

# key touch<sup>®</sup>



customer magazine  
3/2016

Keeping  
the lights on  
with TETRA

Tetrapol is  
gold medal  
standard

Soon  
you'll be  
needing  
this device

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# WHO'S IN THIS ISSUE?

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



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**SATU LAMBERG** welcomes social and health care professionals as new TETRA radio users. TETRA use in hospitals has gained an early foothold in Scandinavia and is now spreading rapidly across the world. Secure communication and time-saving features like group calls enable staff to focus on their nursing and life-saving work.



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## Key Touch 3/2016 - November 2016

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### PRINTED BY:

Libris Oy

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# Dealing with the present, preparing for the worst



**PUBLIC SAFETY** professionals work and communicate under intense pressure and sometimes in situations that are not just difficult but unprecedented in their complexity. We saw such a situation earlier this year in Belgium.

Professionals in the field depend on PMR technologies to support them, to be their lifeline while they protect the public both during emergencies and at large scale events. How can public safety networks meet even the most extreme circumstances?

We have developed network solutions to face a critical situation, and operators and end-users have built and planned their networks based on them. Yet, what if something happens beyond the worst case scenarios?

## Features ready for use

ASTRID learned some valuable lessons from Brussels events, as we report in this issue. One of these was how the use of communication affects the amount of capacity needed. Many things ASTRID intends to use are available in our solutions.

Network planning issues also have a great effect on traffic load. These include both technical and operational factors - fleetmapping, priorities, pre-emption and radio discipline.

## Improving all the time – both TETRA/Tetrapol and hybrid solutions

We are continuously improving and developing new solutions for extreme situations, such as versatile priority and pre-emption possibilities and emergency calls. During

development, many crucial features have been included, such as:

- Base station fall back, addressing transmission breaks between base station site and switching site
- Base station dual homing, addressing switching site disturbances
- Direct mode communication between radio terminals, addressing terminals out of coverage and unavailable networks.

Also, the evolution towards greater data bandwidth and more applications needs to be planned with the worst case scenario in mind - Tactilon Suite offers reliable management of both current and complementary data networks together.

It is not enough to plan for the normal day - we at Airbus Defence and Space are looking ahead and offering you a wide portfolio of global, integrated solutions to plan for exceptional circumstances as well.

We hope you get some pointers from this issue to ensure your network is prepared for the worst.

Olivier Koczan  
Vice-president  
Head of Secure Land Communications

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Franck Fie - Lehtikuvu / AFP



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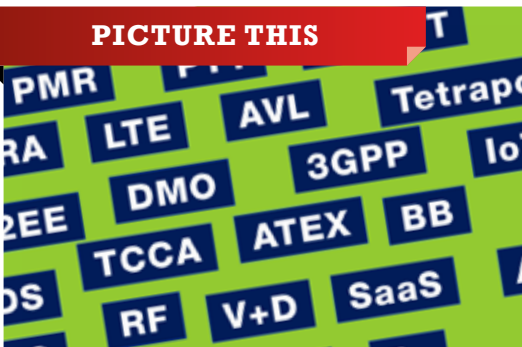
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## PICTURE THIS



### 36 The cheat sheet of PMR abbreviations

Never get lost in the PMR jargon jungle again!



# Tetrapol is **gold medal standard** for Brazil's Federal Police

With thousands of athletes, spectators and journalists descending on Rio for this summer's games, Brazil's Federal Police were challenged to maintain the safety and security of these multitudes of visitors. Fortunately, they had just the right tool to help them in the form of a comprehensive Tetrapol communications network.

Coverage was available in all competition sites, including the main venues at Maracanã and the athlete's village, the airports and the main routes into the city. There was excellent Tetrapol coverage at indoor venues as well as in the Maracanã underground station.



Canada's Damian Warner (L) and USA's Ashton Eaton compete in the Men's Decathlon 110m Hurdles during the athletics event at the Rio 2016 Olympic Games at the Olympic Stadium in Rio de Janeiro on August 18, 2016.

Rio de Janeiro's network comprises 11 Tetrapol Base Stations of eight channels, designed to support more than 2,000 radios being used simultaneously in more than 40 conversation groups. There is also redundancy of core equipment and communication links to maintain maximum confidence in the network.

"Tetrapol is the official means of communications for all Federal Police staff involved in the operation," says Aluisio Sardinha, Coordinator of FP Tetrapol operations in Rio de Janeiro. "All our officers were coordinated through Tetrapol, including the assault and intelligence team. The helicopters, the boats and the tactical

vehicles are also equipped with mobile Tetrapol terminals. Tetrapol has met our expectations."

Beyond the local Brazilian forces such as the Military Police of Rio, Brazilian Highway Police and the Brazilian Army, the Federal Police also cooperated with more than 50 foreign security forces. The main concern was to prevent terrorist acts and assure the safety of the athletes, VIPs and tourists. Tetrapol is integrated with the radio network of other forces and all these communications between the different agencies involved are managed by the Command and Control Unit of the Rio de Janeiro Public Safety Secretary.

As Tetrapol in Brazil is a National Network, the stadiums in the cities of Brasília, São Paulo, Salvador, Belo Horizonte and Manaus, venues for football matches, are also covered by the network. Officers based in these places are connected with the Federal Police coordination centre for the games in Rio de Janeiro.

Airbus SLC Brazil supported this huge radio operation and ensured the customer had complete satisfaction in Tetrapol Radio trunking technology.





France's goalkeeper Hugo Lloris (right) makes a save during the Euro 2016 final football match between Portugal and France at the Stade de France in Saint-Denis, north of Paris, on July 10, 2016.



# French police keep their **EYE ON THE BALL** with **IDR**

**W**ith the potential for hooligans to cause trouble, combined with the growing terrorist threat, French security forces had their work cut out policing the European Football Championships this summer. The huge policing task for Euro 2016 involved up to 42,000 policemen, 30,000 gendarmes, 13,000 private security people, 10,000 soldiers and 5,200 people from public safety organizations.

Coordinating this large and diverse security force was the role of the existing public safety networks which can be used for standard operations around the stadiums and in the towns.

As there was no specific radio coverage for Special Forces in the stadium to reinforce security around the football teams, it was necessary to create additional tactical coverage deploying an IDR (Independent Digital Repeater) in every stadium to allow forces on field to communicate together. This was fine for local radio coverage but another challenge was how to link up police officers on

site to tactical headquarters tens or even hundreds of kilometers away from the incident. In fact, a fixed IDR was also installed near the HQ in Paris and with the IDR's IP interconnection feature, the two IDRs can communicate through a VPN using a 4G commercial network.

This gave commanders in Paris fast access to the tactical communications taking place around the stadium. With the two IDRs interconnected via a VPN, the security forces can communicate together using the same procedures both inside and outside the stadium but also with the Parisian crisis management cell.

The IDR interconnection could be set up between the Parisian IDR and every one of the regional IDRs deployed on site, allowing all local security forces to be managed directly by the HQ in Paris.

Of course, as everyone knows, commercial networks are quickly overloaded during large-scale incidents, so the 4G link was secured with a satellite link to ensure secure communications in the event of an emergency.



## DID YOU KNOW...

‘Where are you?’  
keeps track of your  
team

**D**id you know you can automatically see your colleagues' location information on your radio display? In a tricky situation, facing a threat perhaps, you might find it vital to know where your colleagues are - where is the nearest team member who can help?

The ‘Where are you?’ feature answers this need. You can see how far the caller is and in which direction from you, even without asking, as it is right there on your display automatically and instantly. When other colleagues press their PTT, their position is instantly shared with fellow users. Also, their last sent Status message can be included. You can send your own position to your team during a call by pressing the PTT on your radio.

