

# Public Safety

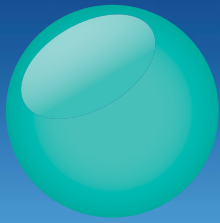


## A Connected World



Communication systems  
and services for public safety

Mission-critical communications  
to rely on at all times



# Public Safety

## Facilitating emergency communications for authorities, public safety users and citizens

Communication is a key factor in an emergency situation, which may range from a minor incident (e.g. traffic accident) to a major incident such as a passenger train crash, a terrorist incident, a chemical spillage or a natural disaster (e.g. an earthquake or tsunami).

ETSI and 3GPP (a collaborative project between standards organizations worldwide, including ETSI, that develops specifications for advanced mobile communication technologies) work on a comprehensive set of standards and interoperability tools to enable communications in the case of emergency situations.

The activities of ETSI and 3GPP cover the scenarios to be considered for communication from authorities to citizens (and reciprocally), between authorities and amongst citizens. Emergency communications cover all communication systems and services including all media possibilities such as voice and non-voice, data, location etc.

The standardization work is based on use cases that are defined by Public Safety users (including fire and rescue services, ambulances, police and Public Safety Answering Points (PSAP)), industry and regulators from all over the world.

## ETSI Groups in the Public Safety Cluster

ETSI groups involved in Public Safety activities:

- BRAN (Broadband Radio Access Networks)
- CABLE (Integrated broadband cable telecommunication networks)
- E2NA (End-to-End Network Architectures)
- EMTel (Emergency Communications)
- ERM (EMC and Radio spectrum Matters) Task Group DMR (Digital Mobile Radio)
- ERM (EMC and Radio spectrum Matters) Task Group 26 (Maritime and radio amateur activities)
- MSG (Mobile Standards Group)
- RRS (Reconfigurable Radio Systems) Working Group 4 (Civil Security)
- SES (Satellite Earth Stations & Systems) SatEC Working Group (Satellite Emergency Communications)
- TCCE (TETRA and Critical Communications Evolution)



EMTEL is an ETSI Special Committee that identifies the operational and technical requirements of those involved in the provision of emergency communications.

In addition, the cluster includes the work of 3GPP in areas such as priority use of the public network, public warning systems, and the use of Long Term Evolution (LTE) mobile systems for critical communications.

The Public Safety cluster also co-operates with various fora, consortia and organizations including the European Emergency Number Association (EENA), the USA's National Emergency Number Association (NENA), ECMA International, the PSC Europe Forum, IETF-ECRIT, ITU-T, COCOM EGEE (European Commission Expert Group on Emergency), ATIS (US Alliance for Telecommunications Industry Solutions), OASIS (Organization for the Advancement of Structured Information Standards), OMA (Open Mobile Alliance), the Wireless Innovation Forum, TCCA (TETRA and Critical Communications Association), GSMA (GSM Association), and the DMR Association.

## Standardization Activities

### Terrestrial Trunked Radio (TETRA) and Critical Communications



TETRA is a digital trunked mobile radio standard developed to meet the needs of traditional Professional Mobile Radio (PMR) user organizations, standardized by our TETRA and Critical Communications Evolution committee (TC TCCE).

TETRA is a narrow-band technology. Today activities are ongoing to include broadband capabilities which will offer significantly improved potential for critical communications. This work will enable creation of new features and the further development of already existing services like:

- high bandwidth services such as streaming video
- automatic number plate recognition
- location services and database access

allowing a more integrated approach to Public Protection and Disaster Relief (PPDR) command and control systems.

Our TETRA and Critical Communications Evolution committee (TC TCCE) is focusing particularly on standardizing the interfaces to broadband systems. We have started to build a reference model for the architecture and the various interfaces which together will provide a broadband critical Communications solution. We have also embarked on a study into the related security mechanisms.

The development of LTE™ to accommodate critical communications users is being pursued and we are therefore working closely with the Third Generation

Partnership Project (3GPP™) on the standardization of group call system enablers, off-network proximity services and security services. A new 3GPP working group called SA6 has been created for the development of applications for specialised communications.

We continue to update the TETRA standards to meet the developing needs of users. We are studying the addition of new algorithms beyond the current TEA1-4 series, for use in TETRA systems from 2020 and beyond and are making improvements to the TETRA Enhanced Data Service (TEDS) to include voice services.

