2G and 3G access networks and the core network.

Next Generation Networks

With increasing convergence between fixed and mobile communication, the telecommunication services of the future are likely to be delivered seamlessly over the most appropriate access network. Users will roam between domains and networks unaware of the underlying mechanisms and technologies that enable them to do so.

The new network model which is designed to accommodate the diversity of applications inherent in emerging broadband technologies has been dubbed Next Generation Networks (NGN) and is based on the extensive use of the Internet Protocol (IP). NGN relies on a few general principles: a shared core network for all access and service types, packet-based transport technologies, open standardised interfaces between the different network layers (transport, control and services), support for user adaptable interfaces and variable access network capacity and type.

ETSI is developing the necessary standards to bridge the disparate networks and domains, allowing them to interoperate. The work is being managed by the Institute's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN).

TC TISPAN is working closely with the Third Generation Partnership Project (3GPP™) to define a harmonised core based on the IP Multimedia Subsystem (IMS) for both wireless and wireline networks. This all-IP network has been identified as the technology of choice to provide a completely new telecommunication business model for both fixed and mobile network operators.

TISPAN_NGN Release 1, published at the end of 2005, provided the robust and open standards that industry can use as a reliable basis for the development and implementation of the first generation of NGN systems. Release 1 fulfilled two fundamental market requirements: the support of advanced multimedia services on the one hand and providing the traditional telecommunications operators with the mechanisms to replace their original circuit-switched networks with the new IP-based infrastructure. The provision of enhancements to Release 1 continued throughout 2006, in particular with the introduction of further supplementary services for IMS infrastructure, and TC TISPAN dealt with numerous Change Requests for Release 1 maintenance and enhancements – a clear indication that the Release is being widely implemented.

In 2006 the TC began work on TISPAN_NGN Release 2, which has a focus on enhanced mobility, new services and content delivery with improved security and network management. The final scope of the Release has now been defined; it will include an IMS NGN Performance Benchmark standard to improve the data available for NGN deployment decision-making. A draft of this standard was made public in October 2006 so that feedback from stakeholders could be incorporated. Release 2 is expected to be completed by the end of 2007. Close collaboration

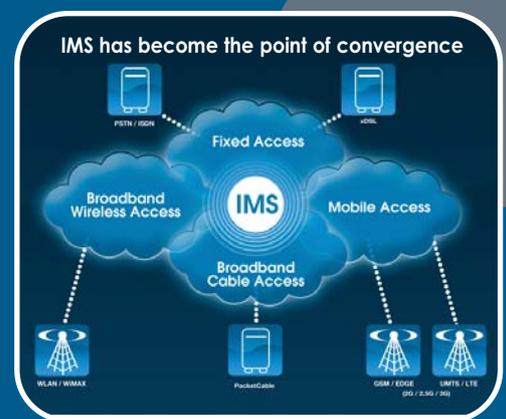
with 3GPP continues, with a number of co-located meetings being arranged, to ensure that a single set of specifications for IMS is created.

Other major topics within TC TISPAN included additional access types and interworking with private and corporate networks. Progress was boosted with a number of ETSI Specialist Task Forces (STFs) focusing on the Universal Communications Identifier (UCI) in NGN, the features and services of global NGN (which provided particularly helpful input on IPTV solutions) and testing and validation interworking.

New work was started on home devices and home networking with the establishment of a working group (WG5) which will deal with aspects that include interworking with NGN, specifically the effect on IMS and the synergies between home devices and networks and enterprise networks. A top priority for the group will be the definition of standards for the customer network, concentrating on end device interfaces. TC TISPAN is therefore seeking to involve manufacturers of consumer electronics to broaden its perspective. To this end, it is collaborating with relevant fora such as the DSL Forum, the Home Gateway Initiative and the Digital Living Network Alliance (DLNA).

External co-operation is a high priority for TC TISPAN, especially since the Global Standards Collaboration designated ETSI the primary Standards Development Organisation (SDO) for NGN, and TC TISPAN provides input to, and considers feedback from, SDOs and other groups such as OMA, the United States Alliance for Telecommunications Industry Solutions (ATIS) and the Telecommunications Standardisation sector of the International Telecommunication Union (ITU-T).

TC TISPAN benefits from the strong support of operators, vendors, service providers and research and government representatives, with some 200 delegates regularly attending meetings. This is recognition of the importance of TISPAN specifications to the telecommunications community, and their growing impact on industry developments. TC TISPAN's standards are proving popular well beyond Europe, and in November 2006 the TC took its message to Latin America, holding one of its plenary meetings and a two-day workshop on NGN, which was attended by over 400 people, in Brasilia, Brazil.



Radio Frequency Identification

Radio Frequency Identification (RFID) is an important growth area for ETSI and has been identified as one of the Institute's top technical priorities in its Strategy for 2007 and beyond.

An RFID system enables data to be transmitted by a device (tag) via radio signals which are picked up by an RFID reader and processed according to the needs of a particular application. At its simplest level, RFID may be seen as an alternative to the ubiquitous bar codes. But, with the ability to store and transmit very much more data, RFID can be used to identify, track, sort or detect a wide variety of objects.

ETSI's work in this area started with the standardisation of the radio interface, and input into the spectrum management process, mostly aimed at applications in the field of logistics. In 2006 ETSI started to consider how to apply its expertise in interoperability and security to complete RFID systems, and also to look at other business applications, such as transport and logistics, access control, real-time location, supply chain management, manufacturing and processing, agriculture, medicine and pharmaceuticals. With the ability to identify objects and to trace them through Information and Communication Technologies (ICT) networks, RFID is a key enabling technology in the 'Internet of Things'.