You can easily save your own or your colleague's position as a waypoint with a single key press - it could be valuable information and needed later.

‘Where are you?’ is a unique pre-programmable feature, available only in Airbus TETRA radios but which works in any TETRA network and even in direct mode. In critical situations getting an answer to the question ‘where are you?’ can be a life saver.

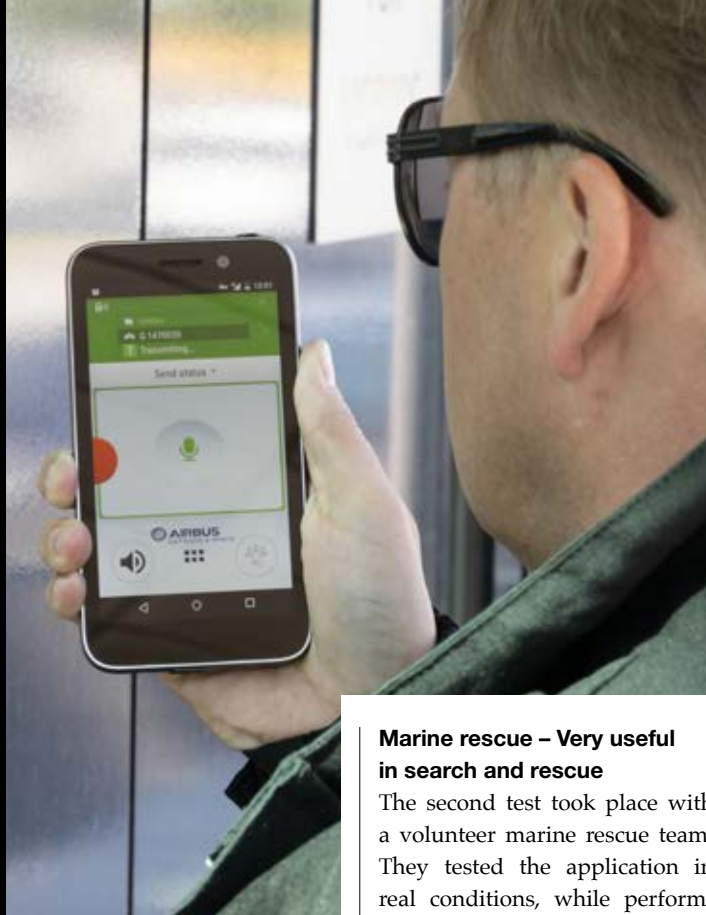


# Tactilon Aagnet gets thumbs up in Estonia

**Estonian users recently had a hands on test with Tactilon Aagnet – the professional group communication application for smartphones. Did they like it?**

**T**hree different organisations in Estonia got to grips with Airbus Defence and Space's Tactilon Aagnet this year and came away with very positive views of the application. Designed for smartphone users, Tactilon Aagnet provides push-to-talk access to TETRA talk groups.

Users from the National Defence League, the volunteer marine rescue team and an IT group at the Ministry of Interior tested the application on several different smartphones. Although some of the users had brief training, others were able to use the app straight away, saying it was “very intuitive.”



### National Defence League – Easy to use

Military users in the National Defence League found that, with good LTE coverage, the combined use of TETRA and LTE is useful. Users gave plenty of positive feedback about the messaging functionality of Tactilon Agnet, which they felt was very easy to use and helpful.

### Marine rescue – Very useful in search and rescue

The second test took place with a volunteer marine rescue team. They tested the application in real conditions, while performing their duties at sea. “This LTE-based Tactilon Agnet solution is very suitable to use in SAR (Search and rescue) Team work”, was their comment. They felt it would be good have hands-free devices which are compatible with SAR specific equipment such as a helmet. “It is crucial to find the right kind of smartphone which has external PTT and is moisture and impact resistant,” they added. LTE coverage at sea is insufficient and that must be taken into account when planning operations.

### Ministry of Interior testing department – they prefer rugged and loud

Similar feedback was received from SMIT- the IT and Development Centre at the Estonian Ministry of the Interior. Smartphone must have excellent audio quality, in particular loud volume. Security was another important aspect mentioned.

Tactilon Agnet encrypts sensitive data and there are special security measures in place (for example, running the Tactilon Agnet application in rooted devices is prevented).

### Overall, the feedback was positive. Users suggested that the following would help make the most of the application:

- Tactilon Agnet is easy to use and to learn
- The combined use of TETRA and smartphones is useful
- LTE coverage for smartphones must be taken into account
- Most users prefer a physical PTT key also in their smartphones
- The chosen smartphones must be rugged and provide loud audio volume.

