

key touch[®]

A photograph of two men in construction safety gear. The man in the foreground is wearing a white hard hat, a dark jacket, and a bright yellow high-visibility vest. He is holding a tablet computer. The man behind him is wearing a black beanie and a similar high-visibility vest. They are both looking at the tablet. The background is a blurred construction site.

customer magazine
1/2016

Top PTT tips for
professionals

Use fewer frequencies
with Tetrapol

First steps on road to broadband

WHO'S IN THIS ISSUE?

Want to know a little more about some of the experts who contribute to Key Touch? Look no further.



JOUNI KEMPPAINEN's life-long interests have been in computers and technology and he now also focuses on IT, global trends and new media. During his free time, Jouni is into hunting, fishing and photography.



SATU LAMBERG has worked in TETRA terminals marketing right through the evolution from Nokia to Airbus. "The company name may have changed, but users have always (and still do) need reliable radios," she says.



TIINA SAARISTO, the long-time Editor-in-Chief believes in sharing information. "Writing for the magazine resembles my favourite hobby, quilting, where small pieces are sewn together to create a fascinating result," she says. @tiinasaaristo



PÄIVI LAAKSO-KUIVALAINEN Päivi Laakso-Kuivalainen is Senior Editor for Key Touch, and is keen to see things from end-user's viewpoint. In her free time she enjoys skiing, orienteering and other outdoor activities. @lkpaivi



TAPIO MÄKINEN has the mission to create marketing and photographic contents for the security of all. He has undertaken photoshoots for Key Touch Magazine and Airbus Defence and Space to capture events, products, sports, professionals at work, city views and critical infrastructure. @tapiomobile



JEAN-MICHEL DUMAZERT juggles his time between work, family, scuba diving and being a local councillor. His packed schedule includes also contributing to Key Touch as Tetrapol correspondent.

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Plans put into practice



PLANS FOR THE FUTURE of PMR networks are moving ahead rapidly and this issue of Key Touch reveals many of these plans in action. There are examples of the current state and future plans of public safety communications, and the plans send out a very positive message - we are using our reliable networks, we are working together, we are making plans for the future and keeping our societies safe.

Other articles in this issue look at how operators are upgrading their networks. A key solution in several of these plans is Tactilon® Suite, for controlling security, subscribers and services.

This issue also has a strong practical flavor. In one article, we help you compare push-to-talk applications, showing the important factors to consider. Adopting a PTT app can also be a smart step towards the future when one makes use of the current, smart systems for critical communication users. Practical advice is also given in the Tetrapol Simulcast –article which explains how it is possible to use fewer frequencies. Using one frequency across multiple cells cuts costs and delivers better mobility for users in Tetrapol networks.

We present practical tips for PMR use in healthcare from a hospital communications veteran, while practical experience of upgrading a live network in Hong Kong is also shared. Another story features our pilot customers in Germany, who are adopting TETRA software release 7.1 and the DXTA Server.

Articles about the Taqto® smart device manager and the P8GR active TETRA pager, a highly convenient tool for dispatchers too, show how you can make operations quicker and more efficient. We also dispel some myths around radio power and ask “are more than 1 W handheld radios really necessary?” A new infographic gives you the answer.

“Eight things you can see with your TH1n and TH9” explains the host of important information available in your PMR radio. This should help those already using their radios, as well as those who are considering what kind of radio to buy.

We hope you find this edition of Key Touch useful in your everyday operations as well as an inspiration as you plan the future of your network.

A handwritten signature in black ink, appearing to be 'Olivier Koczan', written over a horizontal line.

Olivier Koczan
Vice-president
Head of Secure Land Communications

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Using one frequency across multiple cells cuts costs and delivers better mobility for users.

Five (+1) steps to TETRA

– the hospital expert's view

Using TETRA in hospitals can bring great benefits. But how do you go about it? Tomi Pekkonen, Manager for Social and Healthcare VIRVE network, Hospital district of Helsinki and Uusimaa (Finland), gives us his top tips.

In many countries, hospitals still use commercial networks for their crucial communications, even when a reliable TETRA service is available. Many would like to take advantage of TETRA, but don't know where to start.

We interview Mr. Tomi Pekkonen of the Hospital district of Helsinki and Uusimaa (Finland), whose daily responsibilities revolve around hospitals and their TETRA projects. He gives us his 5+1 tips, the crucial steps to take when introducing TETRA to hospitals.

Step 0 Have you got indoor coverage?

Check the indoor coverage throughout the area where you intend to employ the TETRA network. This needs to be tested with the same radios that your staff will be using.

1 Know your users' needs

User needs are an important starting point and all the different user groups in the hospital need to clarify them. An example was a team that needed to be called out from home, but did not get the message due to a failure in a commercial network. Unfortunately, as a result of this, a patient almost died, encouraging the hospital to look seriously at introducing the use of VIRVE.

Typically, when clarifying these needs, you should involve users from the different departments who will use the network, as well as IT/telecoms staff, the head of security and a senior physician.

2 Make a plan and put it into effect

Plan the processes, groups, status messages and other communication tools your staff will use. All the needed groups are configured into radios and are then delivered to the hospital.

3 Choose radios to suit your environment

Pekkonen explains that in the hospital environment, it is crucial that the radio is not too big. Hospital staff often carry their radios in their pockets without any special carrying solutions and so prefer a small, slim radio. According to Pekkonen, the introduction of the small TH1n TETRA radio has increased interest in TETRA in hospitals and all the radios in his current projects are TH1n radios.

4 Train your users

Users will benefit from simple, practical training, which takes into account that they might



Tommi Pekkonen ja Head Nurse Jukka Tiitola (Pohjois-Kymä Hospital) discuss communication possibilities in hospital environment.

have very limited or no previous experience with group-based radio communication. As Pekkonen says: "First users need to be told that this is a phone, nothing dangerous." This means that the same training for police officers or firefighters may not work for hospital staff. As a result of the training, the users should have the confidence to use the phone, supported by a simple, practical guidebook or poster.

5 Carry out a pilot scheme

Depending on the organisation's own wishes, it is possible to do a three to six month pilot scheme and collect and review feedback. Any changes needed can be implemented during the pilot. Another option is to start without a pilot period. In this case, it is also important to collect feedback and act on changes needed. Following this, the normal maintenance phase can begin.

Long-term development helps

Ideally, the education of hospital staff should include basic communication training with radios. This is a good starting point, because in the long term it means that hospitals will have personnel who have knowledge of and practice with radio communications.

The decision making and governing structures also need to be clarified. In particular, you should decide which responsibilities lie with the different parties, such as:

- TETRA operator
- Ministry of Health
- Hospital districts
- Single hospitals
- Other possible governing structures

To clarify these relationships has taken some time in Finland, says Pekkonen, but now that they are in place, it makes the introduction of TETRA into new areas much quicker and much more efficient.

Fewer steps needed

Pekkonen mentions some practical benefits cited by the users of TETRA in hospitals, principally that less time and fewer steps are needed to do their work. An example is that alerting a trauma team now takes seconds compared to the 15 minutes it can take to call them separately over a GSM network. Also, the reliability of the network is a great improvement compared to previous solutions.

Following these steps and ensuring you back them up with a defined management structure will ensure you can bring the benefits of TETRA into your hospital smoothly and efficiently.