In 2006 ETSI took part in the workshops organised by the European Commission (EC) as part of its consultation process prior to issuing the Commission Communication of March 2007, and the Institute expects to continue to contribute fully to the EC's initiatives.

Radio Spectrum

Radio Spectrum in general was a strategic topic area for ETSI in 2006 and continues into 2007. RFID is a good example where ETSI input into the frequency management process has enabled new markets to develop.

ETSI has a Memorandum of Understanding with the CEPT/ECC, and is represented in key committees within the EC (including the Telecommunication Conformity Assessment and Market Surveillance Committee (TCAM), the Radio Spectrum Committee (RSCOM) and the Radio Spectrum Policy Group (RSPG)) to ensure that the necessary spectrum is available for ETSI radio standards.

During 2006, ETSI provided input to enable European Commission Decisions on the operation of Mobile Satellite Services in the 2 GHz band (adjacent to IMT-2000 bands) to allow mobile satellite services with a complementary ground component to improve coverage in urban areas. ETSI also assisted the development of European Commission Decisions on

Following the publication of a Technical Report on a Code of Practice for the installation and operation of RFID systems in Europe, ETSI has carried out a series of practical trials culminating in tests at an operational distribution centre in Unna, Germany, in which RFID manufacturers from Europe and the USA participated and which involved the use of up to 36 adjacent dock doors. Despite the fact that the cartons contained 'RF unfriendly' materials, missed tags typically numbered less than 1.5%.

ETSI tests demonstrated that the existing spectrum-sharing requirements (a 'Listen Before Talk' protocol designed to protect other short-range devices operating in the same band) are too restrictive for high-density deployment of RFID. ETSI has therefore developed alternative techniques, and has initiated a reform of technical regulations through the Electronic Communications Committee of the European Conference of Postal and Telecommunications Administrations (CEPT/ECC) and the European Commission Radio Spectrum Committee. A revised Harmonised Standard is expected to be available for approval in 2007.

Although the current work on RFID has concentrated on the radio interface (the connection between the tag and the reader), ETSI's future work on RFID will not be limited to just the 'radio interface' part between the reader and the tags but will hopefully encompass the whole system.

Ultra Wide Band communication equipment, RFID (taking into account the developments indicated above), and generic Short-Range Devices. These Decisions require EU Member States to make spectrum available under defined harmonised conditions. Coupled with the corresponding Harmonised Standards (developed by ETSI), manufacturers may sell equipment that can be used under harmonised conditions throughout the EU market.

Traditionally, spectrum regulations have allocated frequency bands to specific services and sometimes to specific technologies. In the future, spectrum managers expect to allow a degree of flexibility in the use of spectrum, either providing generic allocations (for example, to short-range devices), or by granting rights (exclusive or shared) restricting only interference to other band users or users of adjacent bands. In 2007 ETSI is expected to receive a number of new standardisation mandates, including one to develop standards for use in such 'flexible bands'.



An Information Society for All?

"eInclusion is about making sure that everyone in society can benefit from the opportunities offered by new information and communications technologies (ICT). It's about using ICT so that excluded groups can take part in a wider society, and about closing the gap between those who can access ICT and those who can't."

"Every citizen should have the chance to take part in, and benefit from, the Information Society. For this to happen, eInclusion policies must respond to the many risks and opportunities that new technology opens up, and must embrace the often-distinctive needs of many different individuals and groups within society."

(the European Commission's eInclusion @EU Project)

Consumers are experiencing a changing environment for telecommunications as a result of a number of recent developments. The convergence between fixed and mobile telecommunications, the rise of the Internet and new collaborative software and applications under the Web 2.0 banner offer exciting new opportunities. But they also present new challenges. The more complex the technology, the harder it is for people to access. This has given rise to concerns about eInclusion and the development of society and the economy. An effective e-society relies on the fact that *all* citizens actually can use modern electronic tools.

ETSI is a leading force in developing standards to achieve eInclusion and has earned an international reputation for its work in this field. ETSI's Human Factors committee (TC HF) has a special responsibility to ensure that the needs of all users, including those who are older, young or disabled, are considered.

TC HF is responding to the new situation, and much of its previous work – predominantly advising on the details of design – has been replaced recently with more general guidance on human-computer interaction.

Hot topics in 2006 were children's use of ICT, the impact of ICT on an aging European population and the need for ever wider public access to ever more complex technological systems.

TC HF produced guidance and standards on mobile services and access to multimedia by people with hearing impairments. A guide on multi-cultural issues was finalised in 2006, which aims to remove or reduce cultural barriers that can exclude people from communicating. Work on Telecare services (delivery of health and social care services in and outside of homes) progressed well and is expected to be concluded in 2007.

In addition, an ETSI White Paper on Young Children and ICT was published in March 2006, which discusses how the telecommunications industry is becoming more 'child aware' and how service providers must address concerns regarding the potential risks to young children from the misuse of ICT products and services.

Through collaboration with various consumer groups and non-government organisations, TC HF was able to put together guidance on the use of symbols and pictograms to help people with visual disabilities to identify services available through television set-top boxes, for example to show that a film or programme can be viewed with subtitles or audio description. This work was prompted by the UK's Royal National Institute for the Blind. A standard was published in November 2006, aimed at ensuring that the threatened proliferation of different symbols throughout Europe is avoided.



Work also continues on a real-time communications guide, telephone keypad design and commands for assistive mobile device interfaces. In 2006 new work was initiated on public access terminals, on an information system for disabled users of public transport systems, and on developing the use of tactile symbols to signify the presence of an audio description or speech output or spoken commands.

