# key touch®

customer magazine
3/2013

TETRA paging creates new ideas

Satellite links

Smart financials for smart grids

# Stay connected with never a break

# WHO'S IN THIS ISSUE?

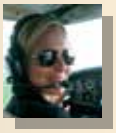
**Want to know a little more about some of the experts who contribute to Key Touch? Look no further.**

**PETRA VAKIALA** enjoys researching and writing stories for Key Touch - there are always interesting new topics to dig into and while digging one learns so much! In addition to writing stories, Petra is into horse riding, downhill skiing and interior design. *@petravakiala*

**TIINA SAARISTO** is Editor-in-Chief for Key Touch and has led the team of editors and contributors since 2003. In addition to Key Touch stories, Tiina is into quilting, Nordic walking and reading mystery stories. *@tiinasaaristo*

**SATU LAMBERG** sees the world around us changing all the time. People are becoming more technology oriented both in their professional and private lives. Against this backdrop, Satu is proud to be a member of the TETRA team to provide secure and safe communication to global users.

**TUOMAS KORPILAHTI** promotes Emergency Response Solutions and Smart Grids and contributes a variety of articles for Key Touch in the areas of new products, data and applications. When not working, Tuomas is busy completing his new house and learning about interior design.



**ANKE STURTZEL** In her role as a press officer for Cassidian, Anke is filled with enthusiasm for worldwide professional mobile radio communication solutions 'made by Cassidian'. With more than 15 years' experience at the EADS Group, she continues to be inspired by the civil aviation sector and the latest technology involved.

**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 Cassidian to capture events, products, sports, professionals at work, city views and critical infrastructure. *@tapiomobile*

**JEAN-MICHEL DUMAZERT** juggles his time between Cassidian, his family, scuba diving and being a local councillor. Since September 2010 he's now added to his packed schedule by contributing to Key Touch as TETRAPOL correspondent.

**Key Touch 3/2013 - November 2013**



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CASSIDIAN

# Out-of-this-world support for field operations

**PROFESSIONAL MOBILE RADIO** has always been about helping people to work more efficiently, wherever needed, whether responding to an emergency or on routine patrol. Increasingly, providing this support on the ground will take technology based in space.

Satellite communications can provide quick coverage to meet the tactical needs of PMR users in locations beyond the reach of a fixed public safety network. Satellite connections can also support big events that need extra coverage. New developments, for example overcoming the communications delay that has dogged conventional satellite connections, make satellite linked communications a viable and economic solution. Commercial operations can benefit too, such as oil companies with operations in remote, offshore, or difficult to access locations that need communications coverage.

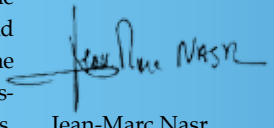
New technology developments are also making the command and control of field operations more effective, particularly by enabling greater cooperation within and between organisations. Better integration of networks and systems is also vital for providing more effective emergency response. Next Generation 9-1-1 is a good example of the possibilities and potential benefits and our article gives an overview of the technology advances that will transform emergency call response systems.

Another transformative technology is LTE 400 MHz which will bring true broadband capabilities to PMR. Key Touch this issue describes a pilot of the technology in Spain. This gave a foretaste of the capabilities of LTE with a demonstration of real-time video streaming from a moving patrol car to the control centre - truly state-of-the-art professional mobile services.

With new and exciting technologies such as these, we are helping our customers to solve their challenges of today and tomorrow.

Finally, before I sign off, you may have seen the announcements that EADS is restructuring into Airbus. From 1st January 2014, Cassidian will be integrated with Airbus Military and Astrium to form a division named Airbus Defence and Space. Which kind of brings me full circle to the start of my editorial where I talked about space-based support for PMR users. With Astrium providing satellite systems and services, our restructuring means you will benefit from being able to obtain all these services from one source.

I hope you enjoy reading this issue of Key Touch and do please let us know how we can help you to achieve your goals.



Jean-Marc Nasr
General Director
Cassidian, Security
and Communication Solutions

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# TETRA's flawless performance at Nanjing Asian Youth Games

**After success at the Asian Youth Games in Nanjing in August, the Nanjing Government is looking forward to next year's 2nd Youth Olympic Games, where the event organisation and command will again rely on TETRA communications from Cassidian.**

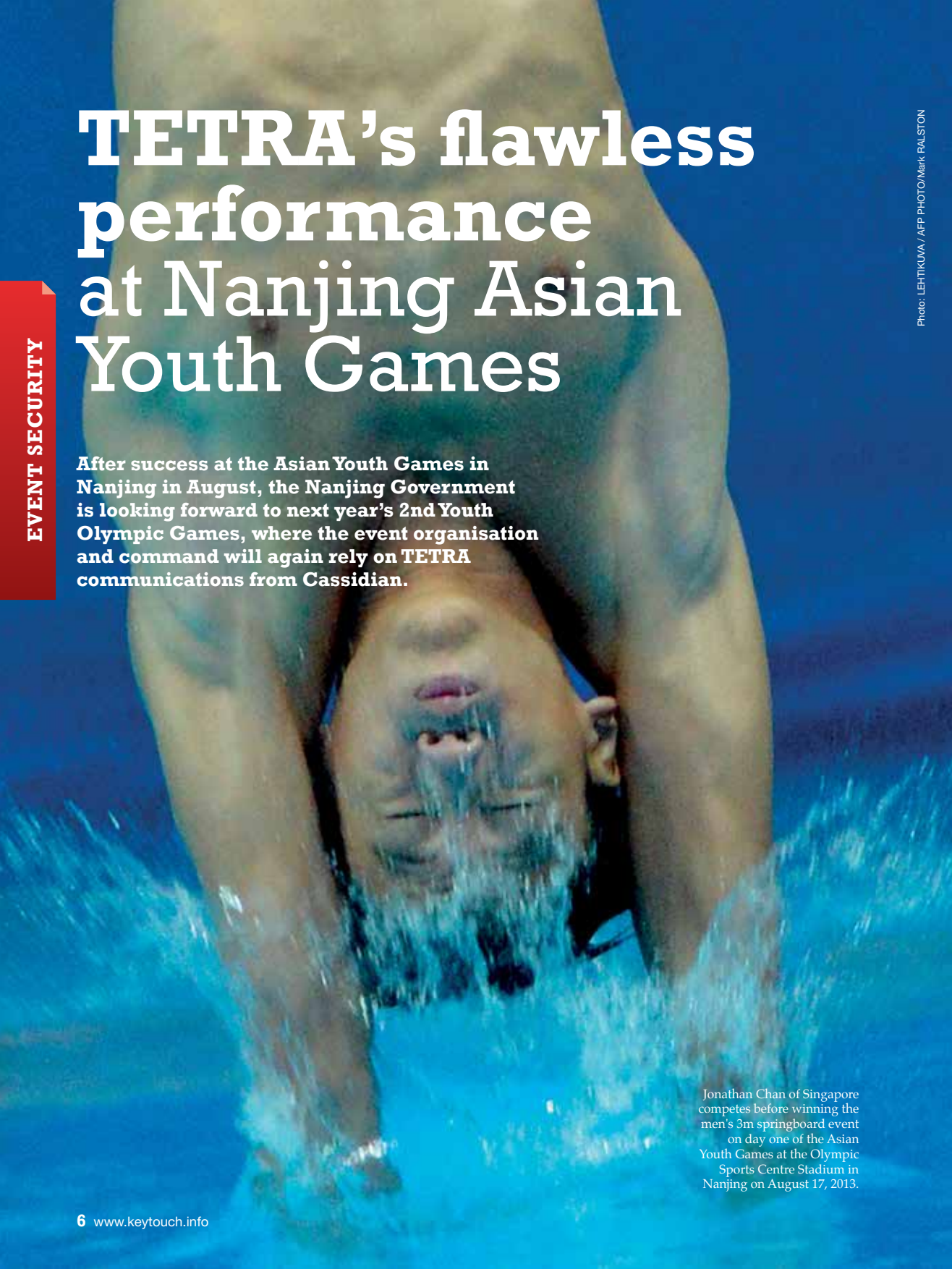


Photo: LEHTIKUVA / AFP PHOTO/Mark RALSTON

Jonathan Chan of Singapore competes before winning the men's 3m springboard event on day one of the Asian Youth Games at the Olympic Sports Centre Stadium in Nanjing on August 17, 2013.

The 2nd Asian Youth Games was held successfully in Nanjing, China from 16 to 23 August. Cassidian's TETRA radio technology provided the communication services for the games to run smoothly and the operator is now looking to use an expanded version of the new network to provide the game organization and command for next year's 2014 Nanjing Youth Olympic Games.

### Quick setup

The new TETRA network was up and running in an incredibly short timescale, with only two months between the signing of the contract with Nanjing Telecom and the deadline for the network build, according to Zhang Tieshuan, director of China P&CC at Cassidian: "It's really a big challenge to build the network within the very tight period. But we are confident in the system performance and the rich experiences of our team."

There was no opportunity to build a test running phase into the project schedule. Instead, the TETRA radio system was put into official operation just before the opening ceremony and successfully delivered a flawless performance. "The closer we got to the games, the more we relied on the TETRA radio communication network," says a key member of the operator of the Nanjing municipal TETRA shared radio communication network at Nanjing Telecom.

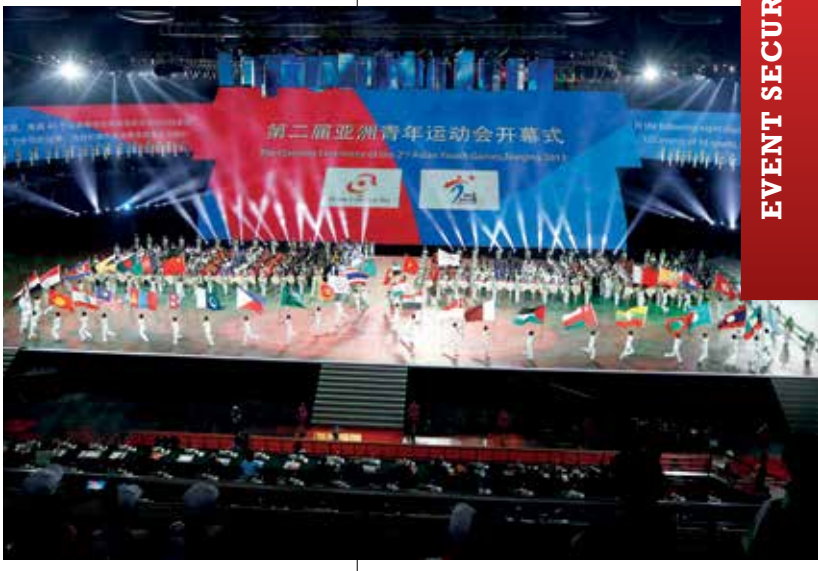
### A winning combination

After the Beijing Games in 2008, the Guangzhou Asian Games in 2009 and the Shenzhen Universiade Games in 2011, this latest event shows again that Cassidian's TETRA network technology is the system of choice for Chinese authorities looking to ensure that the biggest sporting events are supported by stable, reliable and efficient communications.