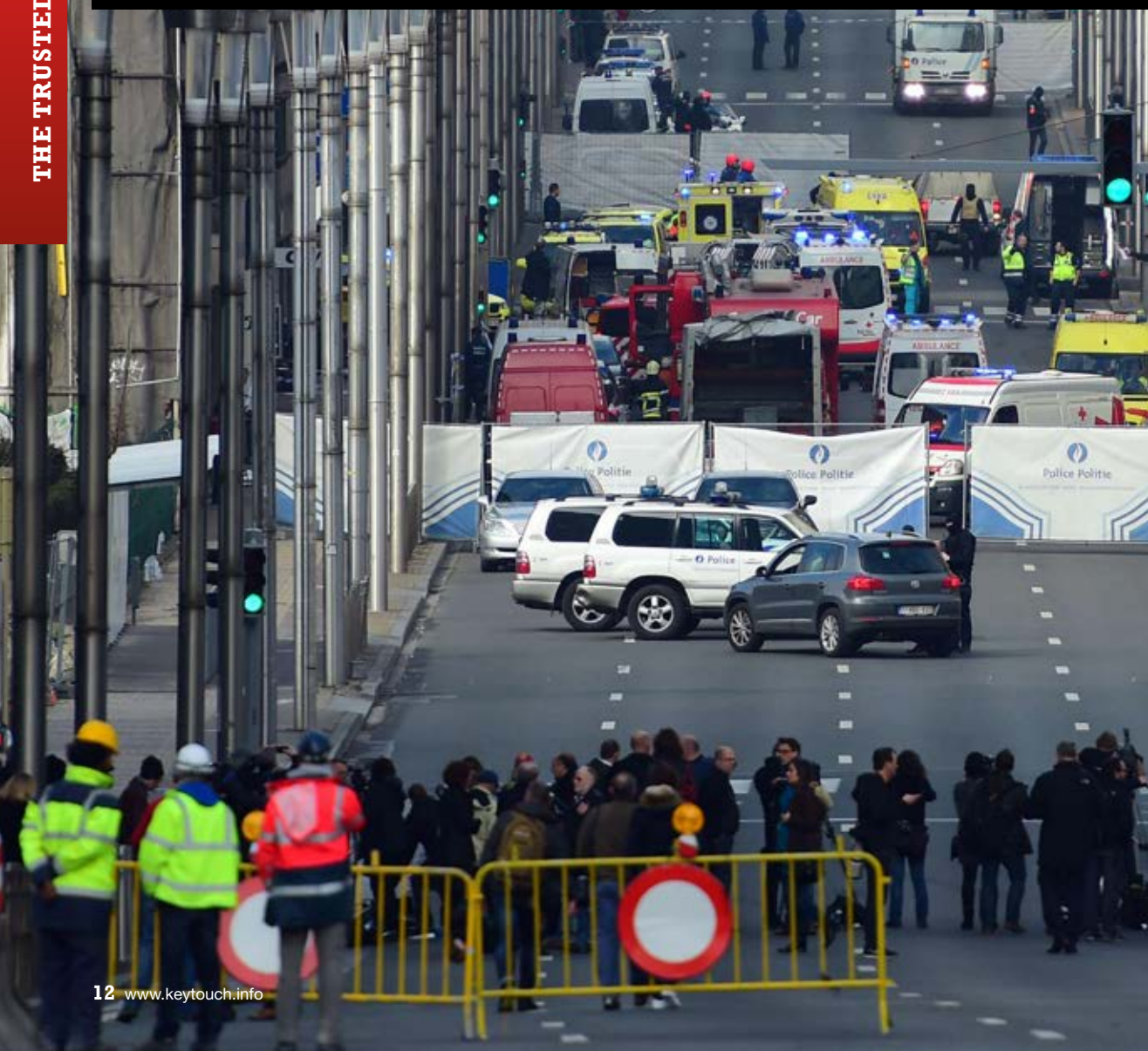


Hotels

MANUEL DONAND - LEHTIKUVA / AFP

THE TRUSTED WAY

# The worst you can think of may not be bad enough



**When a terrible day arrives – will your worst-case planning be good enough? The 2016 bombings in Brussels provide some valuable lessons.**

**Y**ou've prepared your network to face a critical situation. Your network has already proved able to face several large scale events, such as train crashes, gas explosions and armed criminals. What if something happens that is beyond your grimmest imaginings? That is what happened for the first time in 15 years of operations to the Belgian authority network operator ASTRID on 22 March 2016, when terrorists attacked Brussels.

Public safety professionals worked and communicated under intense pressure and in an unprecedentedly difficult situation. They had two complementary systems to use - radio communication over the ASTRID authority network, and for some, an additional secure broadband service, Blue Light Mobile, also provided by ASTRID.

With high demand, users experienced queuing in the ASTRID radio network and also had difficulty accessing the congested Blue Light Mobile. There were times when they just could not get through and many thought that the systems were down.

After the attacks, ASTRID immediately met with the user advisory board and decided together to analyze what happened and identify key factors in the congestion.

#### **ASTRID network – queues and individual calls**

The ASTRID network in Brussels had to serve almost twice the number of users as on a normal day – 4,300 compared to 2,500. In addition, three times the number of talk groups (600) were active during the day.

The network was simply not optimized for the way it was intensively used, with so many groups and calls within a very small area. As some of

the busiest base stations were nearing the limits of their traffic handling capacity, users had to queue for their turn to speak. About five base stations out of 24 in Brussels and two outside Brussels had serious congestion problems.

In this situation, if users release the PTT button on their radio and press it again, they lose their place in the queue, find themselves back in the line again, and generate more signaling on the system. When more people do the same, the congestion gets worse.

Individual, one-to-one calls are another factor that drains capacity. During the attacks, the ASTRID network had to handle an exceptional number of one-to-one calls in addition to group communication. Why? Because commercial mobile phone networks were unavailable. Calls which under normal circumstances would have been regular phone calls had to be conducted over ASTRID.

#### **Blue Light Mobile – its platform wasn't available**

Blue Light Mobile (BLM) is a broadband service provided by ASTRID. BLM is configured to use any one of

### **Brussels under attack - 22 March 2016**

- Three bomb attacks
- Two at Brussels Airport (Zaventem)
- One at a Brussels metro station (Maalbeek)
- 35 people died in the attacks, including the three suicide bombers
- Some 300 people wounded

A security perimeter has been set, on March 22, 2016 near Maalbeek metro station in Brussels, after a blast at this station near the EU institutions caused deaths and injuries.

the commercial networks. On a normal day, this can guarantee that critical users get the best service available.

However, the situation during the attacks was anything but routine and the commercial networks became extremely busy. When all networks are unavailable, priority becomes meaningless.

### Lessons learned

ASTRID and the public safety agencies learned some valuable lessons from the Brussels events. One of the major ones was that operational models - how different organisations use communication in these exceptional situations - affects the amount of capacity they use.



## Unprecedented radio demand

The exceptional situation of two or more incidents almost simultaneously meant that communications were concentrated in several very limited areas. Users changed their operational model completely and many radio users were brought in from outside Brussels. Not everyone followed strict radio discipline, and there was a total loss of commercial networks for mobile telephony, although data was not too affected.

The impact can be shown by the unprecedented numbers involved:

- More than 4,300 active radio users in Brussels, instead of the normal 2,500
- Up to 600 active talk groups of 34 users, compared to 200 normally
- 34,400 group communications
  - 26,000 successful
  - 8,400 unsuccessful or interrupted (of whom 7,000 due to early PTT release)
- 1,000 individual communications.
- A great deal of scanning (consumes capacity) in Brussels and surroundings

Even though ASTRID was designed for and provides reliable service in critical situations, this was something beyond imagination.

Network planning issues also have a great effect on traffic load. These include factors from both technical management and the operational model - Fleetmapping, priorities, pre-emptions and radio discipline.

In accordance with recommendations of the user advisory board, more radio network capacity is currently being added in Brussels.

Improvements identified are both technical and operational:

### Enhancing capacity:

- 1 Obtain extra frequencies (400 MHz band)
- 2 Increase the capacity of the network in Brussels
- 3 Set up a Secondary Control Channel
- 4 Increase Blue Light Mobile priority for ASTRID and implement special priority on access
- 5 Conduct real time capacity monitoring

### Operational management: Review planned operational models

- 1 Review strategy on priorities and pre-emption of calls between 'blue light' services
- 2 Review fleetmaps (multi-service groups) and usage policy
- 3 Improve training in radio network use and radio discipline in crisis situations
- 4 Improve operational communications management - who takes the lead?

It is not enough to plan for large scale events. The lesson of Brussels on 22 March is that every critical communications network operator and end-user organisation should take a look at their plans and decide if they are prepared for exceptional circumstances.



# TETRA HELPS TO KEEP HONG KONG'S LIGHTS ON

**A TETRA network from Airbus Defence and Space has helped CLP Power Hong Kong Limited (CLP Power) to maintain its power supply reliability to the city - now it's time to take it a stage further with an even better system designed to meet the needs of the future.**

CUSTOMER WIRE


**W**hen we think of TETRA, many of us automatically picture its use by emergency services, but there is another major market segment that is making use of the technology's benefits – the enterprise segment.

Just such a user is CLP Power, the larger of the territory's two power utilities. Maintaining the distribution network that connects its capacity with customers throughout Kowloon, the New Territories and many of the outlying islands is a major task that needs to be performed as efficiently as possible. To help achieve

this, a TETRA network from Airbus Defence and Space was installed in 2001. The network is used as a communication platform for critical data services, including SCADA PMS (Pole Mounted Switch) applications.

The company currently employs 1,400 terminals for voice and over 500 devices for data services, which are particularly used for the monitoring and remote control of power lines in rural areas. Bad weather events such as the rainy season and typhoons can affect the operation of overhead power lines. By using this data service, the status of lines can be remotely monitored and a remote





control can be used to perform tasks such as switching power to other routes to restore electricity supplies in case of failure.

In addition, there are apps available for the company to track terminals to improve the safety of its staff. Some vehicles also have TETRA apps installed to allow better despatching of crews to work tasks in the field.

### Powering towards the future

Capable as the existing network is, it can be upgraded to meet fu-

ture market needs. To ensure that services can be provided at the highest standard, new SCADA and Smart Grid services can be developed to extend the lifespan, capacity and coverage of the TETRA network without restrictions due to capacity limitations. To users, a cost-effective solution is to upgrade the existing TETRA network with new elements.