Corporates drive VIRVE subscribers to 35,000



Corporate clients from the commerce and transport sectors have pushed the number of users of the Finnish VIRVE TETRA network to 35,000, a growth of 3.5% over the last 12 months.

The biggest growth came from energy, broadcasting, security, metropolitan area public transport (metro, buses, trams), shopping centers, transport hubs and other mission-critical organisations. These already represent around 10% of VIRVE subscribers.

Future growth is expected to come from railways, the social and health sector (hospitals and others) and the non-authority mission-critical sector.

To better serve both its current users and appeal to potential customers, the Finnish network is undergoing a modernization programme as well as a '5 steps to broadband' strategy. See the VIRVE MVNO story on pages 20-21 of this Key Touch.



When you're facing multiple emergencies in appalling weather, it's good to know you can rely on your friends.

Late autumn, western Finnish Lapland. Floods are making several roads impassable. The emergency and rescue services are dealing with multiple incidents and accidents.

Piling on the pressure, a major accident occurs at the Agnico Eagle gold mine in Kiistala, while a serious road traffic accident also leaves several people injured. Stretched to their limit, the Finnish authorities take the decision to call in help from their partners in Norway, Russia and Sweden.

Fortunately, the above events were not real but part of a large scale training exercise, Barents Rescue 2015, conducted by the four countries in Kittilä, Finland. Held every two years, the 2013 exercise was hosted by Norway, while the 2017 event will take place in Russia.

Involving some 550 operational employees, the aim of the exercise



Rescue from four quarters

was to practice rescuers, medical professionals, volunteers and other participants in working side-by-side in challenging conditions.

Training focuses on testing the host country on its arrangements for incoming rescue personnel

in the Barents region, combining people and assets from the four partner countries into a single integrated force that can deal with whatever is thrown at it.

The exercise also featured an exhibition where participants

were able to see the different tools which could help them in this scenario. Communication is of course a key to successful cooperation and thus TETRA radios received a lot of attention.



Meticulous planning brings **upgrade success for Hong Kong Police**

How Hong Kong Police achieved a record-breaking
3 in 1 upgrade of its TETRA network.



Three words sum up what's needed to mitigate a live mission-critical radio network without causing unacceptable disruption – planning, planning, planning.

That was the major lesson learned by Hong Kong Police when it sought to upgrade a TETRA network that had been in use since 1999.



Dr. Jolly Wong, Chief Technology Officer of Hong Kong Police emphasized the importance of planning to a successful outcome: "It is always a challenge to upgrade a network in operational use. The project needs to be planned carefully so that the interruption to services is as short as possible. Also, planning must take into account how all the new features will be taken into use, so co-operation is also crucial."

Dr. Wong regards the project as a perfect example of success created through close co-operation between customer and vendor.

"Effort was required to plan ahead and execute the upgrade, mitigate the risk and monitor the post-implementation system performance," Dr. Wong explains.

Three upgrades in one shot

Perhaps the greatest achievement of the planning process was to enable the TETRA network to undergo three consecutive upgrades within the space of only three months. The network is based on Airbus Defence and Space's MRCS/CRS hardware platform and Hong Kong Police wanted to upgrade it to the latest software version, Release 6.0.

With planning commencing in 2013, careful orchestration between the customer and Airbus Hong Kong allowed for a seamless transition of the network in three phases. Phase 1 covered the upgrade from Release 4.1 to Release 5.0, Phase 2 handled the transition from Release 5.0 to Release 5.5 and Phase 3 covered from Release 5.5 to Release 6.0.



Dr. Jolly Wong, Chief Technology Officer of Hong Kong Police

"This was a record breaking exercise, with three consecutive upgrades of legacy system hardware accomplished within three months without compromising Hong Kong Police Force's operational needs," says Dr. Wong, emphasizing again that none of this could be achieved without the most careful planning. He also stated that the user experience is the most important factor.

A more sustainable network

The upgrade project revitalized the network, enabling more effective support by Airbus. This in turn helped achieve a sustainable operation, enhanced the system's performance and enabled effective operation and system maintenance. Dr. Wong is particularly satisfied with the last but certainly not the least of the benefits: "The project instituted a culture of coordination and collaboration amongst all stakeholders, uniting them in a shared mission to deliver high quality mission-critical radio communications services."

A Finnish ship will use its own TETRA network to help rescue migrants from small boats in the Mediterranean.

The migration crisis facing Europe has seen hundreds of thousands of people trying to reach EU countries, many of them attempting the perilous crossing of the Mediterranean in small, often unseaworthy, vessels. To try and prevent the ef-

fects of this growing humanitarian crisis, the EU has launched Operation Poseidon Sea in the Eastern Mediterranean.

Finland is contributing to these efforts by sending its offshore patrol vessel (OPV) *Merikarhu* (Sea bear) and accompanying personnel. In ad-

“Sea bear” to secure EU’s external borders

dition to OPV Finland is contributing to Frontex coordinated joint operations in the Eastern Mediterranean Sea by a new 08 -type of coastal patrol boat (CPB) from October 2015 to the end of February 2016.

While preparing for this task, *Merikarhu*'s crew member Lieutenant Senior Grade Jere Purhonen from the Finnish Border Guards explained the challenges facing him and rest of the crew.

Night vigil

Illegal immigrants most often attempt to cross at night, and while on patrol in darkness, the crew of the *Merikarhu* will either get a tip from Greece's border guards or receive an alarm from their ship's control systems. Launching its own small boats, these will spread out to look for the suspected migrant vessels. Depending on what happens, *Merikarhu* will support the smaller boats and transport people suspected of illegal immigration to Greece and hand them over to Greek officials.

A sea-going TETRA network

During these nightly duties, it is vital that the small boats can rely on their communication with the mother vessel. To ensure the safety of person-

nel as well as efficient operations, *Merikarhu* has been equipped with a standalone TETRA system from Airbus Defence and Space. "This way we can increase the reliability of our communications", says Lieutenant Senior Grade Purhonen. Communications are achieved both with mobile, fixed TETRA radios in the boats and also with handheld radios.

TETRA was the obvious choice, since the crew of the *Merikarhu* is familiar with Finland's VIRVE public safety network. Some of the same processes used in the Baltic Sea can be re-used in the Mediterranean.

The officers in the boats can therefore rest assured that they have reliable communications – whether they meet illegal immigrants in need of help or the aggressive criminals who exploit them.





No fear for parking attendants

With a new alarm solution using the Airbus TH1n radio, parking attendants in the Danish municipality of Frederiksberg can now feel more secure.

Parking attendants are often not the most popular of public employees and can come in for some harassment and abuse from angry motorists. This was a problem in the Danish municipality of Frederiksberg, a part of Copenhagen.

Until recently, GSM-based alarm units have been used. The problem was that the operator on duty was often unable to locate the parking attendant. When it comes to personal attack alarms, it is obviously crucial to know where the harassed parking attendant is located.

Push one button to get help

This problem was solved using a TETRA based location solution from IHM. When a parking attendant activates the red alarm button on their small, new Airbus TH1n radio, a free line to the

control centre is opened. The GPS position of the parking attendant is shown on the monitors in the control centre, while the operator on duty can hear what is going on.