The Nanjing municipal TETRA shared radio communication network relies on Cassidian's state-of-the-art TETRA IP technologies and equipment, including: a DXT3 switch, TB3 base stations, THR880i terminals and a dispatcher workstation system. During the games, the network catered for the command needs of 27 venues, which accommodated 122 events across 16 sporting disciplines.

"It's like a rehearsal for the 2nd Youth Olympic Games in Nanjing in 2014. We can learn from the experience of the organisation of the Asian Youth Games and pave the way for the 2014 Nanjing Youth Olympic Games," says the network operator at Nanjing Telecom.

Cassidian attributes the network's success to four key points. First, the company's TETRA technology is inherently stable and reliable. Second, it is supported by an international team of experts with rich experience in big events. Third, a comprehensive contingency plan prevented any hiccups from becoming a problem and careful rehearsals helped reduce the element of chance even further. Finally, good cooperation between the network operator and other stakeholders was essential.




As the capital of Jiangsu province, Nanjing is one of the biggest cities in China, covering an area of about 6,600km2 .Following the Asian Youth Games, the new TETRA network will be expanded for the 2nd Youth Olympic Games as already mentioned, but can also be used as the city's unified emergency response radio platform. Users will include the municipal government, emergency response services, the city administration bureau and utility companies.

# Mobile system helps keep Tour de France in Corsica on track


**With the huge Tour de France starting in Corsica for the first time, special measures in the form of a mobile tactical system were deployed to supplement local communications.**

While the eyes of the world are transfixed by the drama being played out in the peloton (or pack), it's the security and organisation of the Tour de France that commands the attention of 13,000 military police, 6,000 police officers and 7,000 civil security officers every summer. And that's where the Tetrapol French National radio network comes in, helping all these public safety professionals smooth the way for riders and spectators alike. But with the race starting out in Corsica for the first time in 2013, the local communications infrastructure needed reinforcement in the shape of the Gendarmerie's PTN mobile tactical system.

## Big start on Corsica

The French security forces typically count on the availability of the national Tetrapol network to ensure radio communications and easy interoperability between all the different public safety organisations, but the preparations for this year's Tour were slightly more complex than usual, with the race gearing up for a big start on the island of Corsica, which had never hosted a sporting event on this scale before.

The organisers anticipated a record-breaking 100th year for the Tour, especially during the three first stages in Corsica. The race started on 29 June in Porto-Vecchio, crossing Bonifacio in the very south of Corsica and passing through Bastia and Ajaccio before crossing the famous Calanques de Piana during the third stage and ending up in Calvi.

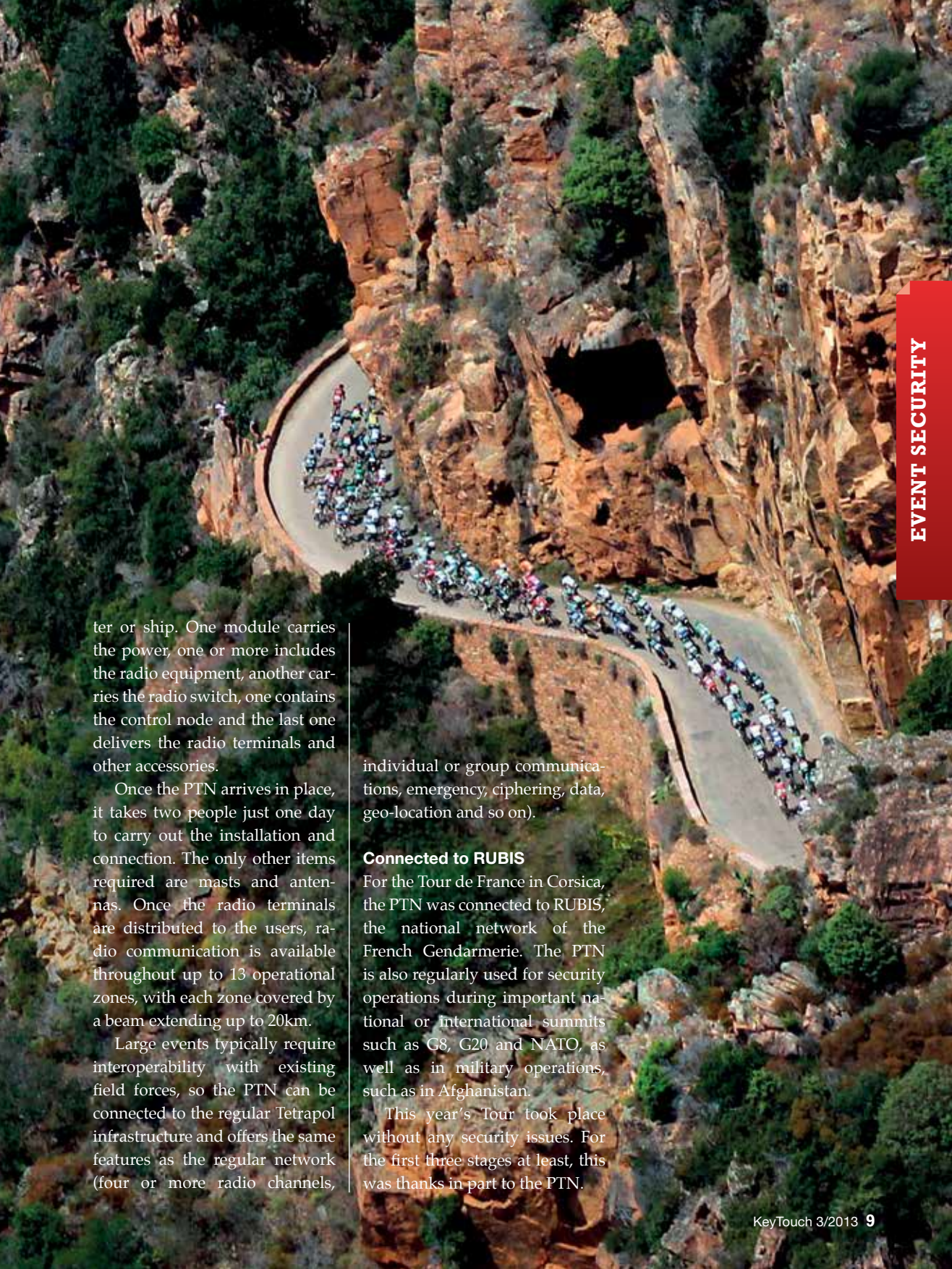
This was the first excursion of the Tour de France to Corsica and the sheer scale of the event threatened to strain the existing communications infrastructure. The Gendarmerie therefore implemented its mobile tactical solution, which was based on technology from Cassidian.

## Communication network on the move

The PTN (Projectable Telecommunications Network) was rolled out temporarily for the Corsican stages of the race. It is designed to meet the needs of military and civil security forces during large tactical operations.

As with the IDR tactical cell used for smaller tactical deployments, PTN enables users to transmit voice and data information via radio and telephone terminals. This system comprises several portable modules that can be transported in secure cases by van, truck, aircraft, train, helicop-

Photo: LEHTIKUVA / AFP PHOTO POOL / PASCAL POCHARD-CASBIANCA



ter or ship. One module carries the power, one or more includes the radio equipment, another carries the radio switch, one contains the control node and the last one delivers the radio terminals and other accessories.

Once the PTN arrives in place, it takes two people just one day to carry out the installation and connection. The only other items required are masts and antennas. Once the radio terminals are distributed to the users, radio communication is available throughout up to 13 operational zones, with each zone covered by a beam extending up to 20km.

Large events typically require interoperability with existing field forces, so the PTN can be connected to the regular Tetrapol infrastructure and offers the same features as the regular network (four or more radio channels, individual or group communications, emergency, ciphering, data, geo-location and so on).

**Connected to RUBIS**

For the Tour de France in Corsica, the PTN was connected to RUBIS, the national network of the French Gendarmerie. The PTN is also regularly used for security operations during important national or international summits such as G8, G20 and NATO, as well as in military operations, such as in Afghanistan.

This year's Tour took place without any security issues. For the first three stages at least, this was thanks in part to the PTN.

# Rapid deployment tactical cell aids international security training

This summer saw security force personnel from 30 different countries gather at the Centre National d'Entrainement des Forces de Gendarmerie for the European Union Police Services Training (EUPST).