Our TC RRS WG4 is investigating the possibility of using Software Defined Radio (SDR) and Cognitive Radio (CR) concepts in the Public Safety domain. Public Safety communications are characterized by patchworks of separate, often incompatible systems with widely varying capabilities. The application of SDR and CR, together with dynamic spectrum management, can provide solutions for the required interoperability of such systems and maximize the use of the very limited radio spectrum usually assigned to these services. We are developing a feasibility study into synergies between PPDR/civil Private Mobile Radio (PMR), military and commercial domains, in response to the Reconfigurable Radio Systems Mandate (M/512).

Digital Mobile Radio (DMR), a European standard produced by the DMR Task Group of ETSI's ERM Technical Committee, defines a direct digital replacement for analogue PMR.

### Emergency calling

Our Emergency Telecommunications committee (SC EMTEL) is addressing 'Total Conversation', which uses a combination of video, real-time text and audio to give people with hearing or speaking disabilities the same level of access to emergency services as able-bodied people, in accordance with the Citizens' Rights Directive.

In support of EC Mandate 493 on the Location Enhanced Emergency Call Service, we expect to publish an ETSI Standard (ES) on the functional architecture for emergency caller location determination and transport in Europe. The architecture is intended to cover a situation, for example, where a Voice over Internet Protocol (VoIP) service provider and one or several network operators need to cooperate to determine the

location of the caller. We have also started to specify the protocols required on the interfaces.

We have finalized a report aimed at enabling the transportation of GPS co-ordinates, as well as the cell ID, from smartphones to the Public Safety Answering Point (PSAP). This would allow a caller to be pinpointed to within a few metres, rather than kilometres.

The Public Warning System (PWS) broadcasts information to alert the public in case of a major disaster. 3GPP continues to improve public warning systems using an enhanced Multimedia Broadcast/Multicast Service (MBMS).

We support the EC eSafety initiative, eCall, the in-vehicle emergency call service which automatically relays data about an accident from the vehicle involved to the emergency services, providing faster and more effective emergency response. eCall is based on GSM™ and Universal Mobile Telecommunications System (UMTS™) networks; we have finalized a report to add this emergency call facility in LTE. We have created two new TSs providing test specifications for eCall high level application protocols, one for conformance tests and the other for interoperability tests.

### Global Maritime Distress and Safety System

The Global Maritime Distress and Safety System (GMDSS) has been put in place between the International Maritime Organisation (IMO) and the ITU. Digital Selective Calling (DSC) is a service allowing to instantly send an automatically formatted distress alert to the Coast Guard or other rescue authority via the MF, HF and VHF maritime radio systems and is part of the GMDSS.

Our ERM TG26 is developing a new European Standard (EN) for man overboard devices using DSC and we will begin work on an EN on maritime personal homing beacons for people lost at sea. We are revising the EN on DSC equipment, and adding a new part on the generic access protocol for devices transmitting on Global Maritime Distress and Safety System frequencies using DSC.

### Satellite Emergency Communication

The Satellite Emergency Communication Working Group (SES SatEC) of ETSI's Satellite Earth Stations & Systems Technical Committee (TC SES) performs standardization in the area of satellite emergency communication, in particular involving broadband services. The group is working with scenarios dealing with the set-up of a temporary emergency communication cell based on WiFi, VHF/UHF, WIMAX, GSM or TETRA which is then linked/backhauled to the permanent infrastructure by means of a bi-directional satellite link.

Current work includes:

- Multiple Alert Message Encapsulation over Satellite and reference scenarios for satellite-based emergency communications
- Categorization of devices to provide Emergency Communication Cell over Satellite, which will guide those involved in procurement.

To find out more about ETSI's Public Safety activities or to get involved, please contact **CHANTAL BONARDI**, Public Safety cluster coordinator: [public\\_safety@etsi.org](mailto:public_safety@etsi.org)

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**ETSI** produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, aeronautical, broadcast and internet technologies and is officially recognized by the European Union as a European Standards Organization. ETSI is an independent, not-for-profit association whose more than 700 member companies and organizations, drawn from 63 countries across five continents worldwide, determine its work programme and participate directly in its work.

**For further information, please visit: [www.etsi.org](http://www.etsi.org)**

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