Safer working together

Another important missing feature was group communication. The operator on duty or the parking attendants' manager often needs to give information to all parking attendants simultaneously. This is now possible with the new solution.

"This group communication is very time saving and gives confidence to the parking attendants that they have all been informed," says Kim Soerensen, parking attendant manager.

SINE RADIO NETWORK

SINE is the Danish nationwide radio network offering telecommunication services based on the TETRA technology and is mandatory for all emergency services in Denmark.



PARKING IN FREDERIKSBERG KOMMUNE

In Frederiksberg, 17 parking attendants work shifts to provide parking enforcement 24 hours a day.

From 1st April 2015, Frederiksberg Kommune is one parking zone, allowing free parking for two hours on all public roads.

Parking for more than two hours requires the purchase of a parking license or a parking ticket.



FREDERIKSBERG FACTS:

- It is the smallest municipality in Denmark in terms of area, is the fifth most populous and the most densely populated.
- It is often considered to be part of Copenhagen.
- Copenhagen Zoo is located in Frederiksberg.



IHM is one of Denmark's leading producers of solutions and equipment for tele- and radio communications. We deliver equipment within three product lines i.e. Public Safety, Public Transport and Maritime & Offshore and our customers operate in Denmark and all over the world. Please contact us to learn more about our unique solutions or visit ihm.dk

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"The parking attendants may also make group calls between each other, improving their co-operation and efficiency," says Joergen Smedegaard, a head of the networking group of parking attendants. The municipality of Frederiksberg is the first in Denmark to use an alarm solution based on the nationwide SINE

net and has gained very good experience with its new system.

"I recommend our new alarm system to many of my colleagues and other professionals. The system works very well, and gives comfort and stability," adds Smedegaard.

EIGHT THINGS

you can see with your TH1n and TH9

Radio is mostly an audible medium, but it does have an important visual aspect as well. Here, we outline eight 'things' you can see on, or with, your radio.

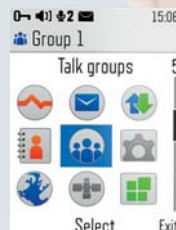
1 LARGE, CLEAR AND BRIGHT DISPLAY

The QVGA full-color display of the THR9i is the largest and sharpest on the TETRA market. With its 2 inch size, up to 262,144 colours and 240 x 320 pixels, the display is bright and clear, providing the perfect user experience whatever the light conditions. The display can be automatically switched on or off depending on the carrying profile, which is automatically controlled by smart holder accessories to save battery life when you don't need to read the display.



2 MAKE YOUR OWN MENU

A major visual aspect of your radio is the ability to easily personalise your menu list, selecting only those main and sub-menus most suited to your work. Your organization's maintenance staff can program the radio to simplify or minimise the number of menus, making your radio more usable and saving time. It's possible to hide all the main menus or show them all. It also improves your safety, as you don't get lost in settings you don't need and can give more attention to your real operational task.



3 CHECK YOUR RADIO MODE AT A GLANCE

When you're in the thick of the action, you don't always have time to read your radio's display - you just want to take a peek to see if you

are in Network Mode or Direct Mode.

Different colors make it immediately obvious whether you're in Network Mode (TMO) or Direct Mode (DMO) - dark blue on the talk group area shows you are in Network Mode, while light blue indicates Direct Mode.

Network indication bars are visible only in Network mode and disappear in Direct mode. So simple, yet so clear!



4 SEE WHERE YOUR TEAM MEMBERS ARE AND SHARE YOUR POSITION WITH THEM

The 'Where are you' feature is a great benefit - and a standard

feature ready to be used right-away, even in direct mode. You can see on your radio display the distance and direction to your team members each time they press the PTT button, telling you if additional resources are nearby, or how far away your nearest colleague is. Your position is also shared with your colleagues when you press your PTT. You can even see the most recent status messages for an instant update.

The 'Where are you' feature is based on GPS functionality, so both sending and receiving radios must have a GPS fix. The position coordinates are shared in the traffic channel, which means no extra load in the control channel - it gets through even in high load hours and operators love it.

If you want to save the position of your colleague as a waypoint for later use, you can do it with a single press of one of the number keys.



CONTINUES ON NEXT PAGE

5 POINT YOUR WAY

Integrated GPS or GNSS in your radio enables you to see your position and coordinates on the screen. You can save position data as a waypoint, simply by pressing 'Save' when GPS data is displayed. You can share your waypoint with your colleagues by sending it as a text message. When you receive a waypoint and you need to find the location, your radio will guide you there. Simply open the Waypoint Guidance navigation app and it shows you the direction and distance to the location, which you can see on the display.



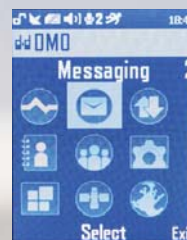
**60°13'12.6"N
24°52'12.5"E**

6 NIGHT VISION FOR THE NIGHT SHIFT

Working at night or in darkness brings additional requirements for the radio. Can you see all the information on the screen clearly?

Are the text and icons easily readable? Or is the display too bright for your eyes compared to the darkness around you?

Luckily you can easily activate the Night Vision feature to change the display to darker and less aggressive colours. The brightness of the display is also optimised to make it more comfortable to look at.



7 MESSAGING AS QUICK AS A FLASH

For quick text messaging, you can send and receive Flash messages as they appear

directly on the display. Start reading the message without pressing any key - you can even send a Flash message to a talk group to reach many users instantly.

Only TETRA radios from Airbus Defence and Space offer the Flash message function.



8 GET MORE WITH JAVA APPLICATIONS

Need to take manuals, time-tables, converters, dictionaries or address books with you into the field? Airbus radios offer Java™ support

so you have access to all your information without the need to carry heavy books. Your radio enables your organisation to download tailored applications to your radio, even over the air. Whether your task requires database queries, task dispatching or field reporting, you can do it all with your radio.

If you don't need a Java application today, you may well do tomorrow. With a radio from Airbus Defence and Space, you are well prepared for the future, since they are the only TETRA radios on the market that support Java. They offer you more than you can imagine.



Airports across the globe rely on PMR from Airbus

Every year, more than

600 million

passengers travel through airports that rely on Airbus Defence and Space PMR products.

Airbus PMR solutions are used at:

All the
top 5
airports in China

2 of the
top 5
European airports

The **biggest**
airports
in Middle East

What kind of solution would suit your airport? Read more
<http://www.securelandcommunications.com/airport-customers>

PICTURE THIS

DID YOU KNOW... your radio is also a repeater?

Do you sometimes need a repeater to extend your radio coverage? Did you know your TETRA radio from Airbus Defence and Space can actually operate as a DMO repeater device? All you need is a specific Repeater License that lets you activate the function in your radio. You can then use your radio as a repeater whenever and wherever you need it.

Using your radio as a repeater is simplicity itself. Just turn on the repeater

mode with a single long press of a functional number key or in the traditional way through the menu. Once the radio is in repeater mode, it sends a presence signal on a particular frequency. Other radios on the same frequency then connect to the repeater.

The radios support the following communication services through the repeater:

- Individual calls
- Group calls
- Status messages
- AIE and E2EE
- Enabling TX inhibit will stop transmission but the radio remains in repeater mode

VIRVE taking **first** steps on road to broadband

With the first step taken In January 2016, Finland and VIRVE have set out on a road that will see them complete a hybrid network.