Chief among these is the new TB3 base station, planned to replace the existing base stations. The TB3-series base stations offer

many functions that the old base stations cannot provide. For example, the Secondary Control Channel (SCCH) option lets the TB3 handle significantly more SDS and AVL messages. Capacity extensions do not require any application changes, but TETRA terminals must support the SCCH feature.

Currently, certain features of SCCH can only be deployed in some base stations. Following the renewal, the feature will be available in more base stations so there can be more users with datacomms in





more areas. It will also allow users to expand remote control across the network as well as other new apps.

Among the advantages are using both its own TETRA and commercial LTE networks to provide seamless communications between different types of users, such as field maintenance technicians and managerial staff.

#### **A trio of partners**

Airbus was awarded the network modernisation contract of CLP Power after a competitive tendering process.

This time round the network will be implemented by Hong Kong mobile provider CSL. There is good synergy in the integration as many staff in the company have a mobile service with CSL. The new devices make it easier to roll out and use. A user only needs one device to connect to different networks and there are no configuration changes in the infrastructure, making it much easier.

#### **Trials begin next year**

The whole project for CLP Power is scheduled for completion in four

years, with the core network ready for trials by Q2 2017, followed by the base stations.

Once the core is ready, the network will undergo interfacing and interoperability tests. Airbus and CSL are providing service for the first few years, following which CLP Power will take servicing in house and use second line support from Airbus, as for the existing TETRA network.

CLP Power will also replace its terminals on a phase-by-phase basis.



# No borders for **commu** for Norway- Sweden project

# nication

**With a border between them stretching for over 1,600 km and both being part of the Schengen area, Sweden and Norway have a joint challenge managing and safeguarding activities on their frontiers.**

**T**he Norway-Sweden ISI project was established to ensure that emergency services can use their terminals in both countries and communicate with those from another nation, as well as with their own team and home control room.

To get the inside information on the project, we talked to Marianne N. Storrøsten, DNK and Anita Galin, MSB, both ISI project managers in respective countries.

**1. Why was this project started? What are the challenges that authorities face in the border areas?** Norway and Sweden have a long tradition of collaboration. Providing effective communication by interconnecting our public safety communications networks is another way to add to this history.

The border shared by Norway and Sweden is 1600 kilometers long. With ISI, seamless communication during a rescue or other public safety mission does not have to end at the national border.

This is becoming increasingly important as extreme weather events become more frequent and crime becomes more international. The benefits of ISI will also be apparent in the day-to-day work and planned operations between the two countries' first responders as well as communication between Customs officers at the border.

**2. When did the project start and when it will be finished?**

The formal start of the project was the signing of a four-party agreement between DNK, MSB,

Motorola and Airbus in September 2012. The corresponding EU-project ISITEP started September 1, 2013. The project period ends in December 2016. On November 16 we will demonstrate ISI to a wider community in a cross-border field exercise between Norwegian and Swedish first responders. Swedish, Norwegian and international guests and media will be present. The ISI gateway and transmission, end-user functionalities, radio terminal migration (same as roaming in commercial networks), control rooms, fleet map, end-user procedures and training will be put to the test in the exercise. The project group is working to ensure that all technical and user preparations are ready for operational use in 2017.



Anita Galin, MSB



Marianne N. Storrøsten, DNK



### **3. What will the Norwegian and Swedish authorities gain when the project is ready? How will their daily work be made easier?**

Even before the ISI-connection, the first responders and Customs in the border areas co-operate in the day-to-day handling of accidents and other incidents. This co-operation will be strengthened through efficient communication.

### **4. What do you need for this kind of project (on both sides of the border)? Is it co-operation, resources, enough time for planning, technological development, operational development?**

It is difficult to prioritize as they are so important. Our project is led by network owners DNK and MSB. The technical development is definitely an important aspect, but in our experience, involvement of resources from the agencies from both sides of the border has been a key factor for success. The user implementation subproject involves Norwegian and Swedish representatives from the health service, the fire & rescue service, as well as the police and customs. In addition, MSB and DNK are developing a bilateral agreement to regulate operational aspects of the interconnection between our networks. The agreement will regulate: a. The interconnection technical setup and security, b. Operations and fault handling, c. Governance model, d. End-user services, and f. Cost sharing.

### **5. How to succeed with a huge project like this?**

High degree of cooperation and flexibility on all partners, high visibility of the project combined with a fixed deadline (here: November 16, 2016) are key success factors to drive it forwards.

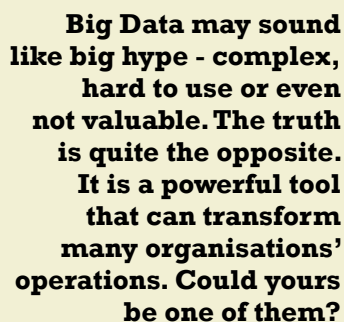
### **6. What was the most difficult part of the project?**

The most difficult part is to align the expected subset of TETRA functionalities offered through the ISI solution and new radio terminal software for migration to end-user procedures and guidelines. ISI defines standard functionalities. In cross-border communication over ISI, it is only possible to use those functionalities that are supported by both connected networks. What's more, the functionalities may work together only in a certain way because their implementation in the two different networks may vary. The cross-border communicating organizations have adjusted their operational procedures to account for these limitations. This part will be easier in the next ISI project as all parties will have tangible references and will be able to get a feeling for the new communication possibilities.

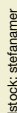
### **7. Can you give advice to other similar projects in progress or starting elsewhere in the Nordic countries or the rest of the world?**

A key lesson is that there are not just two networks to be integrated. Radio terminals and control rooms must also be able to handle cross-border communication and foreign users. Enabling cross-border communication requires connecting different public safety organizations across the two nations. This task of aligning complex network functionality and end-user devices, as well as different organizations and organizational structures, has been a long process.

# SOLUTIONS



**A** mass of data is pretty useless without a Big Data application – a smart program that looks at a vast amount of data and uses it to produce new insights. The Google search engine is a prime example of such an application. Using billions of web pages as its input, it employs sophisticated algorithms to create efficient searches.







### The potential for Big Data

Introducing mobile broadband and new apps and devices means that public safety professionals in the field can get more accurate data delivered to them. This helps improve their operations as well as their safety - and the safety of the people they serve. But there is also potential to organise and analyse the underlying data to gain insights, for example a rising trend of fires at particular types of property, prompting further investigation.

Ownership of the data is important. Public safety organisations are familiar with the importance of keeping communications confidential. In addition, they must ensure that when new data apps are taken into use, they own and master the data assets.

### Making it work

As with any new apps, Big Data apps are relevant only when they are useful. In addition, no application will be useful if it does not work within the organisation's operational procedures. It is important to consider how the app would be used in practice and how it might need to work with other solutions such as control rooms.

Introducing any application in a public safety organisation is complex. It is therefore a good idea to start with a trial group of users to identify the most beneficial apps first. Experiences from those apps can demonstrate from the very beginning that apps are worth investing in. The key is to introduce Big Data apps in the same way you would introduce any other app for everyday use.