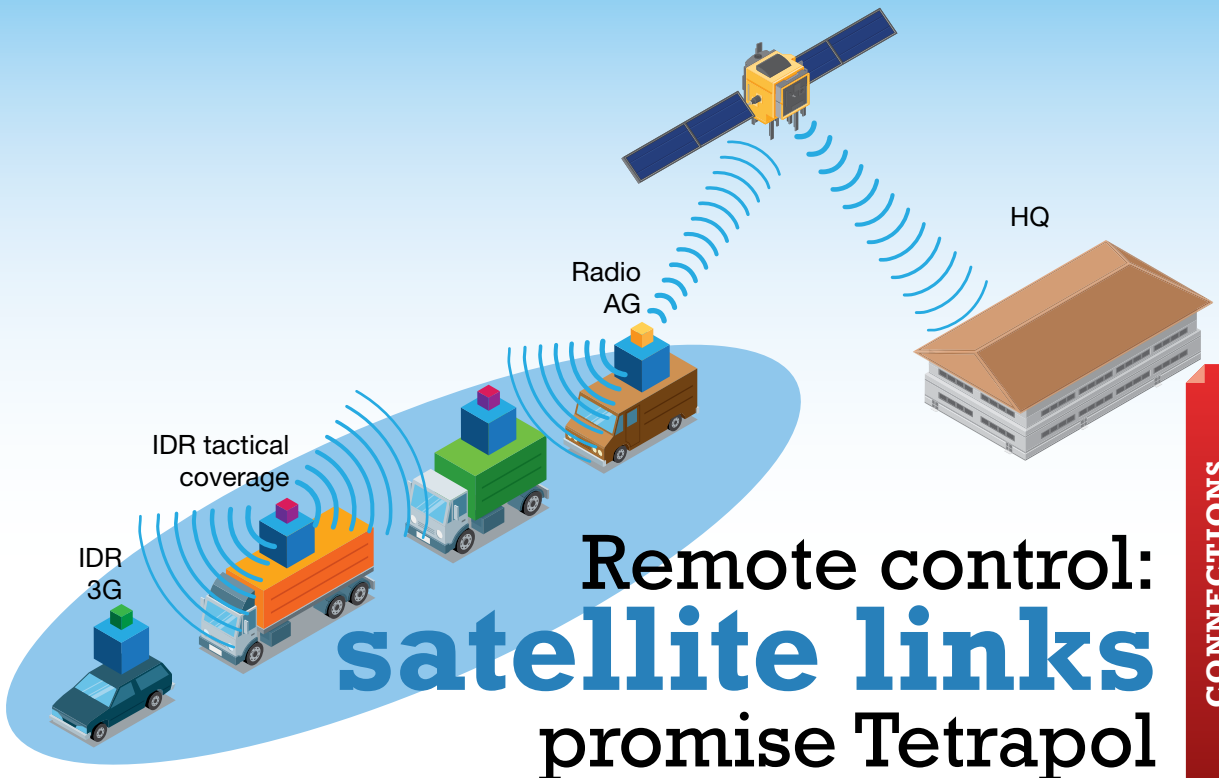
Training exercises prepared participants for such international crises as earthquakes and floods. One of the first lessons was how to communicate together and know where everyone is in the field at any one time.

The French Gendarmerie decided to test the ability of the TETRAPOL tactical cell to meet these objectives. The tactical cell is a rapidly deployable cell that can extend or replace radio network coverage for forces in the field. Ready for action in a few minutes, all information exchanged within the tactical cell's radio coverage can then be broadcast from the field to a national management centre via IP or satellite links.

During the tests, the integrated Automatic Vehicle Location (AVL) application enabled the management in the field to follow the situation and the position of the different forces involved. Thanks to the VLAN, the Gendarmes at the headquarters could also follow the situation, with the Radio Access Gate forwarding voice communication, location and the operational state of all the forces to the HQ's wall display.

The international participants in the EUPST programme emphasised the capabilities of the system as well as its adaptability to their demanding requirements when organising training exercises.

The next step of the test will be to remotely connect the tactical cell to the headquarters through a satellite link. This will allow teams to communicate from their deployments across the world, maintaining security in areas without network coverage.




# Remote control: satellite links promise Tetrapol coverage anywhere

**Successful tests suggest that a vehicle-mounted mobile base station with a satellite link can provide extra radio coverage for rapid-response operations**

Tetrapol tactical cells can be used to connect tactical radio coverage to a headquarters when there is no terrestrial IP link available, according to tests carried out in February at the premises of Astrium in Toulouse. Astrium is the satellite and space technology subsidiary of EADS.

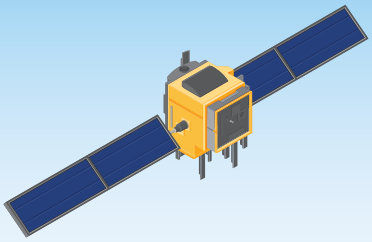
Tactical cells aim to provide radio coverage beyond the reach of the fixed network using an IDR (Independent Digital Repeater). Until now, IDRs have had to connect to the control centre via a Radio Access Gate (RAG) and a terrestrial IP link. The tests demonstrated that several tactical cells could instead be linked remotely to the Control Centre via the satellite communications service that Astrium delivers on behalf of the French General Directorate of Civil Security and Crisis Management (DGSCGC).

So if a fixed base station is damaged, IDR radio communications can plug the resulting coverage gap for field personnel in the affected area. Alternatively, IDR communications can keep field officers in touch with a control centre anywhere in the world, regardless of how remote they are from the fixed network. In the case of overseas aid operations, for example, the operator of the macro-cell could remain in France and implement a tactical cell with one or more IDRs on the other side of the world.

The satellite can link up to four IDRs into the network, which could be essential if communications are knocked out over a wide area by, say, an earthquake or other emergency.

In the new solution, the satellite link is accessed via a new IP radio access gate interface module, which enables the control centre to specify the type of communication, communication channel and the radio cell that each Tetrapol terminal uses.

Many Tetrapol users, such as emergency services and military units, already have vehicle-mounted satellite communications in addition to their terrestrial radio systems,



making it even easier in principle for them to deploy the IDR tactical cells. Some adaptations have been made in RAG and IDR equipment to optimise the latency in the link between two IDRs or the RAG and Control Centre and it is possible to easily tune these specific parameters.

When the tactical communication vehicle arrives on site, the operator simply switches the power on to establish the connection. Radio communication can then be managed from the tactical vehicle or remotely via satellite. The operator uses a PC-based web browser to connect to and configure the IDRs and the RAG. Since the same operator can manage several IDRs, he or she can select the same communication channel for all of them, even if the radio coverage is not continuous over the entire area.

The developers say they now want to carry out tests with alternative satellite links, to ensure that a similar solution could work anywhere in the world.

# Quick fix: satellite links for rapid temporary TETRA coverage

Belgian public safety network operator ASTRID recently carried out tests with 40 users accessing TETRA communications via a mobile base station linked to a satellite. Linking the mobile unit – known as an MTU – to a satellite, is quicker and simpler than connecting the base station to the static public safety network via microwave links. In fact, it reduces the time taken to set up the link to around one hour, or two hours at most, according to ASTRID.

**Takes 1–2 hours to set up**

The concept of a mobile base station isn't new for ASTRID, which deployed an MTU to link with the wider Belgian public safety network (also known as ASTRID) and provide temporary coverage 20 times during 2012 alone. The most frequent users were local police and fire fighters, especially during big events such as festivals and sports fixtures, where there's sufficient notice to set the

MTU up beforehand. But in the case of an unforeseen incident, it takes too long to set up the MTU for service.

The MTU is stored in the Brussels area while not in use. How fast it can reach the location of the incident of course depends on the distance between that place and Brussels, and on the traffic conditions – the MTU does not have emergency vehicle status, so in case of congested traffic, it has no special priority.

Once on location, commissioning the MTU using microwave link connections requires technical expertise and it can take several hours.

In contrast, a vehicle-mounted MTU with a satellite connection would be much easier and quicker to put into operation once on location.

**Minimising the delay is key**

The idea of using satellite connections is not new, but the communications delay (latency) was previously considered to be too great to be practical. The idea cropped up again when Cassidian proposed last year a new method of connection that could reduce the latency from two seconds to less than a second.

Around 40 users representing various disciplines gathered for the test


in the Arendonk military area. The federal police coordinated the exercise from a command vehicle. The MTU in the vehicle was connected to the provincial DXT switch at the Antwerp Command Centre CIC via satellite.

"The satellite connection generates an additional delay," says Els Heyvaert, Radio Networks Coverage & Performance Engineer. "We experienced a 950-millisecond delay when communications took place between different provinces."

The test highlighted the importance of radio discipline, according to Marc Boets, Radio Networks Coverage & Performance Engineer: "When communication is not established instantaneously, the users must keep the PTT [push-to-talk] key down long enough. Most users knew or quickly learned this". Otherwise, communications over radio were the same as with regular radio coverage. "The quality of voice was good and data transmission also proceeded perfectly," he concludes.

Source: SW!TCH, ASTRID's magazine for rescue and security services

**Over 40 Spanish users of the nation's TETRAPOL network recently saw demos of the network's LTE 400 MHz broadband pilot, with live transmissions from a number of cars driving through the city of Segovia.**

# Spanish PMR users see 400 MHz broadband demos

Users of SIRDEE (the Spanish TETRAPOL country wide security and emergency network) were treated recently to an insight into the powerful capabilities of real-time broadband communications. A trial using the network, showed real-time video streaming from a camera on a moving car, including remote control of the camera from the control centre to zoom in on a distant licence plate.

Also demonstrated were an automatic vehicle location system and the planning of a mission on a map. Database enquiries, including images, were also performed.

Photos were sent both ways between the control centre and the car and multiple files were sent and received. SIRDEE users could see on a double screen (one showing the driver's monitor and the other showing the display in the control room) the speed at which the files reached their destination.

Another highlight of the demonstration was high speed web browsing, with access to live webcams in customer premises, real time Internet navigation and connection to Spanish TV broadcasts.

When the cars arrived back at the event site, the SIRDEE users had a chance to see the installed equipment and ask the experts about the services they had just witnessed.

### Multimedia services on existing spectrum

This first trial for SIRDEE of broadband services over 400 MHz was conducted with the objective of implementing multimedia PMR services in the network using the available 1.4 MHz of spectrum in the 400 MHz band.

Two new base stations were installed in two SIRDEE sites of Telefónica, one in a rural and another in a densely populated urban area of Segovia. The base stations are fully compatible with TETRAPOL and 4G LTE 400 MHz.

As well as their TETRAPOL terminal, several vehicles were equipped with a tablet for real-time display of the resources and a video camera that could be monitored remotely from the control room. The users could have simultaneous voice and video communications using the TETRAPOL radio terminal and the tablet.

The event was hosted by Dr. Enrique Belda, Subdirector General de Sistemas de Información y Comunicaciones para la Seguridad of the Ministry of Interior, who welcomed delegates from the National Police, Military Emergency Unit, Traffic Police, Guardia Civil, the Spanish Royal House and Prime Minister's Offices.


Dr. Belda highlighted the excellent response of the SIRDEE network in various emergency situations during the last years and emphasized the importance of a common communication infrastructure to guarantee the safety of citizens.

The Ministry of Interior representative, responsible for the SIRDEE service, described the moment as key for the network modernisation to prepare for the new multimedia services that users are requiring, since the technology is ready and the applications are critical for daily operations.

### Broadband helps meet security challenges

Francisco José Molina, Director of Engineering and Program Development of Telefonica – the SIRDEE network operator- described the state of the art of professional mobile services and the trends toward broadband.

Representing Cassidian Solutions, General Director Jorge Donadeu explained how new broadband capabilities are adapted to the new security challenges and the availability of the LTE 400 MHz technology, which can be gradually introduced into the network using existing terminals.