Finland is looking to the future and planning how to get the most benefit from a network that will increasingly provide high speed data facilities to its users. The Finnish national TETRA network and its operator, State Security Networks Group, are proceeding with their five step plan for public safety broadband.

The plan looks ahead to the modern, hybrid network that will meet users' needs for a reliable and secure VIRVE service for years to come.

Setting up an MVNO and using commercial broadband

Step one of the plan is to set up a mobile virtual network operator (MVNO) to meet the increased data requirements of users. This has been achieved by supporting the provisioning of users on a broadband network, initially through externally purchased SIM cards. The first SIM cards



were delivered to first MVNO customers in January 2016.

The next phase will be to own and control subscribers in the LTE core.

Reliable operator brings broadband benefits

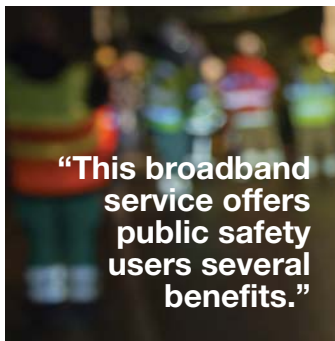
Antti Kauppinen, from State Security Networks explains: "This broadband service, which customers can buy from the same reliable, state-owned operator, offers public safety users several benefits."

One of the main benefits is that a reliable operator is handling their subscriber data. The operator can use the same TacTilon® Suite tool for managing all subscribers, both TETRA and broadband. Another benefit is that two networks will be in use, one commercial operator on the normal LTE frequency bands and one on the less common LTE band 450 MHz. Two networks bring better availability. Automatic encryption is also included in the package.

Bringing state agencies together

A common term they are using is "improving situational awareness". Currently in Finland, there is a project to introduce a joint

field-command system for different state authorities such as police, fire, rescue, customs, frontier guards and defence. For example, this field command tool could take advantage of the broadband service that State Security Networks is offering.



A wide range of devices

Service is not limited to any particular type of device. Antti Kauppinen from State Security Networks estimates that devices used could be anything from

PDAs to laptop computers. It all depends on customer needs and different user groups will use different devices.

It's clear that the Finnish TETRA operator is making concrete steps to realise its plans.

In step two, critical voice and messages will run in the narrow-band network, with high-speed non-critical (but secure) data running in the commercial broadband network.

By offering customers multiple services to meet their needs, State Security Networks ensures it has a path by which to reach its goals. When broadband services develop the required features as well as the required reliability and security, the different services can be merged.



Learn more:

Download Whitepaper "How hybrid networks bring mobile broadband to public safety communications"

Push-to-talk is invaluable to the busy professional user but there is more to this useful function than meets the eye.

Essential Push-to-talk

– top PTT tips for professionals

As many public safety organisations think about how they could use broadband, some important questions naturally arise. Which capabilities are really useful in practice? How can new functions be deployed to the best effect? When selecting a PTT app, what other capabilities could be important for users?

One exciting capability high on the list is TETRA push-to-talk (PTT) for smartphones, enabled by the Tactilon Suite TSA app.

Here are the top four ways to use PTT and associated non-voice functions:

1

Talk to a group easily

Push-to-talk means that the speaker presses and holds the PTT key to talk to the group. But what if several people want to speak at once? In the TSA app, the user presses and holds the PTT key and waits for their turn. They simply stay in the queue as long as they keep the key pressed.

The TSA app also lets a user or a dispatcher make a broadcast call, a quick way to make an announcement to everyone in a group.



Full-screen push-to-talk button

2

One-to-one calls

The Tactilon Suite TSA app delivers more than just PTT to a group. For example, it also lets the user talk to a single person, offering normal duplex calls or walky-talky type semi-duplex calls. What's more, the TSA app invites the user to a group call from a current individual call, ensuring it is not missed.

It is also possible to make a direct individual call. Simply select the person's name or number and press PTT. The person getting the direct call will instantly hear what is said.

3

Emergency calls

Pressing the red emergency button in the TSA app starts an emergency call, potentially helping save a life. Here are just three examples of the power of the emergency call in the Tactilon Suite TSA app:

- The user does not have to select the recipient of the emergency call – it is defined in the system. Users can all have the same or different recipients.
- The emergency call can be either an individual call between the person in distress and the dispatcher, or another radio user, or a group call.
- Thirdly, there are safeguards. To make sure all emergency calls are answered, the call can have up to three possible recipients. If the first choice does not answer, the system will automatically route the call to other choices.

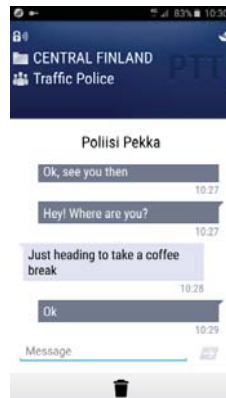


4

Rapid updates with text and status messages

The Tactilon Suite TSA app also allows users to send text messages, which can also be sent to a group. The app uses the text messages as a “data pipe” for tracking the position of the device. A patented mechanism in the system minimizes the load due to these messages. The location of devices, tracked with the help of these messages, can be shown on the screen of a dispatching application.

Status messages are preset text messages such as “on duty,” “task taken” and “at destination,” that a person can send quickly. It is much faster to update one's status with a quick press of a key than by calling in and describing the situation.



Text messages in the TSA app



Status messages in the TSA app

The Tactilon Suite TSA app takes the concept of Push-to-talk to new levels, using it to bring a world of convenience, speed and safety to professional users.



Read more about
the Tactilon Suite TSA app

Taqto 2

- the smart way to manage your devices

User devices are supplied empty of all content. With Taqto 2, you have a quick and easy way to commission them and keep them updated throughout their lives.

Time is an increasingly precious resource in all our daily work. One way to save time, and therefore money, is the Taqto® smart device management solution. Taqto is an advanced, secure and scalable solution for radio deployment and upgrades, simplifying the roll-out of the whole range of radios from Airbus Defence and Space. Taqto allows quick and efficient management of a large installed terminal base.

One solution, four uses

Taqto 2 is a full, total device management solution for PMR organisations. Its four major uses are installing new software and upgrades, setting parameters into devices, subscriber configuration management and app and content management.

Easy for users

Taqto will also make life easier for users in the field. Instead of sending radios to a central service point for an update, upgrades can be carried out locally, close to their actual place of use. The client application connects the terminals to Taqto and starts updating or upgrading radios with a pending update.

Easy to use

Using Taqto, updating and re-configuring radios is easy. With a single action, the radio fleet manager can assign a software update and a set of new parameters to as many terminals as necessary and follow the progress of the update from his workstation.

Keeps track

The central database stores update information on each radio, allowing the radio fleet manager to check the status of all the radios.

A hand-portable radio connects through a specific connectivity kit, while mobile and data radios are connected via cable.



Secures your data

Taqto secures the integrity of critical radio and user information. Only authorised users can view and edit information and assign new updates to radios. It also authenticates every radio connected to the system and secures the executed radio programming tasks. Data flow between the server and clients is performed using secured and authenticated IP connections based on SSL protocol.

Mass provisioning of a huge fleet

You can add multiple terminals from a terminal data file that is delivered by e-mail. This can save a great deal of time when a series of terminals are to brought into use.

