

Telekom subsidiary has won 17 Tetra projects in Germany

T-Systems is well-positioned for digital radio in Germany

TETRA (terrestrial trunked radio) is taking off. According to the global umbrella organization, the TETRA Association, the technology is witnessing an important impetus worldwide. This is the third year in a row that the association, which includes manufacturers, application service providers and telecommunications companies, etc., has registered a growth rate of over 10 percent regarding the number of newly signed contracts. The Deutsche Telekom subsidiary T-Systems is also benefiting from this trend. The ICT industry leader in Germany has won 17 Tetra digital radio contracts in its home country.

T-Systems provides the digital radio solution to public service providers and industrial enterprises. But the business customer unit of Deutsche Telekom also plans and sets up the network infrastructure and implements the systems for German public transportation providers. "The large number of Tetra contracts we've won highlights our experience in the professional PMR market," says Axel Birkholz, who is responsible for strategic projects with the public sector at T-Systems. "Therefore, we're also perfectly positioned for the introduction of the digital TETRA police radio network in Germany."

There is a good reason why many industries switch to TETRA.

"Frequency resources have their limits, and analog systems that have grown over the decades can no longer be easily expanded since this technology is not being developed further," explains Christian Broß, Tetra specialist for business customers at T-Systems. So, it is not a surprise that many companies rely on future-ready and investment-safe technology. This digital radio solution has advantages over analog PMR technology and public mobile communications networks. Employees are able to communicate securely in closed groups. At the same time, voice

and data can be transmitted simultaneously. Another advantage of TETRA is the fast establishment of call connections and the high voice quality. With just the push of a button, over 1,000 users can be addressed at the same time within a group call.

The TETRA technology provides up to 4 radio channels for each frequency and enables stable network service, even if an extremely high amount of data is being transferred. Important calls can be prioritized, i.e., they have the right of way over less critical information on the radio network. This means that companies do not have to rely on public radio networks, especially in emergency situations.

TETRA in public transportation

Aside from the security authorities, public transportation companies are the most important market segment for TETRA solutions. The technology enables companies to effectively manage their operations, save costs and improve quality for passengers. There is a great number of applications available for public transportation providers. These include voice and data communication services for vehicles, operation control systems, fleet management, positioning services and e-ticketing. These examples of T-Systems projects show that the technology is becoming increasingly important in the public transportation sector.

The Berlin Transportation Company (BVG) is the third-largest public transportation provider in Europe. They employ a TETRA radio network for their new subway systems that spans a total length of 93 miles of tracks and includes 190 subway stations. The TETRA system, which was provided by T-Systems ready to use, delivers redundant radio coverage under and above ground for 600 walkie-talkies and around 1,200 radio installations on subway trains.

They also employ a central server with 30 operating stations at the BVG control centers to manage operations. There is also a special positioning system that increases passenger and personnel security. The new digital radio system enables the BVG to accelerate processes for both operation control and operation maintenance.

The Cologne Transportation Company (KVB) has been using a digital terrestrial trunked network that runs on the basis of TETRA since 2005. The company equipped all 650 buses and trains with standardized on-board computers and digital radio technology that is connected via the KVB's TETRA network to the central computer at the control center. The public transportation provider also uses 1,000 walkie-talkies. The KVB's TETRA system covers the entire metropolitan area of Cologne with twelve base stations. The company also uses some 40 repeaters for tunnel coverage.

The business customer unit of Deutsche Telekom is currently installing the digital radio technology in the Nuremberg subway system for VAG (Verkehrs-Aktiengesellschaft Nürnberg). The TETRA solution integrates a central office, four base stations and around 34 repeaters. This provides full radio coverage of the tunnels. In addition to 600 walkie-talkies, more than 110 vehicles will be equipped with TETRA technology.

Shared use of TETRA radio networks and IT systems for operation management by multiple public transportation companies (infrastructure sharing) will become increasingly important in the future. T-Systems is currently implementing an initial project in the Ruhr region of Germany.

Providing service to different industries

In addition to its offer for the public transportation sector, T-Systems also offers the digital trunked radio solution to companies such as stadium operators and trade fair companies, (air)ports, public utility providers and industrial enterprises. For example, the Allianz Arena in Munich secures radio communication for the entire stadium, four parking structures, the esplanade and the outside areas with a TETRA-based solution. The TETRA system uses around 150 end-devices to secure radio communication during major sporting events.

In 2004, the chemicals company Degussa also set up a cross-company TETRA network for its location in Rheinfelden, Germany. In the neighboring city of Grenzach, the chemicals company DSM decided to set up a TETRA network as well. The companies were able to save costs by

connecting the two TETRA networks. This enables employees from production, logistics, security companies and the fire department to optimize their operating processes with over 200 radio communication devices.

For the 2006 FIFA World Cup Germany™, the Organising Committee (OC) commissioned T-Systems to set up and operate a digital radio network for all twelve FIFA stadiums. The business customer unit of Deutsche Telekom provided all of the stadiums, the OC 2006 FIFA World Cup™ headquarters in Berlin and in Frankfurt and the International Broadcast Center (IBC) in Munich with the TETRA digital radio standard. From May 22 through July 16, the members of the Organising Committee as well as private security forces and stadium managers used the digital radio technology on over 2,000 radio communication devices. The police department of the city of Hamburg also decided to test out the digital radio technology during the World Cup. The Hanseatic city also decided to go with T-Systems.

For the papal visit to Bavaria on September 9-14, T-Systems set up TETRA networks at the various locations where the services were scheduled. The organizers were able to use these to communicate during the event without interruptions and independently of the public mobile network.

T-Systems has been awarded 17 TETRA projects throughout Germany, four of which for major events. Most of these projects have come from the transport & traffic, industry and public service market segments.

The TETRA digital radio standard

TETRA (TERrestrial TRunked RAdio) is the digital trunked radio standard that was developed by the ETSI (European Telecommunications Standards Institute) in cooperation with users, manufacturers, network providers and regulators. Currently more than 1,000 TETRA systems are being employed in over 85 countries worldwide.

TETRA offers numerous features that traditional, analog private mobile radio (PMR) does not provide. Something especially noteworthy is the fact that it is tap-proof. This is accomplished by exclusively allocating a radio channel for the duration of the connection and by encryption of the air interface. Both group communication and individual connections similar to wireless telephony between users can be established in less than one second. Possibilities for data transmission such as status reports, short data transmission (such as SMS) and database queries via IP Protocol round off the offer. Effective use of the frequency spectrum (380–430 MHz) combined with emergency call prioritization secures radio communication even in stressful, high-volume emergency situations. A wide variety of sturdy radio communication devices by various manufacturers can be used thanks to a public air interface in the TETRA networks. These devices have been designed to withstand the tough daily activities of task forces. TETRA end-devices also include a surrounding noise suppression feature that enables users to communicate even in extremely noisy environments.

The TETRA system's public, standardized interfaces make for easy integration of voice and data applications and create an ideal platform for customer-specific mobile communications solutions, especially for users with high security demands.

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