During the event, the users and suppliers had the opportunity for a lively discussion about the future of the SIRDEE service. Overall, SIRDEE users were left with a very positive impression of the new real-time applications and services.

**Perfect reliability was one of the essential demands when Turin needed a new digital communications system. After looking at their options, Turin turned to Cassidian TETRA. Key Touch recently talked to Dr Sergio Zaccaria, who has been with the system since the start and says it has had "Never a single second out of service since 2008."**

# How Turin stays with never a break

A major earthquake is not the most convenient time for your public service communication system to fail. With people needing help and evacuation, coordinating aid is vital.

Excellent reliability, whatever happens, is why Dr Sergio Zaccaria, Director of the Civil Protection and Transmission Department of the Turin Municipality is glad the city chose Cassidian's TETRA system for its new radio network. "There was an earthquake in a neighbouring municipality, which uses a different system. When Turin people went to give them support, they could not introduce their radios into the system. It clearly was not working, it had gone bust.

"According to our information, our system is by far the most stable and most seamless in Italy," says Dr Zaccaria. "We tested three vendors' TETRA systems before making our final choice. I remember very well that we chose Cassidian's TETRA system because the tests proved this was the most reliable. It has not suffered a single second out of service since 2008."

### Striving for excellence

When the radio services were introduced to the users, it did not take long before the previous analogue system became completely redundant. Users easily adopted the new system because it worked so well. Although some operational changes were needed, these brought several benefits. For example, it was much easier to define talk groups than was possible previously.

The need of the city's Civil Protection department for such a capable, reliable system was empha-

Dr Sergio Zaccaria

# connected

Communications are key to ensuring co-operation and coordination throughout the metropolis.

sized by Turin's success in being awarded host city of the 2000 Winter Olympics. It meant that the police and the event organizers needed the latest communication technology to help ensure the event ran smoothly.

The city's Olympic committee (TOROC) chose to use the network for its own secure communications, while local police also decided to join for the duration of the Games. One of the main reasons the police were keen to use the TETRA system was the ability to establish a virtual private network. This enables several organizations to share the same physical infrastructure in total privacy from one another.

During the two weeks of Winter Games, some 7,000 TETRA radios generated a sustained call rate of around 6,000 calls every 15 minutes. In one case, a single base station processed more than 1,200 calls in just 15 minutes. In spite of this heavy workload, the TETRA system kept the civil authorities and the event's organisers in touch without any major hiccups. Feedback from users was also extremely positive.

**Extending the system**

These experiences were so positive that the network was reconfigured and extended to cover Turin's urban area. Today, the

**Communication across organisational borders has been a huge benefit**

Cassidian network comprises two DXT series switches, one of which is a backup, and 12 TB3 base stations. "In fact, our organization was the field test pilot for the TB3 when it was first introduced to the markets," says Dr Zaccaria.

The Civil Protection also uses DWS series dispatcher workstations and a NetAct for TETRA network management. There are now some 3,000 users, including around 1,000 civil protection professionals who use Cassidian radios.

The network has vastly improved the communications between Turin's municipal staff, providing not only better coverage and functionality, but also enabling better co-operation. As well as municipal police, the system is also used by transport staff, garbage collection personnel and the local fire brigade.

This interoperability between organisations – being able to communicate across organisational borders when operations require this - has been a huge benefit. Even when operations span several organisations, communications within the organisation are completely autonomous and private.

The new administration scheme in Italy means that big cities such as Turin will become metropolitan areas. Communications are key to ensuring that co-operation and co-ordination works throughout the metropolis, and with the secure radio system provided by Cassidian, the Civil Protection department is ready for this change.

Plans for the near future include extending the network's coverage further to beyond the first suburban ring.

Dr. Zaccaria adds: "We were proud to be the first in Italy to deploy this TETRA technology and provide the Turin Municipality with a radio communication network that represented from the very beginning a completely new generation compared to the outdated analogue radio systems that were in use at the time."

**Managing one of the world's biggest TETRA networks, Germany's BOS network, is made far easier with Cassidian's Tactilon® User Data Management tool**

# New tool makes **managing biggest TETRA network** easier

Cassidian's uniform user management tool, Tactilon, has been rolled out across Germany's BOS digital radio network, with the system being completed and commissioned on time and to budget.

## Developed together – meeting all requirements

This Tactilon tool was devised, developed and rolled out by Cassidian in only three years, working in close cooperation with the German Federal Agency for Digital Radio of Security Authorities and Organisations (BDBOS). Thanks to an innovative development process, all user demands with respect to security, homogeneity, user-friendly handling and suitability for mass use were met.

Currently serving more than 315,000 radio communication users within the police, fire and rescue services, BOS is already regarded as one of the world's largest TETRA networks. Using Tactilon, these large numbers of radio users can be organised into call groups, connected with BOS security cards and provided with call rights. In contrast to other European networks, which "lease" their services and networks from a central operator, the BOS digital radio users manage the network independently, on various hierarchical levels.

## Easy integration

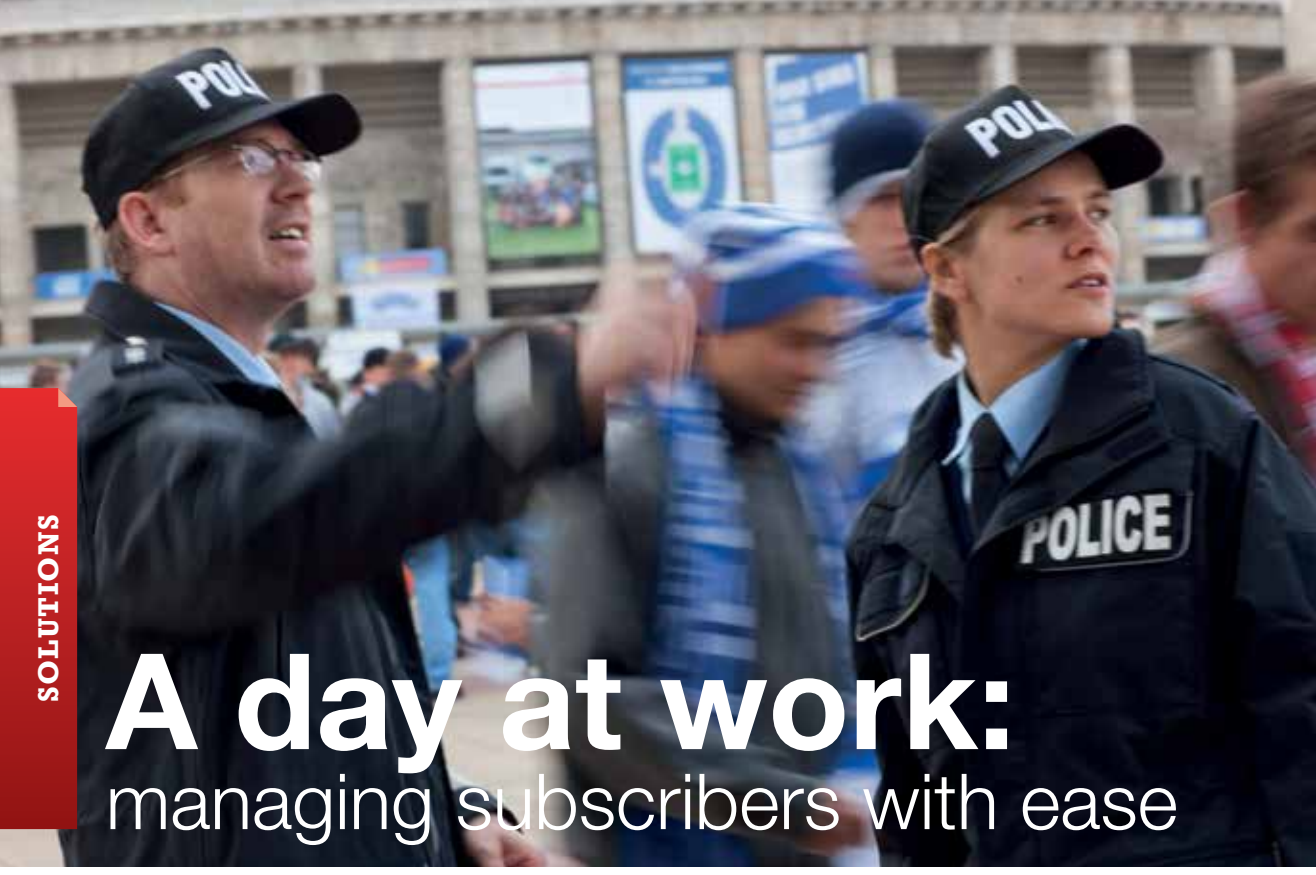
During major events with complex security needs, such as world sports championships or political summits, task forces from other German states can now be integrated at short notice into the communication structure. Depending on deployment needs, the settings for this integration can be changed and monitored rapidly and reliably, even for larger units. The sometimes varying requirements and specifications applied by the federal states to their operational and tactical communication structures can also be taken into account.

The system was designed to meet the specific needs of the network and around 20 workshops were held between BDBOS and Cassidian during the development phase to jointly develop the system's features and capabilities.

## Pay it forward

Sammy Loitto, solution manager at Cassidian, says: "We built up a great deal of trust between Cassidian and BDBOS during the project, ensuring that when the user management tool was launched, it met all requirements. The network is one of the biggest TETRA networks in the world and Tactilon really helps to manage and control it.

"During the development of the Tactilon User Data Management tool the feedback received throughout the years from Cassidian's TETRA customers was taken into account. This makes Tactilon an excellent tool for other existing and new users."




# A day at work:
## managing subscribers with ease

**Managing subscribers in a busy police department is a full time job, one that's made easier with Cassidian's Tactilon® User Data Management tool, as Key Touch found out when it followed a typical working day in the life of Horst Müller. Mr Müller is an imaginary professional from "Unterland".Thus, his story demonstrates a typical day and tasks that are "business as usual" for a professional managing subscribers.**

Working in organisations that save lives is never stress-free. Although Horst Müller knows this, he is still eager to start a new day in his work as administrator for the Blausee Police department in Unterland.

**First task:** Horst is responsible for managing police users in the TETRA network. Today he has a list of new mobile radio terminals which have been fitted into new police cars and he needs to introduce them into the network. He opens his Tactilon user interface with his username and password, creates new subscriber identities and selects the relevant police car profile. Using this pre-defined profile, Horst can quickly and easily add new radio subscribers to the system.