In short – Taqto can save you money

Overall, Taqto provides a transparent way to manage terminals in the deployment phase and throughout their lifetime, cutting maintenance costs and maximizing convenience for users and administrators alike.



TETRA+LTE message in Beijing

Around 30 Chinese metro as well as many other customers saw Airbus SLC China present its latest radio solutions at the TETRA+LTE Forum and Urban Rail TETRA+LTE Workshop in Beijing recently.

Organized by the TCCA China Society, a total of 70 participants from across the industry attended, including governments, regulatory bodies, operators and end user organizations such as China SRC, B-TranC, Justtop, Shanghai Telecom and Qingdao Police.

Many of the major suppliers such as Motorola, Hytera, Huawei, ZTE and Protievora also attended, giving the chance to exchange information and learn about the latest developments in the industry.

Two of the messages that interested customers were that the SLC system can interconnect with the Motorola system and that SLC promises a long term development and quality guarantee for the Airbus offering.

An important pilot project in the energy sector for modern digital radio system

LEW TelNet has become the first customer worldwide for the latest Airbus Defence and Space TETRA switching technology "DXTA".

Lechwerke AG is a regional energy supplier in Bavaria and parts of Baden-Württemberg in Germany.

Lechwerke's subsidiary LEW TelNet is a leading provider of data communication in the region with its private communications network in Bavarian Swabia and neighboring areas, as well as a broad portfolio of services. LEW TelNet GmbH provides enterprises with broadband Internet access services as well as other services like IT security, data center, site networking, network, telephony and mobile working. For municipalities, LEW TelNet provides concepts for the sustainable deployment of broadband networks. Lechwerke AG belongs to the RWE group.

LEW TelNet GmbH has awarded Airbus Defence and

Space a contract to modernise its digital security TETRA radio network. As a core element of the network, the DXTA exchange was ordered from Airbus Defence and Space following its debut at this year's PMRExpo trade fair in Cologne. The DXTA was delivered in December 2015.

With the DXTA, the entire LEW TelNet TETRA network is being brought up to the latest technical standards. Meanwhile, the existing TETRA technology is to be upgraded with the latest software release 7.0 with IP technology. Thus, LEW TelNet has become the world's first company to take the new TETRA exchange generation "DXTA" from Airbus Defence and Space.

LEW
TelNet





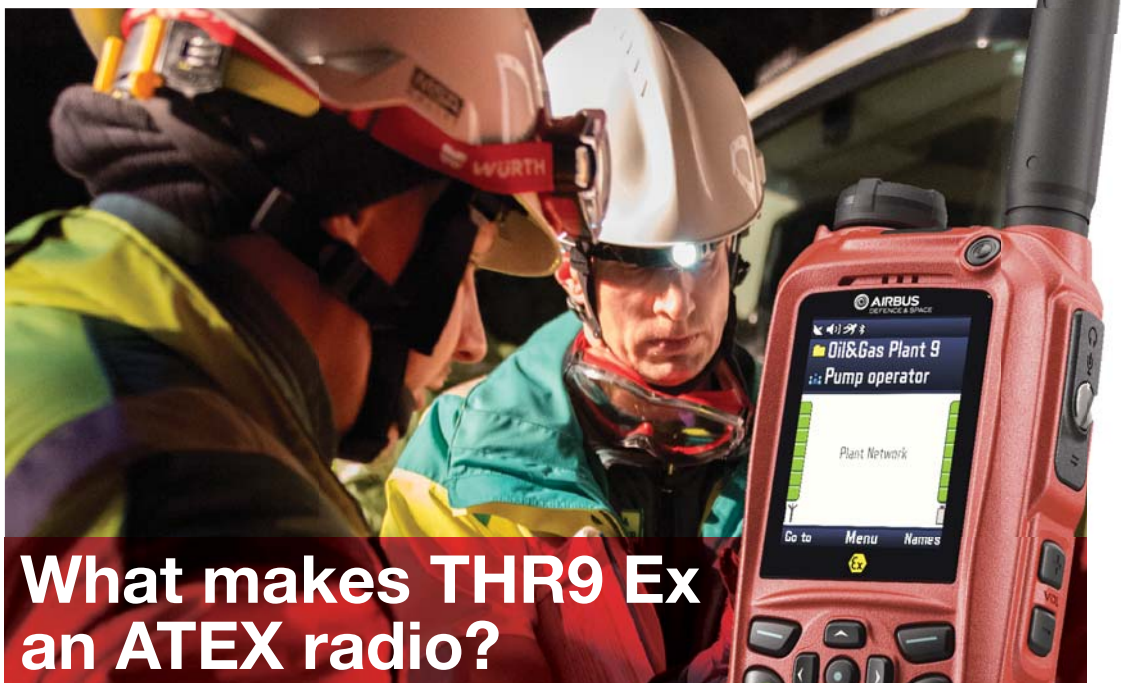
Vattenfall Europe Mining's TETRA digital radio network upgraded

**Important
reference project
in energy sector**

Airbus Defence and Space has recently modernized the company-wide digital TETRA radio network of Vattenfall Europe Mining in Lausitz / Cottbus. The core element of the network,

the existing switching equipment, was brought up to date by two new DXT3 exchanges. The network, consisting of 26 base station sites and used by about 3,000 participants, was built to be fully redundant. In addition, the exist-

ing TETRA network has been upgraded with the latest release 7.01. The Vattenfall site in eastern Germany is thus the world's first user of the new TETRA version from Airbus Defence and Space.



What makes THR9 Ex an ATEX radio?

Staff who work in areas prone to explosions, such as aircraft fuelling crews or oil refinery workers, need an intrinsically safe radio. Quite obvious you may say, but what exactly is it that makes a TETRA radio intrinsically safe and ATEX certified?

Like the TH9, the Airbus Defence and Space THR9 Ex is a fully featured radio, yet is also the most robust ATEX radio available. Protection to IP65 is not enough to meet the demands of an ATEX environment - additionally, special ATEX regulations (*) must be met to ensure that no sparking or overheating will occur under any conditions.

Careful, advanced design

To comply with these mandatory requirements, the THR9 Ex uses specially selected components. These include electronic barriers in the ra-

dio, enabling redundancy to cope with simultaneous related failures.

Potting material, like silicone gel, is used to encase some critical components to ensure a temperature distribution in the event of an internal short circuit. Special plastic materials have also been selected to avoid any electrostatic effect, while providing a perfect robustness to resist any fall or impact, even in extreme weather conditions.

Unique capabilities

Beyond the ATEX requirements, what makes the THR9 Ex truly special is that you can change the battery and the antenna inside the Ex area. Also, if you need to use an accessory, you can connect this while within the hazardous environment, or disconnect an accessory if you no longer need it. Only the THR9 Ex

from Airbus Defence and Space has this capability. It gives you freedom of use without any compromise to your safety.

The THR9 Ex provides the highest standard of intrinsically safe protection, while also having no restrictions on its use in ATEX areas.

THR9 Ex has been granted certification to prove its compliance with the ATEX and IEC-Ex standards

- II 2G Ex ib IIC T4 Gb for gas
- II 2D Ex ib IIC T135°C Db for dust

(*) THR9 Ex is also compliant with IEC-Ex standard

It's a dark night and you're on patrol alone, walking down a deserted alley in a neighborhood with a bad reputation. You wish there was someone with you to help if something bad happens.

