

## ETSI TC SES

TC-SES produces all of the Harmonized Standards needed for satellite systems under the European RTTE directive. TC-SES also produces specifications for the radio interfaces (air interfaces) and the network architectures of satellite systems.

### Technical activities include:

#### Fixed Satellite Services (FSS)

- Fixed satellite system architectures (e.g. Broadband Satellite Multimedia (BSM))
- IP over Satellite
- NGN integration
- Earth Stations onboard Vehicles, Vessels Trains and Aircraft (VMES/ESV/EST/AES)
- Very Small Aperture Terminals (VSATs) and other Fixed Satellite Terminals (ST, SIT & SUT)

*ETSI TC-SES is responsible for producing standards for all types of satellite communication services*

#### Mobile Satellite Services (MSS)

- Mobile satellite system architectures for 2G, 3G and Future Evolution (IMT advanced)
- Satellite Mobile Radio interfaces (e.g. GMR/GMPRS/GMR-3G)
- Mobile Earth Stations, including Vehicle-mounted, maritime, aeronautical

#### Broadcasting Satellite Service (BSS)

- Fixed and mobile broadcast systems: audio, video and multimedia (e.g. Satellite Digital Radio (SDR)).

## About ETSI

### ETSI's MISSION

ETSI plays a major role in developing a wide range of standards and other technical documentation as a contribution to world-wide standardization in information and communication technologies. ETSI's prime objective is to support global standards harmonization by providing a forum in which all the key players can contribute actively.

### ETSI's STRUCTURE

Based in Sophia Antipolis (France), ETSI is a non-profit making organization which unites nearly 700 members from 56 countries inside and outside Europe, representing administrations, network operators, manufacturers, service providers, technical bodies and users. The Institute's work programme is determined by its members, who are also responsible for approving its deliverables. As a result, ETSI's activities are maintained in close alignment to the market needs expressed by its members.

ETSI is an independent organization, but operates in close collaboration with many other organizations, notably the CEPT, ITU, CEN and CENELEC, the European Commission and the EFTA Secretariat, plus numerous other regional and world-level bodies with the ultimate goal of achieving common global standards.

# Satellite Earth Stations & Systems



## Satellite Communications - Overview

The continued growth of communications technologies has given rise to a significant demand for mobility and for broadband data communications services. Satellites, particularly when engineered for broadband services, are playing an important role in this growth by providing cost effective long-distance connections and expanding the capacity and geographical coverage of terrestrial access technologies. Mobile Satellite Systems can provide a geographical extension to the terrestrial mobile systems such as GSM/GPRS, 3G networks (UMTS/IMT-2000) and beyond.

Mobile Satellite Systems have an inherent advantage for delivering multicast and broadcast services, which can be used to provide complementary services for both terrestrial and satellite mobile networks. A Complementary Ground Component (CGC) can be added to provide improved coverage and increase capacity in urban environments.

Additional satellites capabilities include asset tracking and associated messaging services. High availability services, in particular for public protection and disaster relief. Satellite terminals may be handheld, portable, vehicle-mounted, semi-fixed or fixed equipment, used in one or more of the Land, Maritime and Aeronautical environments.

ETSI TC-SES is responsible for producing standards for all types of satellite communication services including fixed, mobile and broadcasting and for all types of earth station equipment.

## Harmonized standards



**ETSI TC SES contributes directly to the deployment of satellite networks by producing a wide range of the Harmonized Standards.** Harmonized Standards have been published for a range of satellite terminals, including both Fixed Earth Stations such as VSAT (Very Small Aperture Terminals) and Mobile Earth Stations (MES).

These Harmonized Standards define essential requirements for satellite terminals in line with the European R&TTE Directive (Directive 1999/5/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity). Several of these Harmonized Standards are used as the basis of CEPT Decisions on exemption of individual licensing for satellite terminals or part of ITU-R Recommendations.

**ETSI TC-SES produces radio interface standards used by current and future satellite systems worldwide**

- GEO-Mobile Radio Interfaces (GMR)
- Broadband Satellite Multimedia (BSM)
- Satellite UMTS (S-UMTS)
- Satellite Digital Radio (SDR)

## Wide range of standards for satellite communications

### Satellite Digital Radio (SDR)

A first set of specifications for radio interfaces for satellite digital radio - to receive signals from the satellite and from their complementary terrestrial transmitters, have been published. This group is a focal point for these new projects for digital radio via satellite.

Several digital audio broadcasting satellite systems over Europe are planned. Reception of a large number of high quality audio channels with accompanying program information will be possible within moving vehicles with the typical satellite footprint providing national or greater coverage for these users. The SDR technology is also capable of supporting multimedia services, including video or television.

### Earth Stations for Aircraft, Vessels, Vehicles and Trains (MAR-ESV)

A new trend has appeared for more and more mobile satellite services: Broadband services with ships (ESV), trains (EST), aircraft (AES) and vehicle-mounted (VMES).

### Satellite Emergency Communications (SatEC)

This activity focuses on the definition of architecture for communication networks using satellite during emergency situations and disaster relief.

*TC-SES is taking a leadership role in developing new standards for communications via satellite*

### Mobile Satellite Systems

The MSS Working Group (MSS-WG) covers all Mobile Satellite Systems operating in frequency bands allocated to Mobile Satellite Services including:

- Satellite component of the Universal Mobile Telecommunication System (S-UMTS) and of the International Mobile Telecommunications (IMT-Advanced).
- Satellite access to terrestrial core networks, in particular the GMR specifications which provide access to GSM/GPRS core networks and UMTS core networks.
- Interworking with terrestrial wired and wireless networks.
- Future evolution of all these systems.

*Satellite systems have an important and growing role to extend the geographical coverage of terrestrial systems and to complement the range of terrestrial services*

### Fixed Satellite Systems

The BSM Working Group (BSM-WG) covers Fixed Satellite Systems, with a current focus on:

- Geostationary satellites
- IP-based services:

Fixed Satellite Systems can be used to extend the coverage of terrestrial broadband services such as ADSL, enabling operators to reach customers in remote regions (including the maritime and aeronautical regions).

Fixed Satellite Systems can also be used to provide complementary services, in particular multicast and broadcast services that use the inherent broadcast capability of the satellite, to provide cost effective distribution of these services to multiple users.

## New areas for satellite standards

### IP over satellite

TC-SES has published a range of standards for broadband satellite multimedia (BSM) communications that are designed for use in IP-based satellite access networks. All of the standards are designed around a modular BSM architecture which combines families of satellite-dependent transmission technologies with a set of common, satellite-independent IP interworking functions such as quality of service, addressing, multicasting and security.

### NGN integration and Interworking with terrestrial systems

Further development of SES Standards are planned to take account of the European Framework Directive and the move towards Next Generation Networks (NGN). This activity will focus on Interoperability and integration of Mobile Satellite Systems (MSS) and Fixed Satellite Systems (FSS) with Next Generation Networks and the associated IP-based services