**Second task:** After creating the users and selecting numbers (ISSIs) for them from a list, Horst selects the correct radio terminal and radio terminal profile for them. He then links the users to the terminals, creating a radio terminal - subscriber pair. Now Horst can export this data and send it to the Taqto device management tool, confident that no data is misspelled or incorrect, as the data only needs to be entered into one tool.

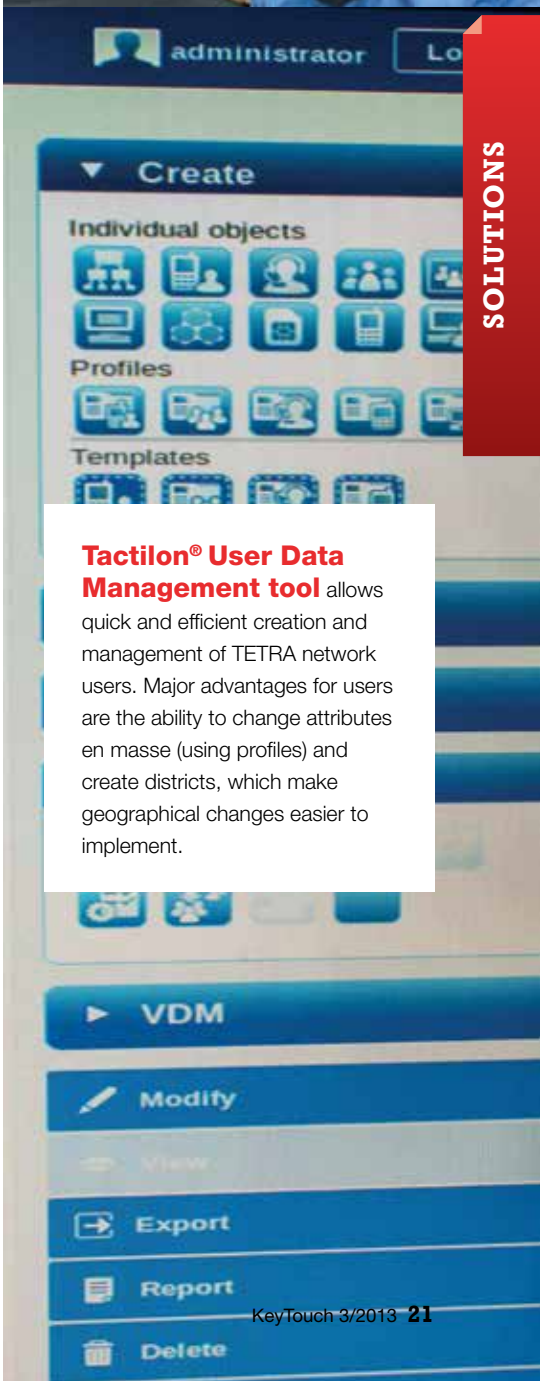
**Third task:** New profile. Horst knows that new radios for motorcycles will be ready and installed soon and he has gathered the information about attributes such as their call rights and priorities. He can now define one profile which includes all the information and which makes it very quick and easy to add new motorcycle police radios into the network.

**Fourth task:** Blausee Police department is introducing a new feature into their radio communication system, a secondary profile that is added to Blausee's policemen's profile. This is the "Major Incident profile", used in extreme situations such as during a flood or other long-lasting natural. In Blausee, this means that individual calls are restricted and all resources are focused on basic services. Horst selects all the members of the team and adds the second profile to all of them. With this single operation, all the team members now have a secondary profile ready. It can be brought into use by a single operation when needed during a major incident.

**Fifth task:** Training. Horst will spend the afternoon training field commanders of the Blausee Police Department. Following the training session, they will be able to use Tactilon to get up-to date information about their fleet while working in the field. They will know their statuses and locations, be able to organise ad-hoc talk groups and do all necessary changes while on the move. All they need is a laptop and an Internet connection - they can connect via the web-based interface with their own user IDs. Today's training will focus on the Major Incident profile. Horst and the field commanders will be going through the parameters and rights, deciding on which changes will be needed if and when a major catastrophe hits their area.

After an afternoon of training, Horst will go back to the office and finalize his report on the training. He is satisfied with his day's work. All of his actions in Tactilon have been recorded and archived, so that in the unlikely event that he has made mistakes, they can be easily traced and corrected.

The nationwide public safety networks in Germany, Finland and Sweden use Tactilon User Data Management.




**Tactilon® User Data Management tool** allows quick and efficient creation and management of TETRA network users. Major advantages for users are the ability to change attributes en masse (using profiles) and create districts, which make geographical changes easier to implement.

**With 17,000 users, growing at 10% annually, Dubai's TETRA network is benefiting from continued investment by its operator Nedaa. Key Touch interviews Nedaa's Deputy Chief Executive Director to discover the challenges of maintaining its growing network's reliability.**

# TETRA keeps pace with growth in Dubai

While many of the world's economies falters, Dubai's is booming. Landmark projects pepper the landscape, from Ski Dubai to the towering Burj Khalifa to new national projects like the Al Maktoum international airport being built to handle 12 million tonnes of cargo and 160 million passengers annually.

For the Emirate's TETRA public safety network, keeping pace with this growth while maintaining its target 99.9% availability is a challenge, admits Mansoor Juma Buosaiba, Deputy Chief Executive Director at the Dubai Government's TETRA Operator Nedaa. "We aim for 99.9% availability of the network anytime, anywhere in Dubai despite the many ongoing projects to expand the network.

Maintaining this resilience means we have to build in redundancy and other preventative measures, such as off-grid power generation, so we are ready for any circumstances."

Catering for 17,000 users, rising at 10% per year, the network comprises DXT switches and more than 100 TETRA base stations from Cassidian to deliver radio coverage across the Dubai area. Its major users include the Dubai government, the police, ambulance services, civil defence, airports and seaports. The network also covers the entire metro system, which is partially underground. The list of user types is growing too, with commercial enterprises such as major hotels joining the network.

### Rapid deployment of coverage

One of the most recent additions to Nedaa's capabilities is a satellite linkedCell on Wheels (CoW) system. "We saw a need to provide emergency coverage in Dubai's remotest regions to support pub-

Mansoor Juma Buosaiba, Deputy Chief Executive Director at the Dubai Government's TETRA Operator Nedaa

lic safety in a crisis. The CoW will provide coverage that can be deployed quickly, as well additional capacity at major events. Although it has yet to be deployed, it is ready," says Buosaiba.

Such forward planning and investment by Nedaa is one of the reasons the TETRA network enjoys a 92% satisfaction rating by its users, as revealed by regular user surveys. As well as its high availability, public safety organisations benefit from the ability to coordinate different agencies' operations over the network, not possible with their previous disparate networks.


Nedaa's new Cell on Wheels system provide coverage and capacity where needed at short notice

"Safety is the ultimate benefit, with faster response time to incidents, full coordination of services and commanders always able to communicate. The network has proven its capabilities, not least at major events over the years from the International Monetary Fund (IMF) meeting in 2003 to this year's New Year celebrations that saw an estimated million spectators around the Burj Khalifa," says Buosaiba.

### Long life for TETRA

The future needs of users is something that Nedaa is already looking at, in particular broadband communications to enable efficient applications like video links and the widespread use of biometrics. "Although we are in the early stages of studying how LTE networks might meet these advanced public safety needs, it is clear that TETRA will remain in place for many years for voice and some data applications. So we are continuing to upgrade our TETRA hardware and software and the system is proving very reliable. We have run base stations for ten years without any failures," explains Buosaiba.

The network's ongoing development is supported by Cassidian's local UAE agent, Atlas Telecom, with backing directly from Cassidian. "We get excellent support from Atlas Telecom and while we are open to using different infrastructure and procure through a tendering process, we use Cassidian systems exclusively," concludes Buosaiba.

# On the money
## – smart financials for smart grids



**We're more dependent on reliable energy supplies than ever before. Energy companies are investing in smart grids to improve reliability and resilience, and cut operational costs. But how can you know if smart grid communication will deliver a smart return on your investment? Here are some key pointers.**

### Optimised total cost of ownership

Upfront investment costs are important, but up to 70% of smart grid communication costs come from operations, such as transmission line leasing, equipment room rentals and staff payments. It's vital to consider the total costs across the life of the network.

### Total coverage – today and tomorrow

Your chosen communication technology must provide cost-effective coverage throughout your geographical operating area. Adding new subscriptions to the system must be easy and low-cost to allow for future expansion.

TETRA radio technology offers wide-area coverage scalable from local to national deployments. High capacity in urban centres means you can develop your business as needed. Its ability to withstand extreme weather or operate in remote areas makes it suitable where no other telecommunication infrastructure is available. It's easy to add new users as the network grows. Simply plug in a new TETRA terminal to your SCADA station, eliminating the high costs of cabling.

### Open standards

Healthy competition among vendors keeps costs down and encourages the development of new functionality. So

# Smart Grid in a nutshell

Smart Grid increases the quality of service to customers and enables modern low-carbon electricity production. It can increase power company revenue by reducing power outages and enabling efficient mobile workforce management.

A smart grid drastically reduces power outages through power distribution automation, where faults are automatically detected and isolated, and electricity re-routed. Effective mobile workforce management ensures a reliable energy supply for customers. Smart grid enables renewable energy production by balancing the generation and consumption of solar and wind power.

Managing a smart grid requires a dependable communication system. TETRA is the perfect choice due to its excellent reliability, security and availability. Wireless TETRA-based smart grids are more cost-effective.

choose a system based on an open standard with a healthy ecosystem of competing suppliers.

**Long-life equipment**

The electricity grid is built to last and the communications system should be too, with carrier-grade equipment designed for a 15-year life. Support agreements should guarantee service and spares availability to suit the critical nature of the utility supply system throughout that time.

**Vendor stability**

Communication technology vendors need to show that they'll be around for the lifetime of the smart grid so they can continue to support and develop their systems.

**Buy one, get two**

Smart grid communication technology need not be limited to monitoring and controlling smart grid devices. The best technologies can also provide reliable voice and data services for your mobile workforce.

TETRA offers data with extremely low latency that allows near-real time monitoring and control of transformers and distribution lines. It also provides reliable group calling, individual calls and data services for maintenance personnel. Reliable voice communication enables better workforce management.