Yet, you do have a trusted partner by your side, in the form of your radio and its advanced 'man down' feature known as Lifeguard.



Lifeguard

Activating the Lifeguard feature sends a status message to a pre-defined destination, like a dispatcher.

This alerts the dispatcher that you are working in a situation with increased risk and may call for help.

Lifeguard is then in self-controlling mode and if your radio stops moving or remains horizontal for too long, the radio initiates a "local alert" - it starts vibrating and the display blinks.

If everything is fine, you can just acknowledge the alert. But if you cannot respond the radio automatically makes an emergency call, sending GPS coordinates and emitting a tone to guide rescuers. All this is done by your TPH900 Tetrapol radio, your TH1n, or any of the THR9-series radios to keep you safe in the field. One day it could really save your life - don't accept anything less.

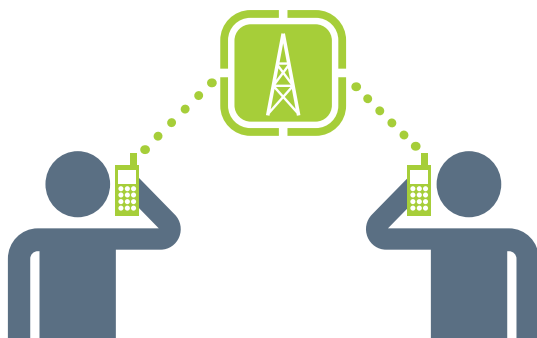
How your radio could save your life

SENSATIONAL RADIOS



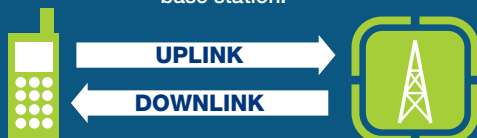
THE TRUTH ABOUT WATTS IN PMR RADIOS

Radio output power is a big consideration when specifying **walkie-talkie radios**. That's because they need the power to transmit and receive signals between radios without any network being involved.



But **PMR radios** work completely differently, making high output power far less significant. PMR radios only need to link to a nearby base station in the network – they simply don't need high power to punch through to another terminal directly. The only exception is when they are switched to Direct Mode (DMO), which is relatively rarely used in practice.

Communication between PMR radios and base stations is two-way. There is the downlink – transmission from the base station to the radio and the uplink – transmission from the radio to the base station.



The radio network planner must balance the uplink and downlink, because there is no benefit in one being stronger than the other.

The TETRA radio network usually provides coverage using base stations which transmit at 25 W power. Some vendors can set up 40 Watt base stations for sites that do not need to provide a lot of capacity.



Typical base station power

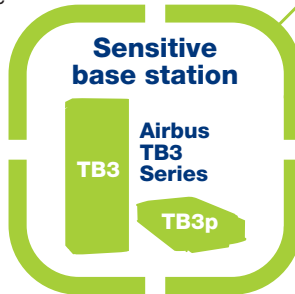


Sometimes used

Fixed base station sites can employ diversity, using multiple receivers to improve the uplink.



TB3 base stations from Airbus Defence and Space are very sensitive. They can “hear” the radios better for three reasons:



MORE RECEIVERS. This improves the signal-to-noise ratio, particularly important in weak signal conditions.

SPECIAL ANTENNA SOLUTIONS further improve sensitivity and signal-to-noise ratio.

Base station receivers use sophisticated **DIGITAL SIGNAL PROCESSING**, which can pick the strongest signal for actual reception.

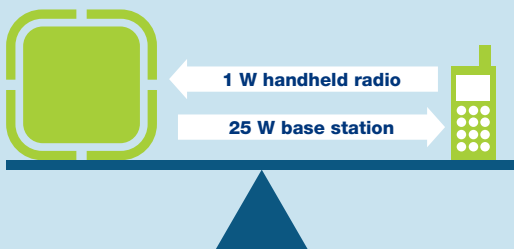
Mobile base station sites with a single antenna cannot use diversity, but they are usually less powerful in general, such as the TB3hp which has a 15 W transmission power.

PICTURE THIS

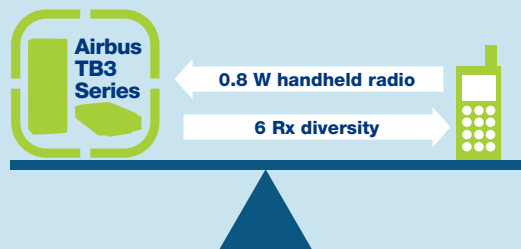
The balancing act

The radio terminal power required will vary depending on the network power. If the radio has -105 dBm sensitivity and the base station has -112 dBm sensitivity, we can show what terminal power is required for different antenna layouts.

For a single antenna base station, a 10 Watt mobile/handheld radio would require a 50 Watt base station to balance uplink and downlink. No vendor has such a base station in their portfolio.



The typical 25 Watt base station with diversity and panel antennas for uplink requires the device to transmit at 1 Watt. This guarantees maximum coverage. Any more power in the radio brings no benefit except when the radio is used without the network, in DMO.



With the ultimate coverage engine, the TB3 base station employing 6 Rx diversity (High Gain Virtual Omni),

a 0.8 Watt radio is enough

for uplink/downlink balance.

With this base station, a more than 1 W radio terminal brings no benefit when used in network coverage.

USE FEWER FREQUENCIES WITH TETRAPOL SIMULCAST

Using one frequency across multiple cells cuts costs and delivers better mobility for users.

One of the most important issues in radio communication systems is frequency interference between neighboring cells, usually solved by adopting a different frequency for adjacent cells.

While this is an effective solution, it requires many frequencies to design a radio network. Sometimes, the required number of frequencies is simply not available in the relevant area and a less 'greedy' solution is needed.

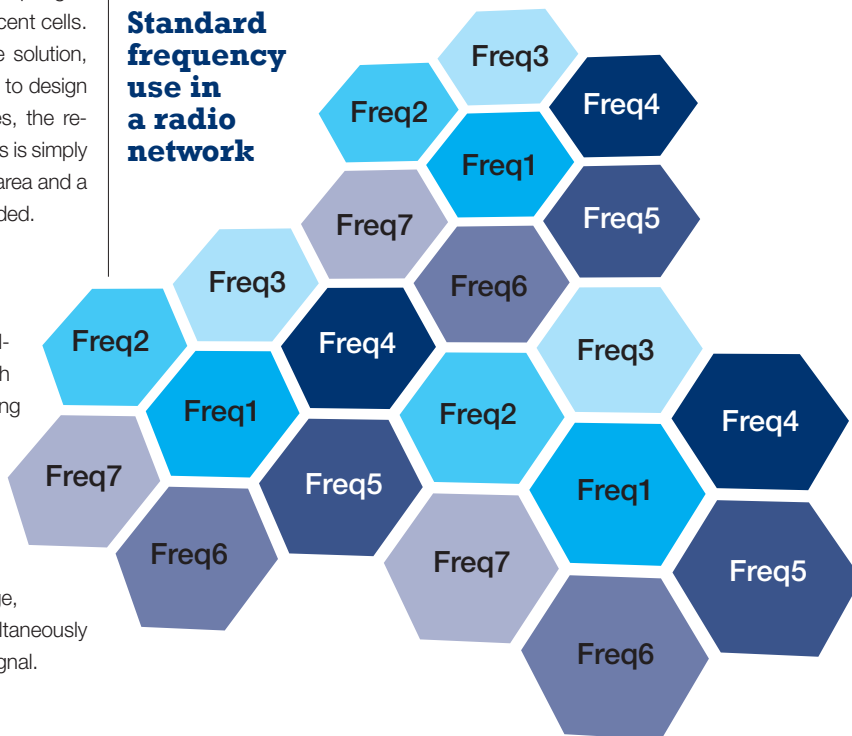
Wide coverage with only one frequency

Simulcast is short for simultaneous broadcast, which provides a means of achieving wide area coverage with multiple transmitters using a single frequency. As many transmitters as necessary are used to achieve the desired coverage, with all transmitters simultaneously broadcasting an identical signal.