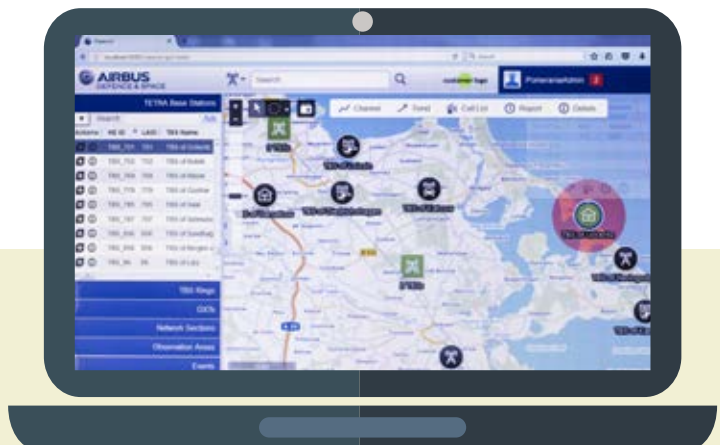
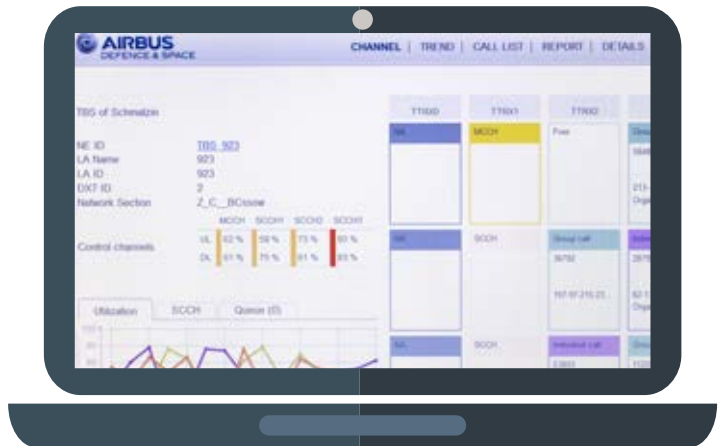
**Big data is a powerful tool that can transform many organisations' operations.**

# Viewcor® puts Big Data to use

Viewcor is a Big Data application that processes and analyses data generated in a TETRA network and presents resulting insights in a visual, easy to understand format. Rather than using the content of communications, Viewcor uses:

- User data (User IDs, organisation IDs, which groups each user is a member of, ...)
- Talk group data (for example, which kinds of calls users made, call duration, which base stations have handled a certain talk group)
- Radio network measurements (such as reserved base station capacity vs available capacity)
- Special factors (e.g. information on pre-planned events).

For a user organisation, Viewcor can show, for example:



- Which base station is becoming congested, which could indicate imminent queuing
- Unexpected traffic loads – perhaps a base station is nearing its capacity limit, which might indicate that something is happening in that area
- Whether there are many individual, one-to-one calls in progress in an area with an already high traffic load. The Viewcor user could ask the callers to end their calls, or terminate the calls themselves.

In addition, the technical operator of the network can see the following, for example:

- An organisation has entered a pre-planned event; the operator can then decide whether to provide more temporary capacity
- How a certain talk group reserves resources in the network. An often-used group active within a large area will reserve a lot of resources. Although possibly intentional, it might also be an oversight when the organisation defined the group area.



# Oslo city wardens step up the pace

**With security added to its parking enforcement tasks, Oslo's Urban Environment agency had to change. Fortunately, it was already using TETRA so it could evolve to meet its new role.**

## More than just parking

Writing out tickets for illegally parked cars has been the traditional role of Oslo's agency for Urban Environment. Although TETRA radios were in use by the start of the millennium, team leader Henning Sletvold says of communication back then was not considered mission-critical.

"Personal protection has obviously always been ensured, but in 2005 the job was not seen as that dangerous," says Sletvold. "The TETRA radios that were in use

did not feature functions such as alarm buttons that are necessary for us today."

Over the years, PDAs were introduced, while GSM-based location services were also adopted.

Last year, things in Oslo began to change. Along with parking control duties, security and safety issues as well as environmental matters were added to the agency's task list.

The agency employees were to assume a role somewhere in between police and security guards,

patrolling the streets, stopping conflicts from escalating, and if necessary, to call the police. These additional duties created new requirements for mission-critical communications.

As such, the entire communication infrastructure needed to be re-evaluated.

## TETRA back in the picture

Juan Cabrera, a special consultant responsible for training the city wardens to communicate effectively, emphasises that the agency suddenly found reliable communications needed immediate attention.

"It all meant entering a remarkable transformation phase. On the other hand, we needed a solution

Last year, things in Oslo began to change. Along with parking control duties, security and safety issues as well as environmental matters were added to the agency's task list.

that could provide extended personal protection for our people out there on the streets, especially during the night. Furthermore, we needed to internally adopt and implement new rules and procedures to utilise the new code of conduct, including the way we communicate with each other."

The existing communication system was simply not good enough, and so TETRA took centre stage again.

A TETRA solution, focusing on secure communication, was set up by TC Connect Norway, a local Airbus partner. Every agency warden working in the field was assigned a new TH1n TETRA personal radio – currently there are around 100 radios used every day.

### Don't leave without it

With features such as quick alarms and group calls, the new TH1n TETRA radio clearly makes a difference when it comes to security at work.

Sletvold says that TETRA provides an efficient way for personnel to call each other, as well as the dispatch center. Something has remained unchanged though – the way the most traditional agency tasks are being handled.

"Everyone working in the field has a TETRA radio for quick and reliable calls. Thanks to TETRA, our dispatch center knows at all times where the wardens are located. However, the old GSM has

not been totally abandoned and we still use our mobile phones to write parking tickets."

Compared to the old PDAs, TETRA's battery lifetime is clearly better. Juan Cabrera admits there is still work to be done on keeping communications more concise, so the extended battery life comes in handy. Durability has proven to be excellent - with the wardens' hands often full of stuff, the radio may be banged about a little now and then. The device is also compact and convenient to handle.

The agency also wants to convey a message of professionalism

but without any military overtones. The light, yet efficient and reliable TH1n radio does this better than the more robust versions. The public are not afraid to approach wardens for help yet still feel protected, promoting Oslo as a welcoming city for everyone.

All in all, the agency is seeing some challenging times with their new responsibilities. With additional training and experience, the benefits of TETRA will soon become even more visible. Meanwhile, following the one principle both Henning Sletvold and Juan Cabrera promote should help the wardens familiarize themselves with TETRA radio:

"Do not leave the building without it."

The city wardens who are eager to help Oslo inhabitant and tourist alike, make the city nicer and safer place.



Both Henning Sletvold and Juan Cabrera emphasize that TETRA radio is an easy and efficient daily tool.





# Tactilon Dabat can put suspects in the picture

Airbus Tactilon Dabat can use professional apps, including face recognition software, to help police officers fight crime.



**D**esigned as both a TETRA radio and a smartphone in one, Tactilon Dabat has the professional user in mind. As such, it is ideal for running professional apps, such as the Facewatch application that makes it easier for police officers to identify suspects.

With Facewatch, a police officer can use the terminal's onboard camera to take a picture of a suspect. A Facewatch application can then check the face against a data-

base of known criminals. It can also run a vehicle licence plate check based on an image of the plate.

Using these resources, police officers on the move and security personnel in enterprises can share information and verify suspects as they are seen. All these tasks can be done on the terminal in the field.

This information is shared between different agen-

cies through a central database, which contains resources such as watch lists of subjects of interest, high-resolution images and CCTV footage. The ability to share this information quickly between the control room and the field means that several agencies can work together to solve complex crimes.

[www.facewatch.co.uk](http://www.facewatch.co.uk)  
[www.dabat.com](http://www.dabat.com)



## Getting smart gives **better Tactilon Dabat apps**

A device like Tactilon Dabat is a great platform for the applications that mission-critical users need in their daily duties.

But how about developing these applications? Is it always as smooth and straightforward as it could be? A new application developer program called SmarTWISP has been launched by Airbus Defence and Space to support the development of applications.

SmarTWISP will certify application developers and validate their products. They will also be able to cooperate in marketing activities with Airbus Defence and Space. This will create a healthy developer ecosystem, which will ensure that users get the applications they need.