One of the highlights of the year was the 20th International Symposium on 'Human Factors in Telecommunication' (HFT2006) which was held at ETSI headquarters in March. This bi-annual event focuses on applied academic thinking, this year placing emphasis on the user's exposure to the latest advances in communications technology. During this event, the Knut Nordby Design for All Accessibility Award was awarded for the first time. Knut was TC HF's first Chairman, who died in 2005. The award was won by Ángela Consuelo Checa Hurtado and Santiago José Ruano Rincón from the Universidad del Cauca, Popayán, Colombia, whose participation at the Symposium was enabled through sponsorship from the ETSI @LIS project.

Ultra Wide Band

ETSI is producing a set of standards to enable various Ultra Wide Band (UWB) devices. The standard governing tank level probing radar has been published, and work is well advanced on Technical Reports on the use of UWB sensors for the analysis and classification of building materials, object discrimination and characterisation, and location tracking. This work has some very practical applications, for example, UWB sensors provide a non-invasive method of checking decay in bridges, and they can be inserted into tools to prevent accidents. Work on object identification for surveillance purposes (pinpointing the presence of a heartbeat) is also ongoing.



Automotive standards

In 2006, ETSI published a new multi-part test specification for Dedicated Short Range Communications (DSRC) radio systems, used for Electronic Toll Collection (the radio technology behind the electronic tag in car windscreens). Interoperability between existing schemes will be a significant enabler to the free movement of goods and people throughout the European Union.

In support of the European Commission's eSafety initiative, ETSI's current work on Intelligent Transport Systems includes communications between cars and between the road infrastructure and cars in the 5 GHz and 63-64 GHz bands.

Aeronautical and Maritime

On the aeronautical area, work continues to enable the Global System for Mobile communication (GSM™) on board aircraft. New standards for meteorological aids will be published in 2007.

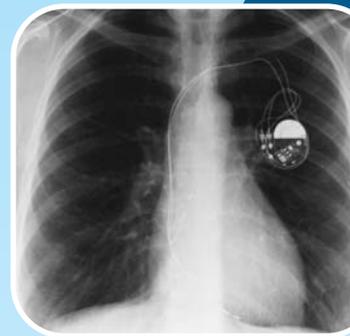
New work was started in 2006 in support of the Single European Sky (SES) Initiative in close co-operation with EUROCONTROL, the European Organisation for Civil

Aviation Equipment (EUROCAE), the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC). This is being performed in response to an EC mandate and co-ordinated in the Air Traffic Management Standardisation Co-ordination Group (ATMSCG).

Highlights in the maritime sector included new standards on the electromagnetic compatibility (EMC) requirements for satellite equipment on board ships, and navigation on inland waterways, based on the requirements of the River Information Services Directive and the Central Rhine Committee, and updates of the standards for maritime mobile communications in the VHF band. Work continues on Digital Selective Calling (DSC).

Medical Devices

Standards for Ultra Low Power implantable medical devices are expected to be published in 2007. These will enable a range of applications such as the remote monitoring of blood, cranial and heart pressures, cardiac devices and insulin delivery systems.



Digital Mobile Radio

Digital Mobile Radio (DMR) is a new ETSI standard defining a direct digital replacement for analogue Private Mobile Radio (PMR), opening up the potential for new services and features and strengthening two-way radio's position as the number one communication choice for mobile professionals working in demanding environments. In 2006, the core specification governing this technology was published, which will improve efficiency and provide significant cost savings.

Cordless Audio Devices

Work is also progressing well on cordless audio devices and wireless microphones. An existing standard for cordless audio devices has been updated to enable, for example, the wireless connection of MP3 players to car radios. New developments in digital television, the growth in theatre, music and independent film and TV production have created a demand for new spectrum, and a new Technical Report on the spectrum requirements for Professional Wireless Microphone Systems was nearing completion by the end of the year.

Broadband Satellite Multimedia

During 2006, ETSI completed work on the architecture for Broadband Satellite Multimedia (BSM) – satellite systems that are intended to be used for high quality interactive multimedia communications. These systems will be able to provide broadband access to the Internet, addressing a mass market and covering large regions. BSM systems are a major growth area in the industry and a priority within ETSI. Broadband satellite access networks will complement wired and wireless access systems, delivering telecommunications services into and within both homes and business. The specifications produced will help ensure that the protocols developed for terrestrial Internet Protocol (IP) networks can be used over satellite systems.

Satellite Digital Radio

In 2006, ETSI produced the first technical specifications to enable the provision of digital radio systems over Europe by satellites, along similar lines to the successful systems operating in the United States. Satellite Digital Radio will deliver tens of high-quality audio channels with associated services.



New Generation DECT™

The popularity of Digital Enhanced Cordless Telecommunication (DECT) is continuing to spread throughout the world. The system has now been adopted in over 110 countries. Last year about 60 million DECT terminals were sold and numbers are growing faster than originally expected. There is a particularly strong growth of DECT sales in the United States, as DECT operation is now permitted in the 1920-1930 MHz band in North America.

ETSI has been 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 expected to generate new services for the end-user and new revenues for suppliers and operators. As the dominating technology, therefore, for in-home distribution of voice services, DECT is also moving to a new generation especially scaled for Next Generation communication networks – the 'New Generation DECT'. In close co-operation with the DECT Forum, ETSI has begun a project to drive the standardisation, development and market preparation for New Generation DECT technology and appropriate products. The specifications of Phase 1 of this project, covering the support of wide-band speech and improved capabilities for accessing IP services, are scheduled for approval early in 2007.