The key and most fundamental benefit to a user of simulcast is the transparent mobility available among all the radio sites of the simulcast

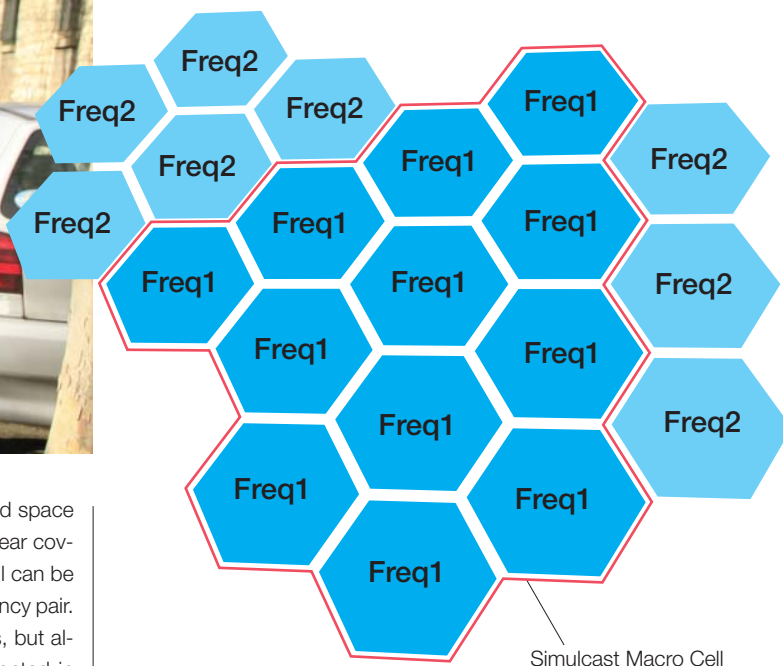
coverage. As all the radio sites belong to the same simulcast cell, there is no procedure necessary to move from one site coverage to another. Simulcast provides coverage throughout the required operational area - whether it is a wide open, large

Standard frequency use in a radio network





Tetrapol Simulcast Macro Cell



geographical area, a confined space needing in-fill coverage or linear coverage for roads and trains, all can be covered with only one frequency pair.

This not only saves costs, but allows systems to be implemented in situations where frequency spectrum is so rare that without simulcast, a solution could not be realized.

All the same

With simulcast, each transmitter in the system transmits exactly the same signal, with the same characteristics at the same time. For the uplink (RT to BS), simulcast systems use receiver voting to select and decode the best received site.

The Tetrapol simulcast solution enables the operator to manage a simulcast cell with up to 12 radio sites, offering coverage equivalent to 12 times that of a single station cell in cellular mode.

The Tetrapol simulcast has the advantage of using fewer radio channels and is particularly well adapted to group communications with wide coverage. Furthermore, because of the size of the cell, it

avoids mobile users changing their radio cells frequently.

Offsets remove interference

When two transmitters are on the same frequency, there is an area where the two signals overlap. Theoretically, within this overlap is an area where the two RF signals could produce interference in a mobile receiver. This is avoided by introducing a small offset between the transmission frequencies in simulcast operation. This offset adjustment is available in a Tetrapol network not only for frequency, but also for time and power of transmission. Using these three offset capabilities, radio engineers can tune the radio network coverage to arrange overlaps at places that offer least disturbance to the users.

When a terminal transmits, base stations that receive the communi-

cation at the same time forward it to the simulcast master entity. This selects the frame with the highest quality from among the voice frames generated by the radio base stations of the simulcast cell, to send to the other base stations in the network. The base stations and the simulcast master entity are synchronised on GPS signals.

The simulcast master entity also provides the command interface between the switch and the radio base stations.

The simulcast master entity can be supported on any radio base station site. The site is automatically chosen from among the radio sites selected by the network operator, providing a tailor-made redundancy to ensure the best availability of the simulcast service.



Active Paging

Alerting emergency staff by paging is well established. Although useful, it is not perfect. The answer? Active Paging.

– the sure way to get your alerts out

When emergency staff need to be called to duty, it is common to alert them using messages sent over a pager. Easy and quick, it has the advantage of not requiring each person on call to have a sophisticated radio, which may see little use.

Yet the traditional paging method does have its drawbacks – is everyone really available for a call out? Can you be sure they

got the message? The current status of each staff member may not always be clear and once the alert is sent, the dispatcher is left waiting for a phone call to confirm the alerted person is on their way to the incident.

The result may be that not everyone arrives where they should be, on time. Standard paging also does not allow for detailed information to be sent to the responders.

Active Paging changes the rules

This has all changed with the advent of Active Paging. Based on TETRA, Active Paging puts much more control in the hands of the dispatcher. The first major advantage is that the dispatcher can see the status of all available responders on screen. These staff, often volunteers such as part-time firefighters, can send a

status message to the dispatcher to show whether or not they are available for alerts.

When an alert does need to be sent, it can contain a short description of the situation as well as its location. The dispatcher can also prioritise alerts, placing each one in a priority class that tells staff something about the size and severity of the incident.

Accept or reject?

Once the alert is sent, the clock is ticking. Alerted staff need to accept or reject the alert, using a simple key press, before the timer expires or they will be recorded as not being available to go to the incident. The dispatcher can see immediately who is and is not available and can alert other responders to make up any shortfall.

When the timer expires, the dispatcher can also send more



detailed information to prepare available responders for when they arrive at the emergency scene.

Active Paging also supports the filtering of alerts according to a person's role. For example, certain types of fire may pose a chemical risk, so the dispatcher can choose to alert an expert on chemicals to advise on procedures. Conversely, the expert need only be alerted to incidents that involve chemicals.

This role function can be automated so that in an emergency, when every second counts, the dispatcher can simply send a group alert and the pagers will filter it according to their particular configuration.

A further management prior-



ity for dispatchers is to keep the pagers updated with the latest software and configurations. This is all done centrally and responders, who may not visit the central fire station or office regularly, can simply download the latest updates by connecting the pager to their home PC.

All these benefits are offered by the P8GR TETRA pager from Airbus Defence and Space. To learn more, visit www.secureland-communications.com/p8gr



Looking Back - Key Touch 10 years ago



In the first TETRA Touch (as Key Touch was then called) in 2006, we made some predictions about the future of Public Mobile Radio and reported on the progress of several European TETRA public safety networks.