This is vital because when considering new tools, users evaluate the whole package – not just the device itself but the applications that can be used with it. It is essential that when police departments or other mission-critical users buy solutions, those solutions work end-to-end. SmarTWISP is making sure this happens.

Overall, SmarTWISP will help Dabat users take full advantage of this powerful device, while also staying safe and achieving more.



SENSATIONAL RADIOS

## Experienced user reveals **his favourite radio**

**M** eet Ari Nikki, an accident and emergency department nurse at Finland's Satakunta First Aid Centre. Nikki has used TETRA radios in critical work for 12 years and can tell you how TETRA radios should perform in just about every situation that nurses face.

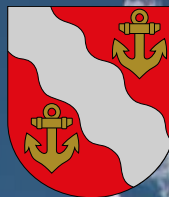
So which radio offers everything that Nikki needs? The answer is Airbus TH9 handheld TETRA radio. For Nikki, the TH9 delivers even better communications and support than his previous favourite, the TH1 device. "The TH1 was slightly smaller, but I find the TH9 just as convenient

to handle even though it is very robust for daily use," says Nikki. With the hospital district handling about 8,000 alarms each year, using the TH9 means Nikki can get alarms in both voice and SMS, making it a very good fit for the centre's needs.

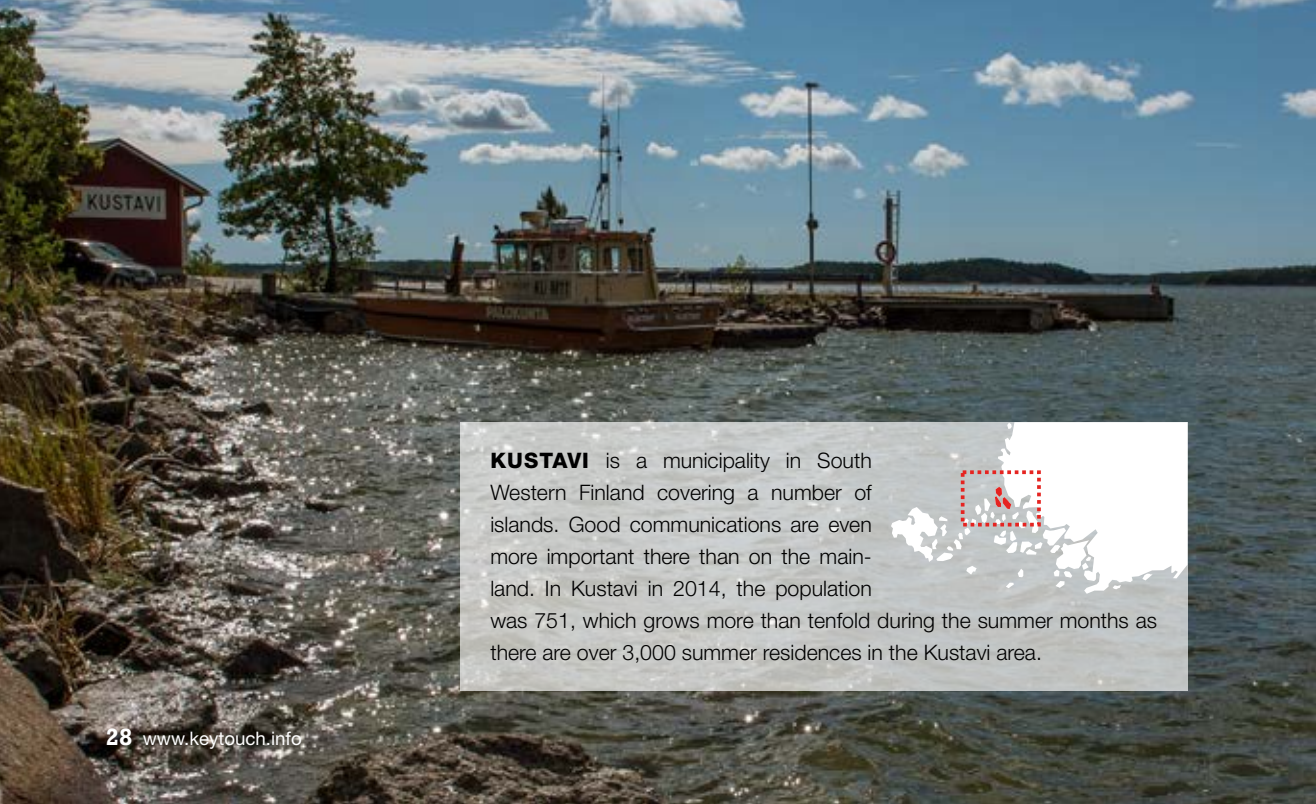
Nikki also values reliability and here the TH9 scores big again. "I also like the radio's hands-free capabilities," he says, "which makes it very convenient and efficient when making regular group calls. The TH9 is the radio I would recommend to my colleagues and to other hospitals," he concludes.



# A vital tool for a village



– TETRA radios keep  
social services and  
health care in touch



**KUSTAVI** is a municipality in South Western Finland covering a number of islands. Good communications are even more important there than on the mainland. In Kustavi in 2014, the population was 751, which grows more than tenfold during the summer months as there are over 3,000 summer residences in the Kustavi area.





**S**ocial welfare workers in remote areas may not seem like obvious TETRA users. But for Marika Lehtinen, Social Secretary of Kustavi, a small coastal village in Finland, the advantages of using the VIRVE TETRA network are many. “Without the network I could not communicate as fluently, especially with other authorities”, she says.

She explains how social welfare services in her area have benefited from using TETRA daily. Staff carry a TETRA radio with them while on call, using them to communicate with their closest colleagues and team leaders.

Social welfare in Kustavi encompasses health care services (excluding specialised care), services related to substance abuse and mental health issues, social work with adults, child protection services, services for the elderly and daycare.

Many of Lehtinen's and her colleagues' daily duties also involve close co-operation with several authorities, such as a police and ambulance services, a requirement made easy to achieve through the use of TETRA groups and the secure communication offered by TETRA radios.

Specific groups are defined for co-operation, allowing the social welfare staff to call for assistance from a police patrol or an ambulance. “This is very quick and efficient compared to calling the 112-center and having them call the police or ambulance service over a commercial mobile network,” says Lehtinen.

An example is the PoSoTe-talk group, where police

**“The unique advantage of TETRA is social welfare – you can reach many authorities with one device.”**

(Po), social welfare (So) and health care (Te) co-operate. This is defined in the TETRA radios and proper training ensures that staff know how and when to use it.

Protecting personal data is a major priority of the social welfare services. With TETRA, personal information – both spoken and exchanged as data - is safe because TETRA communication is encrypted.

#### **A vital tool**

Lehtinen considers the VIRVE TETRA network a vital tool. “It is not a burden to carry the radio when you have the advantages that you get,” she says.

Based on her experiences, Lehtinen thinks that front line staff, like those caring for the elderly or disabled, as well as the management working in the offices, would definitely benefit from quick access to information from the field: “Municipalities in general should plan the use of VIRVE into their operations and especially into their disaster preparedness plans.”



Marika Lehtinen, Social Secretary of Kustavi, uses TETRA radio daily to communicate with other authorities.

# TETRA or smartphone, Secapp keeps you in the loop

**F**irefighters and first responders need quick alerts and need to respond to them just as quickly. It's also very helpful if they can get those alerts whatever device they are using, either a TETRA radio or a standard consumer smartphone.

With Secapp, they can. Secapp is a communication tool that alerts firefighters and first responders in seconds via different communication channels and devices. Whatever device they are using, users have a real-time view of who can respond to the emergency, what skills they have and how long it will take them to arrive on the scene.