The DECT Forum plans to set up a certification programme for New Generation DECT products and has asked ETSI to provide test specifications. New Generation DECT will become an integral part of home gateways, so interoperability is an important driver for these standardisation activities.

Digital Subscriber Line

ETSI's work on Digital Subscriber Line (DSL) systems is extending into a new area – the energy consumption of DSL equipment. Work will begin on the reduction of the power consumption of xDSL equipment in 2007, with Asynchronous DSL (ADSL) and Very High Speed DSL (VDSL) for broadband equipment as the priorities.

Broadcasting Standards

JTC Broadcast (the Joint Technical Committee which brings together the European Broadcasting Union (EBU), the European Committee for Electrotechnical Standardisation (CENELEC) and ETSI) addressed some important new areas during 2006, such as the need for electronic programme or service guides in digital broadcasting. For Digital Audio Broadcasting (DAB) and Digital Radio Mondiale (DRM), a single standard for electronic programme guides has been developed using XML. Similarly, an electronic service guide has been standardised for DVB-H (for delivery of video services to handheld devices, such as mobile telephones or PDAs). Metadata is becoming increasingly important – as in the very complex series of TV-Anytime specifications which will help consumers to find their desired content, whether it is to be broadcast in the near future, was previously recorded on a local hard disk or is available on-line.

The latest techniques for the compression of audio and video signals permit broadcasters to make better use of the radio spectrum, which is especially important for new applications such as High Definition Television (HDTV) and for multiple low bit-rate channels delivered to handheld devices. The majority of the standards for these new compression systems emanate from the International Organisation for Standardisation (ISO) MPEG (Moving Pictures Experts Group). In 2006, JTC Broadcast revised several existing ETSI transmission standards to allow various new compression systems to be used on digital radio and TV services.



As the year came to an end, JTC Broadcast turned its attention to new specifications for the delivery of television to handheld devices. Standards for DVB-H have already been completed, but new work is now being introduced to enable DVB-SH – the delivery of television by satellite to handheld devices. Other technologies, such as Digital Multimedia Broadcasting (DMB) based on DAB standards and MediaFLO, will also be included in future activities.

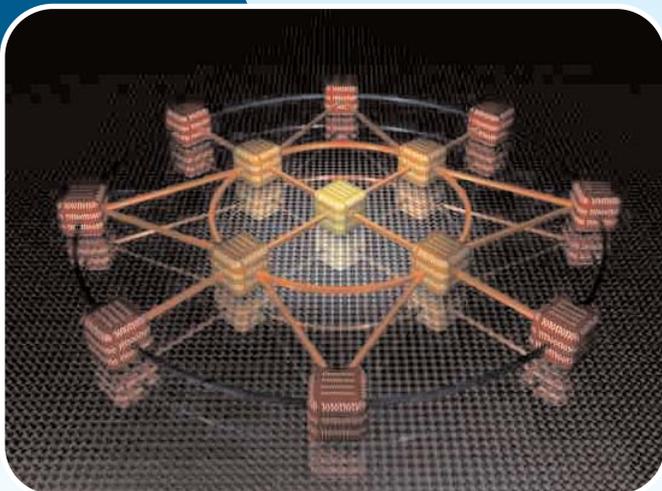
Grid

The vision is that a Grid environment should consist of interoperating elements ranging from small devices up to supercomputers, to serve communities ranging from individuals to whole industries, and should cover data, information and knowledge. Standardisation is essential to enable so many different pieces of hardware, software, operating systems, databases etc, potentially spread all over the world, to interoperate. Grid technology is widely regarded as a key element in tomorrow's 'network of networks', and is expected to drive the creation of both jobs and commercial products.

ETSI has a long history of partnership experience in the Grid standards community, notably in interoperability testing and Plugtests™. ETSI's Strategy for 2006 included Grid as one of the Institute's priorities and a starter group was set up to identify ETSI's potential contribution to Grid standardisation. In June 2006 ETSI's GRID Technical Committee (TC GRID) was created and held its first meeting in September.

TC GRID's task is to address issues associated with the convergence of Information Technology (IT) and telecommunications, paying particular attention initially to the lack of interoperable Grid solutions in situations which involve contributions from both the IT and telecommunications industries.

In 2006, TC GRID defined its first specific tasks. It will undertake a survey of existing stakeholders in the Grid domain, for which the European Commission (EC) has provided support funding, and work is expected to begin in 2007. A test frame for Grid standards will also be developed in collaboration with ETSI's Protocol and Testing Competence Centre, and a preliminary survey of the Open Grid Forum approach to standards has been undertaken to assess to what extent ETSI testing methodology can be applied. The successful series of Grid Plugtests will be documented. Meanwhile other work items are being identified. In particular, there is considerable interest in addressing the convergence between TC GRID and ETSI's Telecommunication and Internet converged Services and Protocols for Advanced Networking Technical Committee (TC TISPAN).



Railway Telecommunications

GSM-R is the wireless communications platform based on GSM, which has been developed specifically for railways as a cost-efficient replacement for all existing analogue railway radio networks. GSM-R offers a secure platform for voice and data communication between railway and operational staff, including drivers, dispatchers, shunting teams, engineers and station controllers. It delivers features such as group calls (VGCS), voice broadcast (VBS), functional addressing, location-based connections and call pre-emption in times of emergency. It will support applications such as cargo tracking, video surveillance in trains and stations and passenger information services.



GSM-R has been selected by 38 countries across the world. In Europe, GSM-R is being combined with the General Packet Radio Service (GPRS) to form a basis for an Intelligent Transport System to offer railways the means to improve the efficiency of rail operations and offer new services to users.