What does the future hold for PMR?

TETRA Touch imagined the future for PMR with the help of some of the world's leading experts, looking at four major trends - globalisation, security uncertain-

ties, instant communication and the changing shape of work.

Globalisation would lead to the need for cross-border communications.

The rise of global threats such as information warfare, easily mobilised riots and terrorism would require public safety professionals and their tools to adapt.

Instant communication had already made business operations very real-time in nature. With less time for reflection, there would no place for slow reactions or in-

efficient communication tools.

The changing shape of work meant moving from traditional eight-hour days to multiple jobs, flexible hours and mobile offices, which would find increasing use among public safety professionals.

What do you think? Were the predicted trends spot on or way off? Did the experts miss an important trend?

TETRA progressing in Europe

Ten years ago, Sweden was seeing the first live components in its



nationwide authority communications network, allowing safety and security authorities to share the new RAKEL network.

RAKEL would enhance the safety of Sweden's security personnel and citizens while improving co-operation both within organisations and between them.

Despite some tough deadlines, Hungary was also noted as being on the fast track to TETRA.

Finally, the back page introduced two of the newest user organisations of the ASTRID network in Belgium, Antwerp's police and firefighters across Belgium.

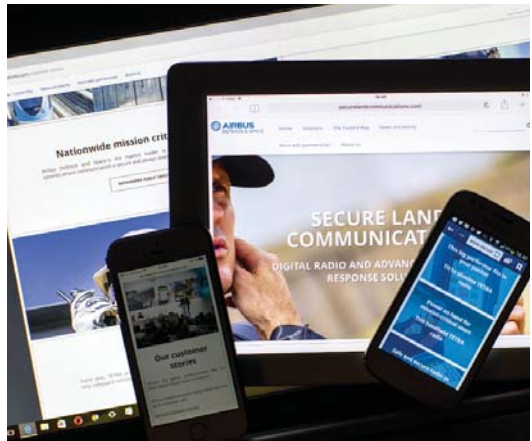


TETRA on the World Wide Web

PMR and TETRA pages on the eads.com website – and the Extranet service “PMR Online” was mentioned and its menu structure (areas of topics) was introduced.

Today, eads.com does not exist but PMR and TETRA are well represented on the www.securelandcommunications.com website instead.

Here's to the next ten years of Key Touch and TETRA!



New website for Professional Mobile Radio users

The website at www.securelandcommunications.com presents PMR solutions from a customer viewpoint, tells customers' stories and stimulates dialog with a blog.

Airbus Defence and Space's Secure Land Communications (SLC) programme line has introduced a new website at www.securelandcommunications.com for people looking for information on secure radio communications and related solutions. In particular, the new website strives to answer possible questions that visitors might have.

Not only does the new website cast fresh light on the product range, it also features an important new element: customer stories.

For the first time, SLC is also running a blog on the web, dedicated to mission-critical communications.



Subscribe to the blog at www.securelandcommunications.com/subscribe-to-blog

Moulding LTE to the needs of public safety users

The standardisation of LTE for public safety use is making progress, but the sector needs to ensure it gets the right agreements in place to make broadband truly useful for users in the field. Key Touch interviews Tero Pesonen, Chairman of the TCCA's Critical Communications Broadband Group (CCBG) about the current situation and what's coming.

1. What is MCPTT and what does it mean for public safety users?

Strictly speaking, MCPTT (Mission Critical Push to Talk) is a work item in 3GPP LTE Release 13 standardisation that aims to enable group call services in LTE networks to meet public safety requirements.

The current wording in the 3GPP TS 23.179 specification is: "The MCPTT service supports communication between several users (i.e. group call), where each user has the ability to gain access to the permission to talk in an arbitrated manner. The MCPTT service also supports private calls between two users."

So far, the greatest single deficit of the LTE standard has been the capability to address the needs of organisation-centric voice communication i.e. group calls. Now, LTE releases 13 and 14 are expected to provide adequate answers to the need.

2. When LTE standards are developing, what are the most crucial things for public safety users to follow?

Public Safety is a very small segment compared to billions of consumers. So far the voice of the critical communication community has been heard remarkably well. A specific group to address critical communication - the SA6 - has even been established. However, progress must never be taken for granted. Already it is evident that part of the intended LTE Rel 13 content for MCPTT will slip to the following release. The same can be expected to hap-

pen to the LTE Rel 14 MCVIDEO (Mission Critical Video) and MCDATA (Mission Critical Data) topics. So, on the standardisation side, it is imperative to keep track that the finally published standards actually meet the operational requirements.

However, this is only one of the steps on the road to a common interoperable solution for mission critical mobile broadband communication. Equally important is to demand and ensure that the industry implements the services according to the standard and ensures evolution from existing services. The critical communications market is too small to allow proprietary solutions that fragment the market.

When we speak about critical communications factually we also speak about spectrum availability. The standard or its technical implementation won't work unless there is harmonised spectrum enabling it to be used. The recent World Radio Conference (WRC2015) gave a very encouraging resolution. Now, it is up to the public safety agencies to convince their national decision makers on the importance of dedicated internationally common spectrum. In the USA the police, fire and others blocked Capitol Hill with emergency vehicles and lobbied each representative to understand the need with very successful results. Similar successful action was taken in Canada. Without dedicated spectrum, the public safety sector has little negotiation power to optimise the communication solution their lives depend on.

3. What is the content and schedule of LTE standard Rel 13 (from public safety point of view)?

The primary content is the first part of MCPTT. The standard is expected to be completed and available around March 2016. However, there is strong time pressure for the on-going protocol work.

Other Rel 13 functionality includes extended Proximity Services for device to device communication (ProSe-Ex) and Isolated E-UTRAN Operation (IOPS) to enable locally routed communication for fallback and single site purposes.

4. What is your recommendation on communications solutions for public safety users for the next 5 - 10 years?

TETRA will continue to be the bedrock of critical communications for the foreseeable future. Therefore it is imperative to maintain, refresh and upgrade the current systems and further develop them – for instance there is still plenty of unharvested potential with critical applications.

In parallel, the need for broadband must be addressed securely – establishing an MVNO following the Belgian and Finnish examples would be a good step forwards. By owning their LTE core, public safety subscriber information remains secure, and commercial operators can proceed with their core network virtualization ambitions without expensive restricting regulations.

5. What should user organisations do to influence the standardisation?

User organisations should become involved - either directly or via representation. Each nation state should form a view on how their interest is best served. The highest level is to have one or more representatives directly involved in writing the requirements and specifications. If that is too much, then it is important to appoint a person to closely follow what is happening and has either the mandate to form, or the capability to very quickly obtain, a national position on questions that may arise - the 3GPP turnaround times are often counted in hours and days.

I would also recommend active participation in the work TCCA is doing via the Critical Communications Broadband Group (CCBG) and other working groups. After all, 3GPP standards provide an excellent foundation and platform, but on top there is still a whole world of topics to be addressed before everything runs smoothly for the officer on the beat.

Tero Pesonen, Chairman, Critical Communications Broadband Group, TCCA

CRACKING THE CODE OF IP RATINGS

The IP rating (or IP code or IP classification) gives more detailed information on the radio than vague terms such as “waterproof” or “water resistant”.

TYPICAL IP RATINGS OF PMR RADIOS

