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TETRA Standard
Press Backgrounder
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TETRA – the global radio communications standard designed for public safety organisations

In their every day activities, public safety organisations need various kinds of communications services. TETRA offers both the usual cellular services as well as professional radio services such as group communication, field workforce management services (dispatching) and efficient data services. TETRA is a unique combination of group voice communications, mobile telephony and mobile data services specifically designed for authority use.

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TETRA is an abbreviation of TErrestrial Trunked RAdio. It has been defined and approved by the European Telecommunications Standards Institute (ETSI) to be the only official European Standard for digital Professional Mobile Radio (PMR). Accordingly, TETRA is a global standard for radio communication in the same way that GSM is the mobile telephony standard.

TETRA is a purpose built technology that offers major advantages over conventional radio systems to public safety and security organisations. It was developed to meet the needs of the most demanding professional radio users who need fast one-to-one and one-to-many radio communication using voice and data in their daily work. Users are typically public safety and security organisations such as police, fire and rescue forces. TETRA fulfils the needs of professional users and replaces old analogue and proprietary radio communication systems that no longer meet professional radiocommunication needs.

TETRA channel efficiency

In a trunked radio system such as TETRA, the radio channels are in a common pool and the TETRA system automatically allocates the radio channels to the radio users at the beginning of each call. This automatic channel allocation from a common pool is called trunking and systems using this method are called trunked mobile radio systems.

TETRA supports short data and status messaging, as well as Internet Protocol for packet data services. TETRA also supports generic and tailored data applications for each user organisation, such as automatic vehicle location, database inquiries, reporting WAP solutions and image transfer.

Meeting increasing demands

The TETRA standard was introduced as the first truly open system standard for digital Professional Mobile Radio. It was developed by the European Telecommunications Standards Institute (ETSI) and has been rapidly adopted on other continents from the Americas to the Far East, with more than 505 contracts in 65 countries in July 2004. TETRA has been developed together with the end user organisations to ensure it offers the best functionality.

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From private to shared networks –for more efficient co-operation

In the past, Professional Mobile Radio (PMR) users have built their own networks, designed to suit their own needs. The result was a large variety of overlapping private networks, each with its own frequency and way of working – possibilities for co-operation were minimal. It was also an expensive way to build a network.

This has all changed with the latest digital technology – PMR users can now share a network and benefit from improved services and lower costs without sacrificing their security.

Supporting public safety operations

With the conventional radio communications systems, public safety organisations have been forced to adjust their operational model to the non-flexible radio communication. In contrast, TETRA is designed to support the operational models of the authorities, bringing flexibility to reach new levels of efficiency in field operations.

Interoperability for an open TETRA market

Interoperability between the networks and terminals of different vendors is vital when building large shared networks. It enables more flexibility in products and prices for the end-user organisations.

Neutral party test interoperability and certificates are granted according to the Interoperability Profiles defined by the TETRA MoU.

Inter-System-Interface for cross-border communications

The Inter-System-Interface (ISI) is a set of standards that provide the interface for a TETRA service across network boundaries. ISI can connect several TETRA networks together. TETRA MoU's hard work extending the TETRA Interoperability Profile (TIP) specification coverage has reached further, significant milestones - in addition to the interoperability between networks and terminals provided by different vendors, the ISI is fundamental in building large nationwide TETRA services. Inter-working is just as important when neighbouring countries have TETRA networks from different vendors.

Direct Mode Operation for critical situations

In extreme situations or in an area beyond TETRA coverage, Direct Mode Operation (DMO) provides direct communication between TETRA radios.

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Ease of use and privacy

In TETRA, groups are defined in the users' radios in advance and communication between group members takes place simply by selecting the group with a rotary switch or menu keys and pushing the press-to-talk button on the radio. Only those radio users belonging to the same group hear and can participate in the communication.

Security

In a conventional radio system there is no intelligent switching in the network. All users with their radio tuned to the same frequency or channel can hear each other. Users must also agree in advance, which channel they use, usually selected with a rotary knob on top of the radio. Hence, there is no call privacy in a conventional radio system. In contrast, TETRA gives the maximum security and privacy with air interface encryption and end-to-end encryption.

Person-to-person calls

In TETRA, individual calls work the same way as in cellular systems such as GSM. It is easy to make a call direct to another person and call privacy is also achieved. TETRA brings the convenience of conventional cellular telephony and the advantages of radio communications. In a conventional radio system, individual person-to-person private calls are not possible.

Higher quality

Unlike analogue based conventional radio systems, TETRA is fully digital, giving better voice quality, more advanced data features and more efficient use of valuable frequency spectrum.

TETRA is an open standard with tested interoperability between the networks and terminals of different vendors, which is a key to large shared networks. It also allows the user to buy parts of the network from different vendors.

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Notes to the editor:

TETRA Interoperability certificates http://www.tetramou.com/tech/index.asp

ETSI
is a European institute of standardisation. However, its standards are recognised and used all over the world.
http://www.etsi.org/

TETRA Memorandum of Understanding (MoU)
Almost all well-known suppliers, testing houses and users such as public safety organisations have signed the TETRA MoU. The MoU gives enormous impetus to TETRA because the MoU suppliers have declared their intention to support TETRA rather than competitive developments.

The MoU, with its large number of participants, shows that TETRA is not just a European standard on paper, but a real standard that will be used and produced.
http://www.tetramou.com

Nokia is the world's leading supplier of TETRA networks and terminals, offering the most modern countrywide digital radio communication solutions for public safety organizations. Special features for public authorities include: top-class communication security, fast group calls, sophisticated emergency call functionality, prioritized calls, advanced messaging and data communication services, including packet data. Nokia has a proven track record of delivering multi-switch TETRA networks capable of providing all TETRA services uniformly countrywide. The open interfaces of Nokia TETRA solutions enable seamless integration to command and control systems.
http://www.nokia.com/tetra