The first high speed line using the new European Rail Traffic Management System (ERTMS), which combines the European Train Control System (ETCS) with GSM-R, went into use between Naples and Rome, and is already being extended to Florence. By 2007, as well as Italy, Spain, Germany and Switzerland, there will be projects operating for high speed lines in France, the Netherlands and Belgium.

The conditions for implementing cross-border GSM-R between France, the Netherlands, Germany and Belgium were defined in 2006 and the roaming agreements are in the process of being signed. GSM-R on border-crossing trains is becoming a reality and most European countries are expected to sign up in 2007.

The introduction of Direct Mode Operation (DMO) within GSM-R for its use for GSM in Professional Mobile Radio (PMR) is an important evolution which answers not only the requirements of the railways but also offers the possibility of fulfilling the needs of the blue light emergency services. In 2006 ETSI began work on DMO in GSM-R telecommunications systems and is evaluating the possibility of using DMO GSM-R for communications related to safety in railway tunnels.

Collaboration and Co-operation

ETSI was established to provide Information and Communication Technologies (ICT) standards for the European market place. At the same time, the Institute has a global dimension and recognises both the advantages of international collaboration and the benefits of globally applicable standards. ETSI therefore focuses partly on Europe, but also further afield.

Europe

The campaign of Roadshows launched in 2005 to recruit Members to ETSI and to attract new work was completed mid-2006. A total of 18 Roadshows were held throughout Europe, including two specifically dedicated to users. Senior representatives of ETSI took the opportunity to present the ETSI vision of how the future of the ICT industry must be built on partnership.

ETSI members and staff attended and made presentations at numerous conferences and exhibitions in 2006, including the 3GSM World Congress in Barcelona. Among the key events hosted at ETSI in 2006 were the third interoperability conference on standards and open standards, the DECT™ Congress and a workshop to discuss the role of standards and interoperability in the ICT-related European Technology Platforms.

Working with Partners

ETSI continues to work co-operate closely with its sister European Standardisation Organisations, the European

Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC).

In 2006 ETSI strengthened its partnership portfolio by signing a number of agreements, including ones with the Home Gateway Initiative (HGI) and the European Network and Information Security Agency (ENISA).

Partnerships were renewed with a number of other organisations including the TETRA Association, the ICT Standards Advisory Council of Canada (ISACC) and the Association of Telecommunications Enterprises of the Andean Community (ASETA). ETSI is also discussing a series of partnerships aimed at reinforcing its global and technical reach, for example with the China Electronics Standards Institute (CESI), the Fixed-Mobile Alliance (FMCA) and the organisation for the Advancement of Structured Information Standards (OASIS). Looking ahead, ETSI remains committed to reinforcing its dialogue and extending its collaboration with partners around the world.

Latin America

ETSI is keen to capitalise on partnerships with emerging markets and in 2003 launched @LIS, a four-year co-operation programme funded by the European Commission (EC), which aims to enhance collaboration between Europe and Latin America on issues related to the Information Society. @LIS has now entered its final year (April 2006-March 2007), and earlier efforts are coming to fruition. For example, a link has been established with the Ministry of Health in Mexico through the National Center for Health Technology Excellence (CENETEC), which led to a co-operation initiative on Broadband access for eHealth applications, a study trip by a Mexican ministerial delegation to ETSI, and a two-day workshop in Mexico in May 2006. CENETEC has joined ETSI, with the dual aim of acting as a clearing house for relevant standards in Mexico and providing input to ETSI's newly established eHealth Starter Group.

Throughout 2006, a range of events was organised in Latin America to promote ETSI standards and the European standardisation system including an ICT workshop in co-operation with CONATEL (a regulator) and CANTV in Venezuela, the TETRA conference in Sao Paulo, Brazil, and the Satellite Conference of the Americas in Ecuador. ETSI also took part in the ICT/NGN Workshop organised by Regulatel in Guatemala and the Andicom exhibition in Colombia (October).

ETSI also signed a Memorandum of Understanding with the Association of Telecommunications Enterprises of the Andean Community (ASETA).

China

Recent growth in Chinese markets has made relations with China a major priority for European businesses. ETSI, CEN and CENELEC have together appointed a European Standardisation Expert in China. Responsible for helping increase co-operation between China and Europe in the field of standardisation and conformity assessment, his first task is to explore the standardisation system in China, to identify new standardisation needs and to foster co-operation between Chinese industry and its European counterparts.

White Papers

Standards are only useful if they are used, and the more widely used they are, the more useful they become. Promotion of the Institute's activities, its output and its capabilities is crucial, therefore, to the success of ETSI's work.

With this in mind, the Institute has introduced the concept of ETSI White Papers, which will provide a free, informal overview of areas of technology which ETSI is addressing. The first of these, on Security, was published to coincide with the Security Workshop held on ETSI premises in January 2006. Since then, further White Papers were produced on Young Children and ICT (March) and Achieving Technical Interoperability (October). Other titles are planned for 2007.