One organisation using Secapp is Pomarkku Voluntary Fire Department (VFD). One of Finland's oldest volunteer fire brigades, it conducts hundreds of rescue missions a year. "Secapp gives us a valuable head start in case of fire. It would be impossible to go back to the time without it", says Jani Valli, Chairman of Pomarkku VFD.

However, alerting firefighters and first responders is just one

example of what Secapp can offer mission critical communication. It has been used by hospitals, security companies and other private organizations, even in global sports events.

## A single solution

Earlier this year Secapp demonstrated communication between Airbus TH1n and the newly introduced P8GR TETRA pager. Combining the best aspects of TETRA and commercial communication under one solution, using Secapp with TETRA means no new devices are needed.

Among the first interested parties in Finland for Secapp with TETRA support were the Hospital District of South Ostrobothnia and Mikkeli central hospitals, responsible for caring for nearly a million patients annually.

"Reliability and usability of Secapp are key for us to manage our medical care personnel. We

must be able to alert them where they are needed at any time with any device at hand", says Juha Tainen, Chief of Emergency Care of Seinäjoki Hospital.

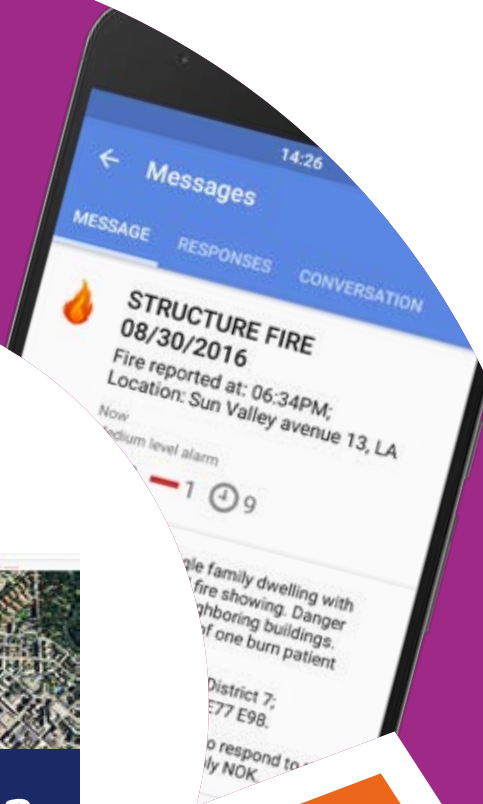




### About Secapp

Secapp is a commercial product from Finnish company Magister Solutions Ltd. Magister creates future communication (mobile, satellite) and security technologies, and has a number of satisfied customers among some of the world's largest vendors, operators and private companies. These include European Space Agency (ESA), Nokia, Huawei and DNA, a Finnish telecom operator.

For more detailed information about Secapp and Magister visit [www.secapp.fi](http://www.secapp.fi) and [www.magister.fi](http://www.magister.fi)



### Saving time and costs

Secapp has provided a number of benefits for its customers, ranging from cost savings to better reporting and unbiased delivery of different types of messages

and alerts. Cost savings have been achieved by reducing SMS communication, while people responsible for alerting and paging staff can work more efficiently compared to using traditional SMS, phone calls or separately handled emails.

In some cases, there is no need to replace communication devices that have come to the end of their lives, as Secapp has allowed an organisation to simply use other existing devices instead.

By centralising different communication channels with Secapp, communication becomes a lot less vulnerable to interruptions or failures. Moreover, Secapp is easy to deploy, as it can be taken into use in one day using existing devices. Secapp pricing is based on user volume and is invoiced monthly, offering scalability and flexibility to customers.



# What if there were no priorities?

**W**hen public safety professionals need to work together under pressure, their communication has to be reliable, as well as very structured and orderly. Some communications are more important than others, which is why priorities are so important in professional radio communication systems.

But, what if there were no priorities?

## Group call

Group call, or one-to-many call, is where one group member speaks and the others hear them. One person can speak at a time by keeping the push-to-talk key pressed. When he's done, he releases the key, allowing another to speak.

Without priorities, everyone in the group is equal. If there is a queue, it's first-come-first-served.

Yet, most groups include a leader, whose communications are very relevant. A good PMR system assigns priorities to group members. The leader would have higher priority, getting the next turn to speak, and perhaps allowing him to cut off any other group member.

Without priorities, the leader could speak only when all the others before him had spoken.

## Group call vs other group calls

Let's say a team leader reports to someone above him, who gives orders to the whole team.

This higher-level leader often needs to give an order to many leaders below him and would prefer to talk to them as a group, rather than individually.

Without priorities, this communication would reach a lower-level leader only when there was no traffic in his other group. Only some lower-level leaders would hear the order. How would the order-giver know who heard?

Just as a member in a group might have more important things to say, some group calls themselves are more important than others.

## Emergency call

A person can make a special emergency call or a distress call when he needs help immediately. Very much like a call for help, it is critically important.

Without priorities, an emergency call would be heard only when other traffic allowed. Proper PMR systems treat an emergency call as highest priority, clearing other traffic that would block it.

There are systems that do even more to make sure that an emergency call will not go unheard.



## Priorities are clearly a priority

Imagine a countrywide system with many thousands of users from different organisations, authorities such as police and fire fighters and industry users like utilities. It needs a very versatile system to ensure smooth operation when all of these are involved in a critical situation.

Professionals communicate in a hierarchy. Whether delivering a group call, emergency call, or individual call, success will not come without proper priority schemes.

# Finnish hospital wins prize for TETRA use

A Finnish hospital has won an award for using the VIRVE TETRA network to help improve the safety of patients and staff.

North Carelian Central Hospital in Joensuu, Finland, received the award in May 2016 for using the network to make improvements including slashing up to 20 minutes off the time to summon the trauma team to emergencies. The hospital also dramatically reduced the time spent waiting to contact staff by phone and improved communications between the laboratory and radiology departments.

The whole VIRVE operation has been smooth and natural in normal situations as well as in a variety of emergency situations, such as disasters, situations involving multiple patients and when co-operating with the authorities .

The Health Care and Social Recognition Award was made by the Finnish Association of Fire Chiefs. The award was received by the Joint Authority Director Ilkka Naukkarinen and nurse Jari Hirvonen.

VIRVE is the Finnish TETRA network, which is used by several different authorities. TETRA's introduction has generally been slow in social and health care. North Carelian has been one of the first hospitals in the world to take TETRA communication into daily use. The award recognized the hospital's success in developing a TETRA communications system and making a significant improvement to patients' and workers' safety.



# Over 6000 calls a day? TETRA takes the strain for Qatar's ambulance service



**With a population of some 2.5 million, Qatar may be a small nation but is also a wealthy and sophisticated one, with services and infrastructure to match. One of these is Hamad Medical Corporation's Ambulance Service, which deploys over 100 vehicles a day to support the emergency medical needs of the community.**

**R**esponsible for patient-carrying ambulances, critical care paramedic units, major incident units, hazmat units and three helicopters, the ambulance service has a number of duties. These include responding to medical emergencies in Qatar, patient transport, interfacility transport, the mobile doctor service and medical repatriation.

As such, it needs an excellent communications system to keep all

these staff in touch with the dispatch centres. The ambulance service is highly dependent on verbal communication between units and between units and the controllers.

The most common type of communication is between ambulances and the dispatcher, discussing the condition of the patients or confirming directions to a call. Another typical example is communication between on-the-scene clinical staff seeking advice from the Clinical

Team leader based in the control room.

Security and redundancy are therefore paramount.