**Pay-as-you-grow**

Your chosen solution should allow you to start small and scale up cost-effectively to a nationwide deployment, as and when your business develops. This pay-as-you-grow model means investments are never wasted.

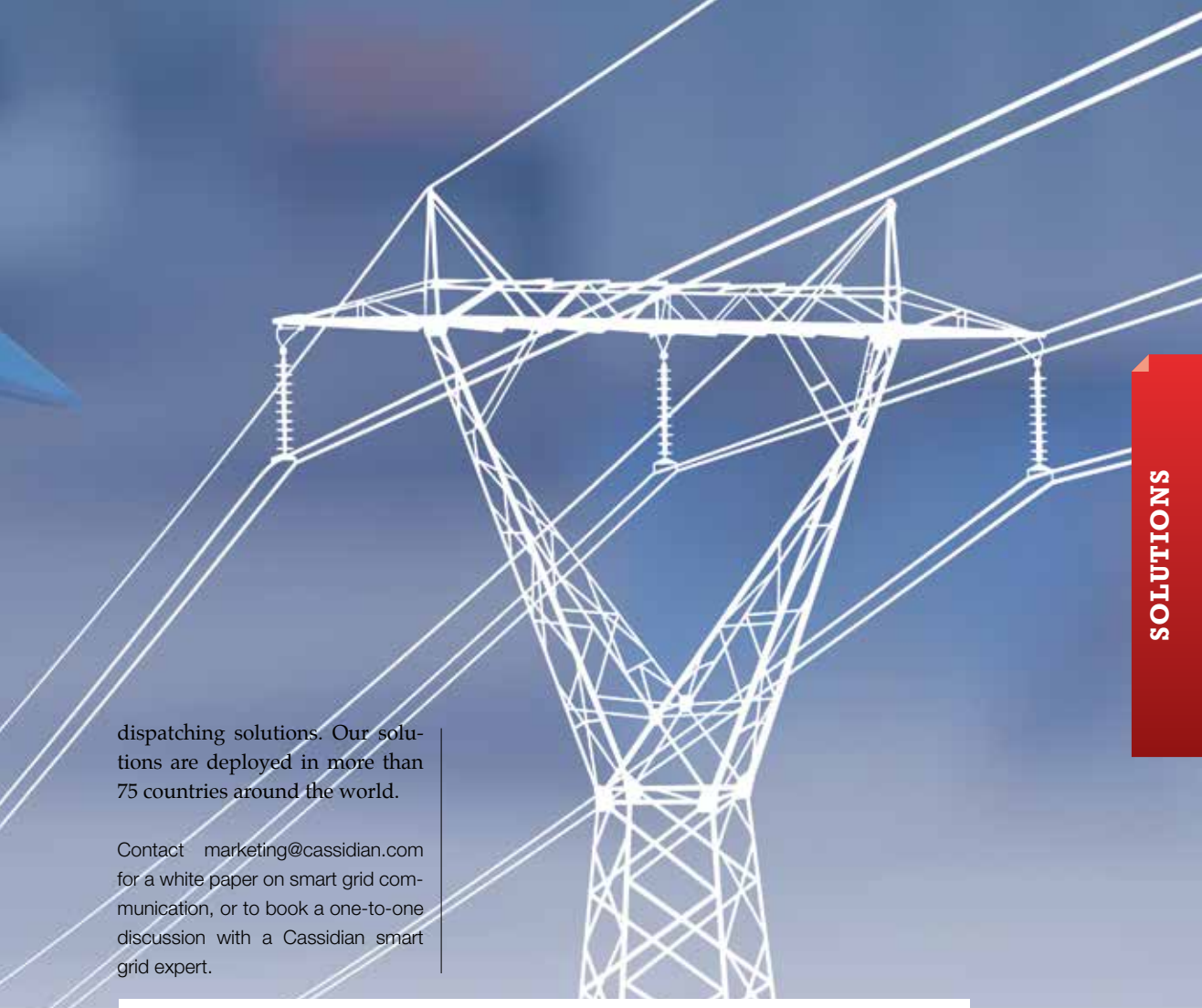
**Reliable, available and secure**

The smart grid needs a reliable connection even when public communication systems fail. Typical examples include extreme weather conditions or events sparking spikes in demand, such as a local crisis or high-profile sporting event. It also needs to be secure against unauthorised interference.

TETRA is hardened for police and military use. It offers a wide selection of high-level encryption options to protect data traffic. Secure authentication ensures that unauthorised equipment cannot be connected to the smart grid and jamming detection alerts you immediately if someone is trying to block network access.

**Cassidian smart grid communications**

Cassidian offers a complete smart grid communication solution, including highly reliable TETRA communication networks, SCADA modems, award-winning handsets and vehicle radios and



dispatching solutions. Our solutions are deployed in more than 75 countries around the world.

Contact marketing@cassidian.com for a white paper on smart grid communication, or to book a one-to-one discussion with a Cassidian smart grid expert.

# KEPCO - A successful smart grid

KEPCO provides energy distribution across South Korea and has been running a Cassidian TETRA system to control its electricity distribution grid since 2007. The system supports automated power distribution, transformer monitoring and mobile workforce management.

Key achievements are:

- Control time of power grid equipment reduced from 5 seconds to 1.8 seconds
- Monitoring time for a transformer reduced from 10 seconds to 4 seconds. This has resulted in tangible business benefits for KEPCO and its customers:
- The rate of power loss in distribution in year 2011 was reduced to only 3.69%
- Response times to incidents are dramatically shorter. The average power outage time per customer was only 12.4 minutes in 2011
- The shorter response times have brought better customer satisfaction
- Operational costs have been lower, thanks to the efficient communication system and the applications that use it.

# BEYOND JAMES BOND

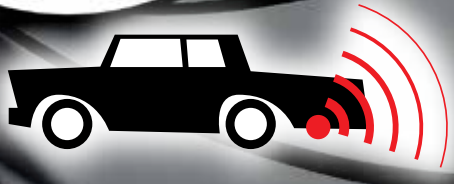
**We all love how James Bond overcomes his enemies with the help of hi-tech gadgets supplied by the ever ingenious 'Q'. Yet, what if 'Q' became 'C' (for Cassidian of course)? With some of C's technology, there would be no need for cigarette lighters that doubled as radio transmitters or a TV in a watch.**

### PAGER ON A KEY CHAIN OR WRISTWATCH

This regular pager was not very sophisticated, despite being concealed as an everyday object. Instead, use the active pager from Cassidian.

### LEKTOR DECODER

This typewriter-sized decoding device was used to decipher encrypted Russian messages. These days, bad guys cannot decode your confidential radio communications when you use end-to-end encryption.



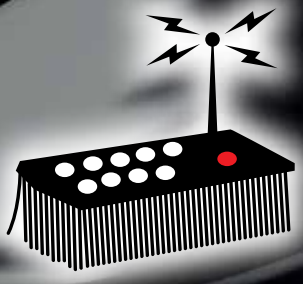
### HOMING BEACON

Bond used this device to track people, cars and ships. Yet, with a Cassidian radio, your HQ can keep track of your position using APL/AVL, thanks to its built-in GPS device.

# – NO NEED FOR GADGETS WITH ‘C’

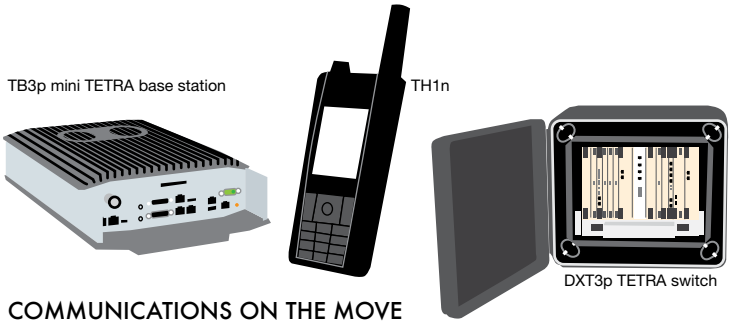
## THE FELIX LIGHTER

This radio transmitter/receiver disguised as a car cigarette lighter allowed Bond to contact his friend. Yet, why not go even more invisible? We recommend that Mr Bond uses the thinnest terminal out there, the TH1n, which will fit perfectly in the pocket of his trademark dinner jacket – just use the pocket clip holder to place it conveniently. As the radio is so slim it is not visible to outsiders. Bond merely needs to connect a discreet headset to listen and talk.



## CLOTHING BRUSH COMMUNICATOR

As its name suggests, this was a radio hidden inside a clothing brush with a key, allowing it to transmit messages in Morse code. Messaging via Morse code is so last season. Cool operatives use their secure radio to tap text messages using SDS.




## COMMUNICATIONS ON THE MOVE

The TB3p mini base station has been integrated into a piece of nifty carry-on luggage. Using a mini base station will bring secure communication services even to areas with no network coverage whatsoever – such as the North or South Pole, the Sahara desert, or, who knows, even in orbit.

And if you need even more features than a smart standalone base station can provide, you can use the DXT3p switch. It fits easily into the trunk of an Aston Martin, between the machine guns and rear firing oil sprayers.