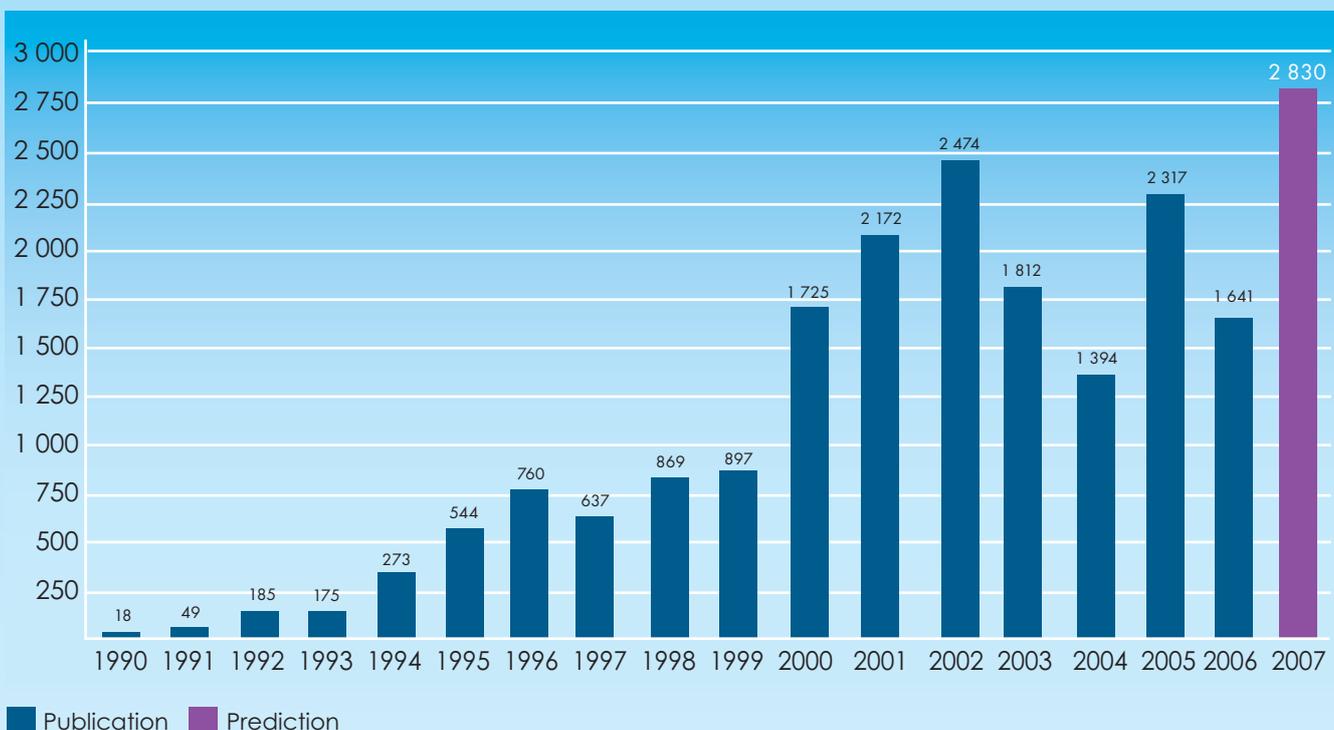


Standards Production

The number of standards and reports published in 2006 was up on 2004 (from about 1400 to over 1600), although it did not match the exceptional peaks of 2002 and 2005 which were due to the large number of specifications published those years for 3GPP Releases.

By the end of 2006, ETSI had published a total of nearly 18 000 standards, specifications, reports and guides since the Institute was established in 1988.

The number of deliverables published, for each of the years 1990 - 2006 and the prediction for 2007.



Distribution by type of published document

| | in 2006 | total since 1988 |
|--|--------------|------------------|
| Technical Specification (TS) | 1 383 | 11 025 |
| Technical Report (TR) | 114 | 1 207 |
| ETSI Standard (ES) | 65 | 438 |
| European Standard (telecommunications series) (EN) | 60 | 2 039 |
| ETSI Guide (EG) | 14 | 186 |
| Special Report (SR) | 5 | 48 |
| Old deliverable types | 0 | 2 999 |
| TOTAL | 1 641 | 17 942 |

Specialist Task Forces and Other Funded Projects

Specialist Task Forces (STFs) are groups of highly skilled experts representing different ETSI Member organisations who come 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, R&D and promotion initiatives

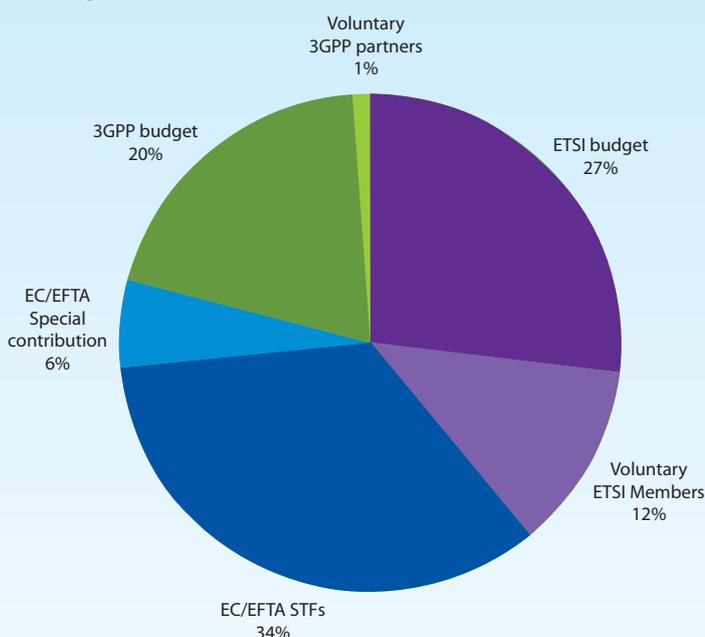
for the European Commission (EC) and the European Free Trade Association (EFTA).

Altogether, 45 STFs and other funded projects were active during 2006, involving more than 150 experts and representing an investment of about 3,7 M€.

