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Secure dedicated radio communications improves reliability of a modern public safety organisation

Reliable and effective communications is undoubtedly one of the most important issues in assuring safety and security in society. A trunked radio communication system with advanced command and control functions enables incidents to be handled quickly and efficiently –with less losses. To guarantee the availability of the service, public safety authorities need networks dedicated to their own use. A conventional commercial mobile communications service does not provide the necessary secrecy, privacy and availability and their capacity is often not enough for the needs of both the emergency services and the public.

Cross border communication is currently a major issue in Europe, owing to the free movement of people between most European countries under the Schengen treaty. Such communications enable cross-border rescue operations to be completed more quickly and effectively, yet also make it easier to commit international crimes.

Public Safety and Security organisations such as police and rescue authorities need instant one-to-one and one-to-many radio communication using voice and data with the highest levels of security, reliability and availability. In addition to daily routine communication, dedicated radio communications ensure operation in extreme situations caused by disasters or environmental catastrophes, which often may cause other communications networks to fail. For public safety organisations, security is fundamental and requires authentication of the network's users as well as encryption of voice and data communication. Dedicated radio communications systems are designed to ensure operations in these situations.

From proprietary solutions to open standards
In the past, trunked radio technology was only available as a proprietary solution from specific manufacturers. This resulted in a large variety of overlapping private networks, each with its own frequencies and ways of working. The possibilities for co-operation were minimal. This was also an expensive way to build networks.

Even today, most police, fire, rescue and border services have their own, often incompatible private radio systems. These are usually analogue systems with no security features. In some cases, authorities are dependent on commercial services with no guarantee of availability in the event of a major catastrophe.

The world is changing fast and communications methods need to improve accordingly. Today's authorities can source their network from many vendors, ensuring greater choice, more cost-effectively and with higher quality. Interoperability between all vendors is vital for the market success of users, operators and manufacturers.

Shared networks improve co-operation
The most advanced digital radio communications solutions allow different organisations to co-operate over one shared network . Each organisation has its own virtual private network with uncompromised security and privacy. In the event of an incident, new temporary operational groups can be formed as with full communications functionality.

With shared radio networks, the efficiency and reliability of all public safety organisations can be significantly improved and the costs for society will be lower – there is no need for overlapping radio communications services.

Trunked radio communications – supporting operations
The world of public safety and security presents the toughest challenge for any Professional Mobile Radio network.

The communication system needs to be robust and capable; providing sophisticated yet easy to use functions in the most rugged of environments, and contribute to the safety and efficiency of field personnel. The availability of the

service has to be very high – conventional commercial mobile communications services cannot provide a dedicated service with call priorities.

Advanced communication features, such as group communications, immediate push-to-talk, dispatching functions to support operational management and the high availability offered by a dedicated network, give organisations the power to work the way they want to. With all police and emergency radio users linked via a common technology and frequency band, efficiency and safety improves, as personnel are organised to suit the way the organisation wants to work, instead of being restricted by what the technology allows.

Efficient channel allocation
In a trunked radio system such as TETRA, the radio channels are in a common pool and the TETRA system automatically allocates them to radio users at the start of each call – the user does not need to know what channel they are using. This automatic channel allocation from a common pool is called trunking and systems using this method are called trunked mobile radio systems. Channel allocation with TETRA is far more efficient than in GSM networks, which results in a more cost-effective network.

A new communications reliability
In most Public Safety organisations around the world, communication is a hot item – in many countries old equipment must be renewed during the next few years. The change from conventional analogue to intelligent digital radio networks is a big one, involving both technical and financial complexity, especially for the users.

In the future, it will not simply be a question of communications within one country but also between authorities across the border. In Europe particularly, all the national developments are heavily influenced by the need for a standard solution for all European Public Safety organisations.