## **A nationwide network**

To meet these needs, the ambulance service has used a nationwide TETRA network since 2006, employing 250 Airbus TETRA terminals - TH1n, THR9i, THR880i and TMR880i. Of its 2,000 staff, executives are assigned their own radios, while field



staff are assigned a radio according to operational call signs.

Two control rooms are employed to coordinate the ambulance teams' responses, one with the National Command Center for emergency response and another control room for resources not directly related to emergencies.

An important feature of the TETRA network and radios is the ability to easily structure talk groups into meaningful operational areas to ensure communication is not affected by conges-

tion. The service can also easily shift resources away from daily operational talk groups to dedicated talk groups in the event of a significant incident.

Full and half-duplex features are also important to the service. TETRA has enabled direct communication via full duplex between the elements of the command structure, making it easy for everyone to be aware of the situation and decreasing dependency on mobile phones.

One of the most significant benefits of using the TETRA system has been

its ability to support the ambulance service as demand grows. The service has seen an increase in calls of over 20% each year, placing a significant load on the communication platform.

### Advanced paging

Plans are also in hand to make staff alerts more efficient and effective by deploying the TETRA P8GR from Airbus Defence and Space. The ambulance service has an extensive call roster that could benefit from paging and there are plans to use them in the country's hospitals to notify them of major medical incidents. The Ministry of the Interior is researching the best solution for sending and receiving messages from the devices to the control centres.

Hospitals are also now using TETRA terminals. This posed a challenge in familiarizing non-radio users with both the TETRA terminals and in correct radio communications procedures. This is very different from talking on a phone and most of the hospital staff had never previously used a radio in a professional context.

The service is also closely collaborating with MOI Telecommunications on expanding its use of TETRA to include such functionality as TETRA LTE and PTT on smartphones and whatever other solutions can help the service to improve.

As Qatar develops its society and infrastructure and faces new responsibilities and pressures, its TETRA network will be there to help take the strain.

[www.hamad.qa](http://www.hamad.qa)



# The cheat sheet of PMR abbreviations

**Master the shorthand language of PMR and PMR evolution – never get lost in the jargon jungle again!**

## Basic

**Professional Mobile Radio** or **Private Mobile Radio** - refers to mobile radio solutions designed for professional rather than consumer use.

**PMR**

**Terrestrial Trunked Radio** - a standard by ETSI, European Telecommunications Standards Institute, which defines a digital system for professional mobile radio communication.

**TETRA**

A digital professional mobile radio standard, as defined by the Tetrapol Publicly Available Specification (PAS), in use by professional user groups, such as public safety, military, industry and transportation organizations throughout the world.

**Tetrapol**

**Short Data Service** - a service in TETRA standards to deliver short data (text) messages.

**SDS**

**Push-To-Talk** - a function that lets one user at a time talk to a group or to another user by pressing the terminal's push-to-talk key

**PTT**

**Long-Term Evolution** - a standard for wireless communication of high-speed data for mobile phones and data terminals. The standard is developed by the 3GPP. It is often marketed as 4G LTE.

**LTE**

**Direct Mode Operation** – when radios communicate directly with each other without using a base station or any of the network infrastructure.

**DMO**

**TETRA and Critical Communications Association** - a body that maintains and encourages an open and competitive market for TETRA and encourages industry to cooperate in developing future mobile broadband.

**TCCA**

## Intermediate

**Interoperability** (of TETRA equipment) – the ability of one vendor's equipment to work in a system manufactured by a different vendor, and to different vendors' radios working together.

**IOP**

**Inter-System Interface** - the standard used to connect two TETRA networks together in a way that will be (relatively) seamless to a user.

**ISI**

**Atmosphères Explosives** - refers to two European Union Directives concerned with equipment designed to be safe to use in hazardous areas. The term "ATEX radio" refers to a radio that meets the safety requirements.

**ATEX**

**Mission-Critical Push-To-Talk** - the LTE feature that emulates

**MCPTT**

functions provided by professional mobile radio (PMR) systems. MCPTT requirements are set in the LTE standard Release 13. MCPTT includes regular group calls, broadcast group calls where no response is expected by the initiating user, group calls based on priorities such as emergency group calls that could pre-empt other calls in progress, and private one-to-one calls.

**Automatic Vehicle Location** - a service or an application that shows where a vehicle is, either on a map or in geographical coordinates.

**AVL**

**Broadband** - high-speed Internet access that is always on.

**BB**

**Fifth-generation** wireless network technology, which aims to increase data communication speeds by up to three times compared to its predecessor, 4G.

**5G**

**Radio frequency**

**RF**

**Voice and data** - used to describe a radio communication system which can handle both.

**V+D**

## Expert

**End-to-End Encryption** - encryption of the complete communication link from one end to the other without decrypting the communications anywhere in between. End-to-end encryption is required for maximum communications security.

**E2EE**

**3rd Generation Partnership Project** - a collaboration between groups of telecommunications associations. The initial scope of 3GPP was to make a globally applicable third-generation (3G) mobile phone system specification. The scope was later enlarged to include the development and maintenance of LTE and related "4G" standards, for example.

**3GPP**

**Automatic Person Location** - a service or an application that shows where a person is, either on a map or in geographical coordinates.

**APL**

**Transmitter** - a radio transmitter is a device which sends radio waves through an antenna.

**Tx**

**Receiver** - a device that converts a signal from a modulated radio wave into usable information.

**Rx**

**Internet of Things** - a system of inter-related computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

**IoT**

**Software as a Service** - a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. It is sometimes referred to as "on-demand software".

**SaaS**

**Quality of Service** - on the Internet and in other networks, the idea that transmission rates, error rates, and other characteristics (the Service) can be measured, improved and to an extent guaranteed in advance. QoS is of particular concern for the continuous transmission of high-bandwidth video and multimedia information. Transmitting this kind of content dependably is difficult in public networks using ordinary "best effort" protocols.

**QoS**

Sources:  
<http://www.tandcca.com/about/page/12023>  
<http://www.wikipedia.org>  
<http://www.techtarget.com/>



# One of the **world's highest Tetrapol stations**

**Clinging to the side of a mountain at 3,507 metres altitude, a repeater station in the Alps is working day and night to provide radio coverage for mountain rescuers. Only a station on Little Matterhorn is located higher, at about 3,800 metres.**

**C**ountless mountaineers in the Swiss Canton of Valais can now feel safer since a remarkable new Tetrapol repeater station came on line in summer 2016. Built at more than 3,500 metres, the site is in a hard-to-access area of glaciers and took more than 18 months to build, with construction only possible during the summer months.

Part of the Swiss Border Guard (SBG) network, all equipment is housed in a new building next to an 85 year old mountain hut owned by the Swiss Alpine Club.

The new building is almost totally covered with solar panels and houses batteries with a capacity of 1,000 Ah, enough for ten days' continuous operation even in unfavourable weather. Excess energy generated is used in the mountain hut, which has also been modernised by Swiss Alpine Club to make the solitary life of the hut's caretaker more comfortable.



# Soon you'll be needing this device

## You'll stay in touch

Communicate with your team instantly with two options built into one device – push to talk or touch to message, even when using gloves.

## Back-up power

Stay on top of things with a long-lasting, changeable battery.

## Secure and durable

Stay protected thanks to built-in TETRA security in a ruggedized device.

## The smart features

Advanced apps, built-in security and broadband data are right at your fingertips on a large display.



# Tactilon Dabat

Smart. Strong. Secure.

Learn more at [www.dabat.com](http://www.dabat.com)  
[www.securelandcommunications.com/dabat](http://www.securelandcommunications.com/dabat)

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