Technical areas in which resources were invested

| Technical area | k€ |
|---|----------------|
| 3GPP Tasks | 812,6 |
| Human Factors (HF) | 568,2 |
| Telecommunication and Internet converged Services and Protocols for Advanced Networking (TC TISPAN) | 506,5 |
| Broadband Radio Access Networks (BRAN) | 497,8 |
| Methods for Testing and Specification (MTS) | 388,7 |
| EC special contracts | 220,3 |
| Satellite Earth Stations and Systems (SES) | 163,5 |
| Electronic Signatures and Infrastructures (ESI) | 157,0 |
| Operational Co-ordination Group (OCG) | 121,6 |
| Speech Processing, Transmission and Quality Aspects (STQ) | 72,1 |
| EMC and Radio Spectrum Matters (ERM) | 71,3 |
| Digital Enhanced Cordless Telecommunication (DECT™) | 51,1 |
| Terrestrial Trunked Radio (TETRA) | 39,0 |
| TOTAL | 3 670,0 |

Funding sources in 2006



EC/EFTA funding

For the year starting May 2006 until 31 December, the EC and EFTA contribution to the ETSI standardisation infrastructure was 1 764 k€.

The EC/EFTA contribution for specific standardisation contracts under their 2006 budget line provided funding of a further 2 095 k€ to support the ICT 2006 Standardisation Work Programme: the work itself will be performed between 2007 and 2009. As in previous years, all of the contracts were signed in December 2006. A further 1,3 M€ of successfully evaluated proposals for funding were not handled in 2006 but will be funded out of the 2007 EC/EFTA budget; it is hoped that they will be provided for signature by the end of Q1 2007.

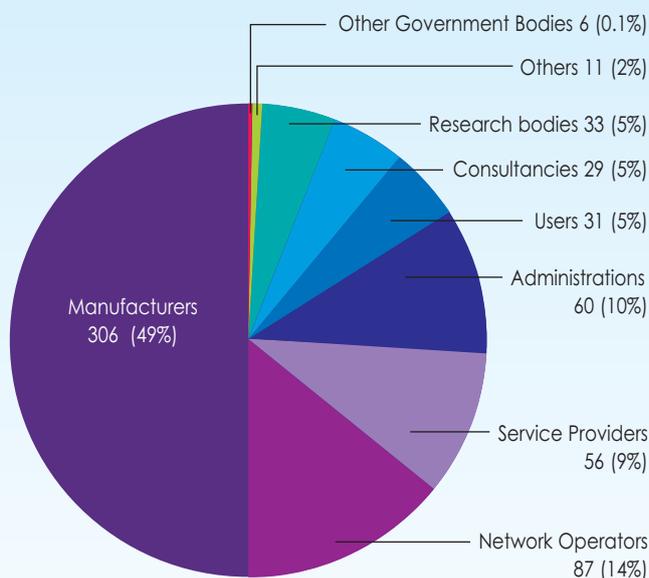
Membership

Confirming the trend observed last year, ETSI membership evolved positively in 2006 with a small rise again in numbers. New Members have been attracted by the new topics being standardised in ETSI, particularly Next Generation Networks (NGN) and eHealth. Some Members have also substantially increased their financial contribution in recognition of the importance of the work being achieved in ETSI.

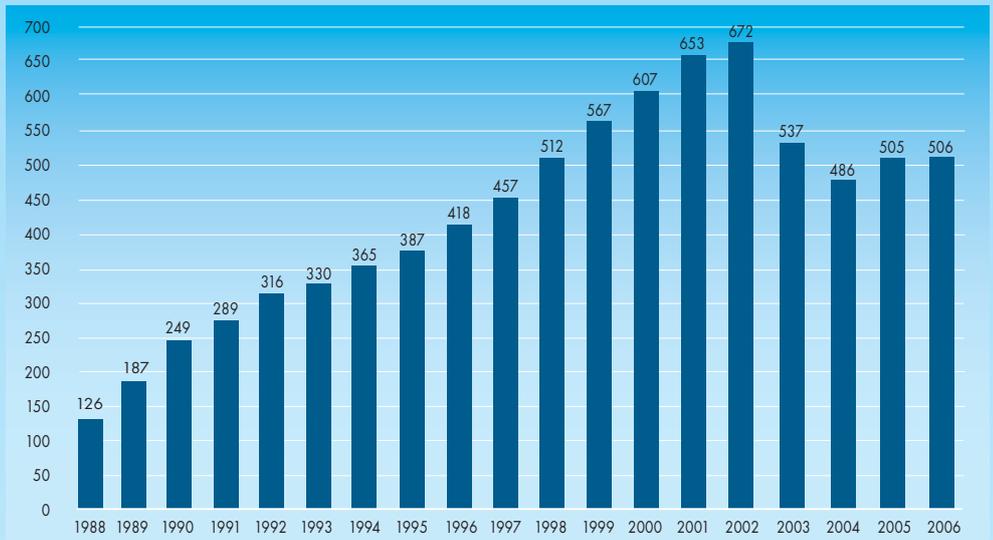
The Institute now brings together well over 650 Members. At the end of 2006, ETSI had 506 full members drawn from 37 European countries. With the addition of the former Yugoslav Republic of Macedonia, Jordan, Mexico and Qatar, the total number of countries represented in all categories of membership rose to 62, drawn from five continents. Associate membership was at 113, representing 24 non-European countries and provinces, and there were also 39 Observers.

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.