# Stay smart and covert with CassidianTh1n

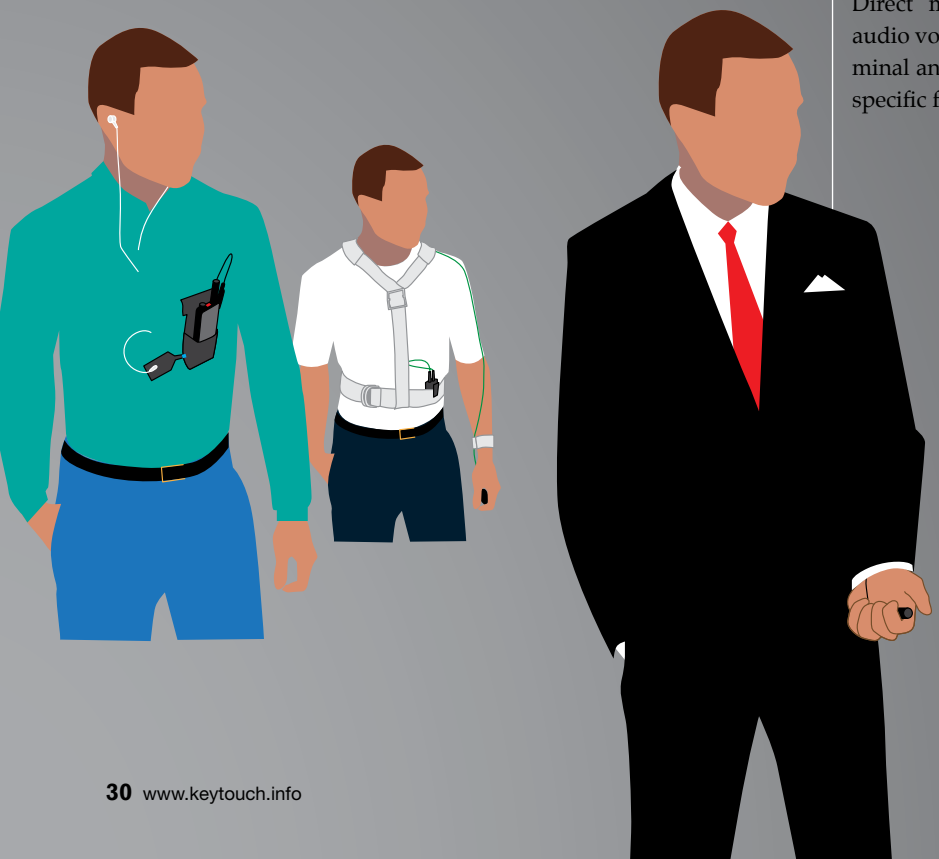
He looks like any of us and does the same things we do - walking in the street, sitting in a café, or watching a sports event. He could be wearing a business suit, jeans with a T-shirt or sport clothes with a smartphone headset. Just an ordinary guy that no one would pay any attention to.

Yet, this is no ordinary man, doing everyday things. He is on duty - a security officer, a bodyguard or a secret service agent. He is a professional in a covert operation, perhaps guarding a building or securing a VIP person or one of the many other duties that require a covert radio and accessories. To maintain his cover, he wants no-one to know he is carrying a professional radio or to see him using it.

The Cassidian TH1n TETRA radio is small yet offers high emitting power, making it easy to conceal. Thanks to the smart accessory interface, TH1n can be adapted for covert use with special accessories that provide a complete outfit.

Optimum coverage can be achieved by changing the standard antenna to a dipole. Carrying the terminal, antennas and cables is made easy with a very light and comfortable harness (see picture).

Another feature is a smart accessories interface that allows clear transmission and reception through the use of transduction or induction technologies and earpieces. Finally, a smart Remote Control Unit allows the user to change channels remotely, both in Trunked and Direct modes, change the audio volume, mute the terminal and access any other specific features he needs.




# Know where they are before you ask

Ever wonder how the some of the unique features of Cassidian radios are created?

A few years ago a group of Cassidian R&D engineers were having a coffee break and began talking about how much communication and phone calls have changed since they were children. As they talked, they realized a curious thing - most of today's mobile calls begin with the question 'where are you? '

One engineer pointed out that this never happened when people were calling landline numbers in offices or homes – the caller knew where they were calling. However, in the mobile world, people don't usually know where their call is being answered. Yet, people are curious and want to know where the other person is.

Discussion led to TETRA users, whose whereabouts are even more important, in fact vital. In a tricky situation it might be critical to know where your colleagues are - where is the nearest team member who can help me?

Brainstorming the idea, the engineers came to the idea that the location of the caller should be shown on the display automatically and instantly, because there is no time for a conversation. And that is how the "Where are you?" feature was conceived.


# DID YOU KNOW
## that your phonebook is now twice the size?

The latest phonebook in Cassidian TETRA radios is almost double the size of previous versions. The old phonebook had a maximum of 255 entries, but the radios can now hold up to 500 entries.

This is a huge extension to your range of contacts. What's more, up to five numbers and up to two text notes can be saved for each contact in the phonebook. That means that a full 500 contacts can equate to 2500 phone numbers at your fingertips.

Each number in a given entry has to be assigned a specific number type, which can be one of the following:

**PRIVATE** - if the number is a TETRA number other than an abbreviated TETRA number.

**ABBR. NUMBER** - if the number is an abbreviated TETRA number (Fleet Specific Short Numbering – FSSN).

**PHONE** - if the number is a public telephone network (landline or GSM) number.

**OFFICE EXT.** - if the number is an office extension number.

The first number saved under each name is automatically set as the name's default number and is dialled automatically unless you select an alternative number.

The phonebook is very easy and quick to access. Just press the right selection key for Names when the radio is in standby mode. Of course, the phonebook can also be accessed via the **MENU/CONTACTS**.

# TETRA PAGING
## creates new ideas



Many people still picture a pager as a small beeping device showing only which phone number to call when the user can get to a landline telephone. Paging today offers much more, including advanced solutions that make it a valuable tool in day-to-day operations.

The basic idea remains the same: to alert people on duty when they need to respond to an incident. The alerted individuals are often professionals, but they may also be volunteers. In any case, they're needed to help handle a critical situation. Thanks to secure, advanced TETRA networks, paging solutions will have many more features and functions to offer in the future.

### Paging devices

Old-fashioned, basic paging is not efficient in the modern world, where dispatchers are often looking to pass critical information directly to the alerted people. Instead, it's paging's features that make it useful.

For instance, the paging device can show the priority or severity class of the alert and a timer will start running. The user must accept the alert before the timer runs out, or the system will record that they're not available. This is useful because the dispatcher instantly knows which resources are available for call out.The pager display must be big enough to show all the important information, so that personnel know what to expect once they arrive at the scene of the incident.

The pager needs to be compact and the antenna should be integrated within the device, so it is convenient to carry in a pocket. It should also be rugged and resistant against dust and water. Most of all, it should be very easy to use with long battery life. Ideally, the user should also be


able to carry out any software upgrades and terminal configurations over an IP network by connecting the pager to their home PC. This would reduce the need to take the device to a service point when the pager settings need to be reconfigured. Being able to update the pager at home, for example, would make life much easier for volunteer firemen who do not regularly visit the fire station.

**Simple or full paging?**

Paging solutions nowadays can provide anything from a simple call-out to a wide feature set. In countries such as Germany, where the majority of fire brigades rely on volunteer fire fighters, paging with a simple call-out is a perfect solution. Volunteers may be drawn from many different professions, but they each have their own specified task within the fire brigade.

These part-time volunteers don't need to be involved in the public safety authorities' voice communication during their normal working day, when they may be busy as teachers, nurses or office workers. The important thing is that they are reachable. A powerful and simple pager with a long-lasting battery and simple set of features is therefore the best solution. Voice communication is usually not needed, since the users only need to accept or reject the alert by pressing a key. An alert gathers the volunteers together at the fire station for more detailed instructions.

Full call-out can be a better solution for professionals, such as fire fighters who are on call at home. Full call-out normally requires a TETRA radio with a paging feature. After the user has accepted the task, the radio can move to an information phase and the dispatcher can provide everyone in the alerted group with more details about the mission, via either text or voice. Those officers who accepted the task can even start a group call before they get to the fire station. This means that the group starts preparing sooner for whatever situation they face.

Of course, it's not just emergency organisations that can benefit from advanced call-out features. They can also help organise other field operatives, such as maintenance personnel. With this type of task manage-



ment, maintenance technicians could be called to their next job by a simple pager and press the “accept” or “done” key to let the dispatcher know once the job has been completed.

### Operators can benefit

TETRA paging also offers benefits for network operators who can use their existing TETRA infrastructure, which is more cost effective than running a separate, dedicated paging network. Pagers are light users of the network, because they don’t require voice communication. A good balance of radios and pagers can therefore help to optimise the use of network resources. Operators might also attract new users who normally use GSM communications but are looking for task management features. During major incidents, the public mobile phone network is often jammed with too much simultaneous traffic, but TETRA provides more secure communications. In addition, a pager scores well in terms of information security, because the risk of misuse is minimal if it gets lost or stolen.

Operators and dispatchers can also benefit from the advanced filtering features available in paging. Each user can have a specified role, such as a chemical expert, for example. That person need only be alerted if chemicals expertise is needed in a particular incident. This function can be automated so that in an emergency when every second counts, the dispatcher can simply send the alert and the pagers will handle the filtering.

### Future trends

Because demand for paging in TETRA seems to be growing, operators, organisations and users around the world should take some time to define their needs and use cases. Stakeholders should get up to speed with what’s possible with paging in TETRA and get ready to make the most of the technology. Paging might bring new opportunities and new ways of working with existing TETRA systems.

Photographer: Juhana Hietaranta

**See the new active TETRA Pager in action at Cassidian stand in PMR Expo 2013.**

**Outstanding radio performance in robust and compact design.**

# New Sri Lanka airport gets TETRA

Cassidian has supplied Hambantota International Airport in Sri Lanka with a secure TETRA radio communication network based on its Claricor solution. The network includes an Automatic Vehicle Location (AVL) function and is ready to be integrated with additional planned systems.

The new TETRA network has 50 airport authority users, helping to make their work easier and more efficient. Users have listed the most useful features as SDS, Text Messaging, Group Call, Individual Call, Emergency Call, Radio Tracking by AVLS and Ambient Listening.

Claricor is Cassidian's solution for small to medium-sized networks. Designed to meet the needs of airports and for use in the industry and transport sectors, Claricor offers many of the advanced functions of larger networks including secure voice and data services, individual calls, group calls and dispatcher functions. In addition, Claricor can easily expand from covering a small group of users served by a single site to becoming a fully-fledged network addressing the needs of several thousand subscribers.

The system's installation, commissioning and activation were performed by a Cassidian team based in India in close cooperation with Sri Lankan company Queens Radio Marine Electronics (Pte) Ltd, Cassidian's value-added reseller (VAR).

Cassidian was chosen by China Harbour & Engineering Company Limited (CHEC) of Sri Lanka to supply the communications network to the airport, which was inaugurated by the President of Sri Lanka in March 2013 as the country's second international airport.

This is the second TETRA system installed by Cassidian in Sri Lanka, following that for Bandaranaike International Airport, Colombo. The most recent order is for additional Cassidian TETRA terminals to be used by various departments at the airport.

PHOTO © ROHAN KARUNARATHNE / Demotix/Demotix/Corbis

# THR9 Ex and Claricor® 3 - a perfect match for oil and gas

As with many other industries, oil and gas production faces the challenge of managing and controlling critical communications. The industry also has the further challenge of working in an explosion prone environment. Overall, the oil and gas industry needs a reliable, secure and advanced communication system that can be used safely in such circumstances and can also connect to the public phone network when needed.