Full and Associate Membership by category



Evolution of ETSI Full Membership - totals of Full Members



Membership by type

| | 1 Jan 2006 | 31 Dec 2006 |
|-------------------|------------|-------------|
| Full Members | 505 | 506 |
| Associate Members | 110 | 113 |
| Observers | 39 | 39 |
| Total | 654 | 658 |

Membership by country

(Full and Associate Members and Observers)

| | | | |
|---------------------------------------|----|--------------------------|-----|
| Albania | 1 | Japan | 4 |
| Algeria | 1 | Jordan | 1 |
| Andorra | 1 | Korea | 1 |
| Australia | 2 | Latvia | 2 |
| Austria | 10 | Lichtenstein | 1 |
| Belgium | 27 | Lithuania | 1 |
| Bosnia Herzegovina | 2 | Luxembourg | 6 |
| Brazil | 1 | Malaysia | 1 |
| Bulgaria | 4 | Malta | 2 |
| Canada | 8 | Mexico | 1 |
| China | 8 | Netherlands | 29 |
| - Taiwan (Province of China) | 9 | Norway | 8 |
| Croatia | 4 | Poland | 5 |
| Cyprus | 2 | Portugal | 2 |
| Czech Republic | 4 | Qatar | 1 |
| Denmark | 20 | Romania | 4 |
| Egypt | 2 | Russian Federation | 8 |
| Estonia | 1 | Singapore | 2 |
| Finland | 15 | Slovakia | 2 |
| France | 67 | Slovenia | 3 |
| Former Yugoslav Republic of Macedonia | 1 | South Africa | 4 |
| Georgia | 1 | Spain | 15 |
| Germany | 78 | Sweden | 23 |
| Greece | 5 | Switzerland | 17 |
| Hungary | 4 | Turkey | 6 |
| Iceland | 1 | Ukraine | 1 |
| India | 3 | United Arab Emirates | 2 |
| Iran | 1 | United Kingdom | 116 |
| Ireland | 13 | United States of America | 56 |
| Israel | 8 | Uzbekistan | 1 |
| Italy | 28 | Yemen | 1 |

62 countries or provinces in total

658

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 2006 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

The key points of the budget management, compared with 2005, are the following:

Expenditure – In total, expenditure increased by 0,6%. Secretariat costs, which represent 26% of expenses,

increased by 2% (in line with inflation). 5,1 M€ were spent on the Mobile Competence Centre (MCC) and 2,5 M€ on the Protocol & Testing Competence Centre (PTCC). 1,9 M€ were spent on the Fixed Competence Centre (FCC) and 0,9 M€ on the Radio Competence Centre (RCC). In addition, 1,9 M€ were spent on Specialist Task Forces (STFs) for the Fixed and Radio Competence Centres (FCC and RCC). 0,8 M€ were spent on Plugtests™ activities for the preparation and support of interoperability events.

Income – Members' contributions decreased by 3%. 52% of the budget was funded by Members' contributions (11,5 M€). The contribution of the 3GPP™ Partners (1,6 M€) remained constant. EC/EFTA payments amounted to 4,8 M€, to cover expenses related to the operation of the European standardisation platform and standardisation projects. Income generated by support services supplied to fora and consortia (Forapolis) increased by 21%.

2006 Budget statements

| Income | (k€) |
|--|---------------|
| Members' contributions and Observer fees | 11 543 |
| EC/EFTA contracts | 4 881 |
| 3GPP Partners | 1 688 |
| Voluntary contributions | 335 |
| Forapolis | 2 035 |
| Sales | 347 |
| Plugtests | 353 |
| Financial income | 194 |
| Other income | 957 |
| TOTAL INCOME | 22 333 |

| Expenditure | (k€) |
|--------------------------------------|---------------|
| Secretariat | 5 975 |
| Mobile Competence Centre (MCC) | 5 120 |
| FCC, RCC and Funded Work Programme | 4 261 |
| Protocol & Testing Competence Centre | 2 527 |
| Forapolis | 2 035 |
| Special Projects | 820 |
| Plugtests | 745 |
| European Friends of 3GPP | 625 |
| Provision and losses | 225 |
| TOTAL EXPENDITURE | 22 333 |

In 2006, income balanced expenditure.

Financial Statements for the Year 2006

The final accounts and the balance sheet are summarised below. The fiscal accounting period is 1 January 2006 - 31 December 2006.

Statement of Income and Expenditure Year 2006

| | Income (€) | Expenditure (€) |
|---------------------------------|-------------------|-------------------|
| Income | 22 102 681 | |
| Purchases | | 11 425 336 |
| Expenses | | 10 851 406 |
| Investment management | 211 095 | 23 611 |
| Extraordinary income & expenses | 19 206 | 32 629 |
| TOTAL | 22 332 982 | 22 332 982 |

Summary of the Balance Sheet

Assets

| Net amounts at: | 31 Dec 2005 (€) | 31 Dec 2006 (€) |
|---------------------|-------------------|-------------------|
| Fixed Assets | 7 258 239 | 7 033 651 |
| Debtors | 14 079 630 | 18 045 108 |
| Securities/cash | 4 832 254 | 3 713 282 |
| Adjustment accounts | 76 369 | 119 031 |
| TOTAL ASSETS | 26 246 492 | 28 911 072 |

Liabilities

| Net amounts at: | 31 Dec 2005 (€) | 31 Dec 2006 (€) |
|--------------------------|-------------------|-------------------|
| Equity | 8 331 645 | 8 331 645 |
| Provisions | 150 000 | 150 000 |
| Balance carried forward | - 52 984 | - 52 984 |
| Creditors | 6 725 885 | 7 155 244 |
| Adjustments | 11 091 946 | 13 327 167 |
| TOTAL LIABILITIES | 26 246 492 | 28 911 072 |

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standards and interoperability
in a shrinking world...*



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