The industry's facilities, such as refineries, are often located in restricted areas, for which a nationwide network will often be adequate to provide coverage. However, if such network is not available, a perfect alternative is Cassidian's Claricor® 3 - a smart

network solution that can be developed from a single stand-alone site to a multi-site system. Claricor provides field-proven TETRA technology with excellent features and reliability, criteria essential for oil and gas applications.

Yet, a network on its own is nothing without cleverly-featured and well-equipped radios. The THR9 Ex radios from Cassidian meet the demanding requirements of oil and gas users and are fully compatible with the Claricor system.

**High value with low investment**

Claricor is a low cost system that is quick to roll out. With its compact size and standardized TETRA features, it offers 'public safety reliability' for 'business critical users'. Claricor has the highest number of TETRA features on the market, making it a perfect pair with THR9 Ex in oil and gas use. Both are quick and easy to learn and use, making the combination a high quality, cost-effective choice.

**THR9 Ex - a radio filled with features**

THR9 Ex is a fully featured TETRA radio with a user-friendly, logical menu. Its alphanumeric keypad and many programmable function keys make it easy to use.

The THR9 Ex includes the same unique features only available in Cassidian radios, such as Lifeguard, Where are you, voice feedback and Java platform for tailored applications. It also has a powerful, 2000 mAh battery for long operation time and the ability to change the battery inside the Ex area, enabling top performance in demanding environments.



## **Seven reasons** for choosing Claricor with THR9 Ex

1) The complete system of CLARICOR 3 and THR9 Ex is the perfect solution for the oil and gas industry, providing all the secured communication needed. For example, Claricor 3 is an excellent bearer for SCADA information used to supervise oil pumps and pipes
2) The radio transmission coverage is the best on the market for such a small system
3) Claricor uses equipment built to last, giving a long life and cutting the need for constant maintenance
4) The THR9 Ex user can stay focused on the job without any concerns about working in an Ex zone, as the radio offers the highest level of protection for all types of gas
5) The THR9 Ex is the most robust radio available, able to work in harsh environments. Knocks and drops are not a problem for the device
6) The THR9 Ex battery can be changed in an Ex area, so no need to worry about loss of power. Also the ability to connect and disconnect accessories inside the Ex area provides tremendous flexibility for very efficient working
7) Everyday work tasks are made easier by the radio's clear user interface, offering advanced features and the ability to display user-friendly applications on an extra-large colour screen.

# Building a safer world – Next Generation Emergency Call Processing

# NG9-1-1

The most significant change in Public Safety communications over the last 30 years is occurring right now, part of a process that will continue for many years to come.

That change is the adoption of Next Generation 9-1-1 (NG9-1-1). What does this mean for the daily operations of control rooms or PSAPs (Public Safety Answering Points) and why is the adoption of NG9-1-1 so critical for everyone involved in an emergency call?

## Let's start with a hypothetical situation.

Imagine a family returning from their vacation when suddenly, without warning, a car crosses into their lane and hits them head-on. The father is in the driver's seat and mother in the passenger seat; three children are in the back with the baby in a car seat. Everyone in the family is now in a life threatening situation, where seconds can mean the difference between life and death.


In today's world, how would they get help? If they are unconscious or unable to make an emergency call, their only option would be to wait until someone stops to help. In a NG9-1-1 world, it would be very different.

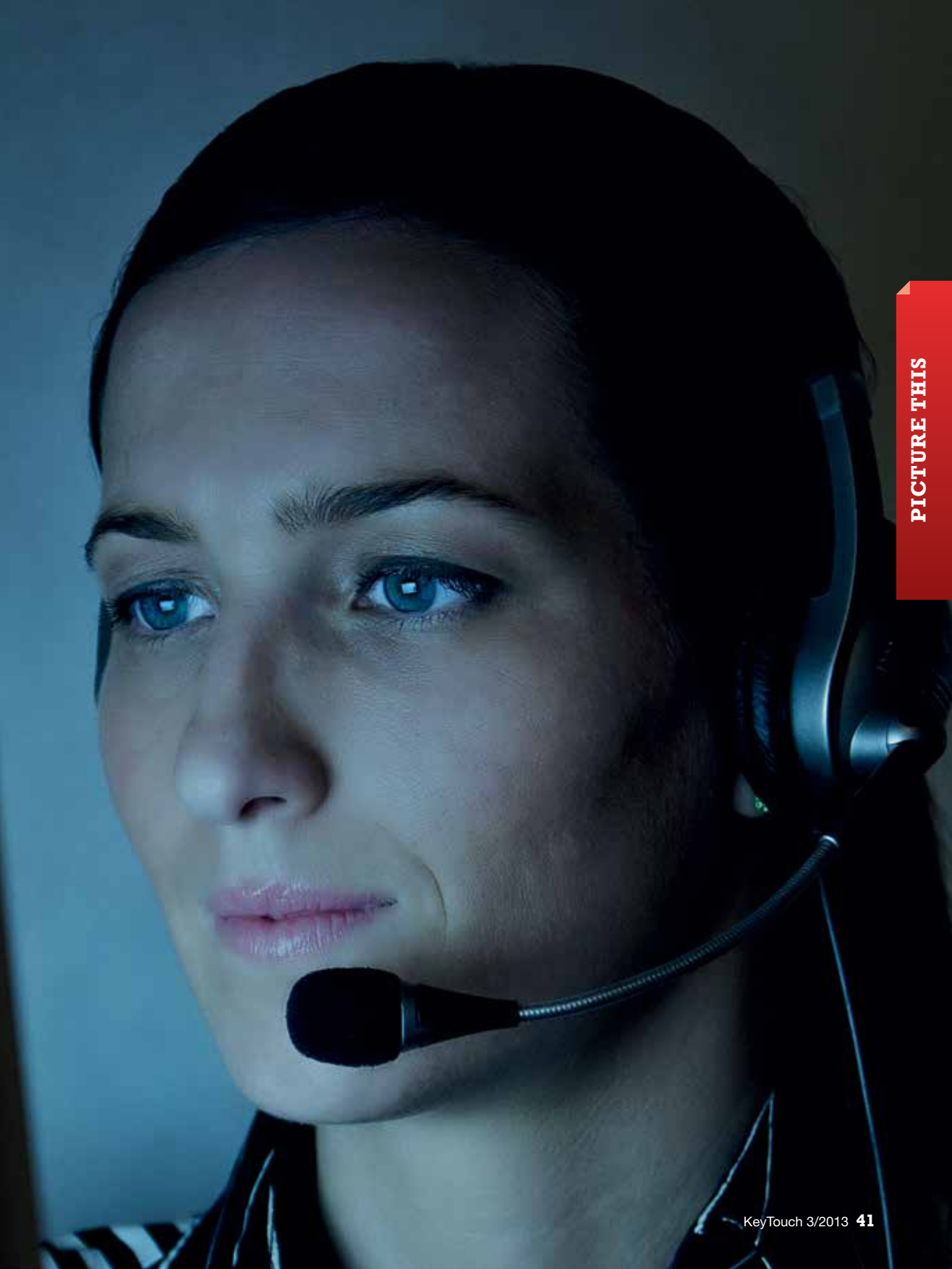
### Cars send their own emergency calls

First, the car would automatically call for help as soon as the telematics within the vehicle recognized that an air bag was deployed. Known as Automatic Collision Recognition or ACN, the information would be sent to the control center or PSAP and could include, how fast the car was traveling, its location within a couple of meters, the owner's name, the driver's name and a medical history of not only the driver but the family as well.

All of this information would be immediately displayed on the call taker's screen. If there is a closed-circuit television camera at the scene of the accident, the video image of the crash could also be transmitted to the call taker. He could further benefit from photos, videos and SMS from people at the crash site.

### Accurate location and key personal information available immediately

All these important details would be broadcast to the police, fire



and ambulance services, based not only on the location of the accident, but also the personnel closest and best suited to handle that particular incident. The data would also be instantly forwarded to the receiving hospital so they can begin preparations for the emergency care.

**Improved interoperability**

NG9-1-1 also facilitates the sharing of information between agencies. This means that first responders across a country, a state, a province or a city, can communicate seamlessly over the IP network and share all necessary information.

The importance of NG9-1-1 is emphasized by Gigi Smith, President, Association of Public Safety Communications Officials (APCO) International: "The emergence of Next Generation technologies in both 9-1-1 and first responder broadband communications represent the most significant advancement in emergency communications in over half a century.

"These new technologies provide an opportunity for citizens, telecommunicators, dispatchers, and first responders to share critical data, in near real time, across multiple platforms and jurisdictions. APCO will continue to support the universal implementation of Next Generation technologies and the lifesaving capabilities they bring to communications centers and first responder agencies."

Overall, NG9-1-1 offers communities smarter ways to keep everyone safe by providing more accurate and more useful forms of information to save more lives. It is the evolution and integration of technologies that will allow people to protect their communities more than ever before.




# Getting technical – NG9-1-1 inside out

**Today's hottest trend in emergency response centres is Next Generation 9-1-1 (NG9-1-1). Although there is a lot of talk, the field has few true experts on the subject. Key Touch outlines for you the key technologies behind Next Generation 9-1-1 and 112 solutions. What's important to remember as you read on is that NG9-1-1 applies to all emergency systems, whether it is 1-1-2 or 9-9-9 or any other number used for Public Safety Communications and response.**

## Components of NG9-1-1: Multimedia and intelligent information processing

NG9-1-1 brings a dramatically new way to make emergency calls, with some people saying it sounds almost like science fiction. In reality, it is Public Safety joining the 21st century.

"NG9-1-1 involves two components," says Jeff Wittek, Chief Strategy Officer for Cassidian Communications. "First, it allows control centres to accept non-traditional packet communications, such as text messages, images and video. The second component is the intelligent processing that makes all this information useful to dispatchers and responders."

## IP communications enable new media

NG9-1-1 is the ecosystem of hardware, software, databases and other components that allow Internet Protocol (IP)-based communications with and between control rooms or PSAPs.

Moving emergency call processing to IP-based communications is critical because IP and multimedia saturate our day-to-day personal and business communications. While we use real-time text and video to communicate on a daily basis, our method of communicating with emergency call takers has not changed.

NG9-1-1 enables us to make emergency calls from any communications device on any IP-based network, using the same tools we use today in our personal communications. And just as importantly, it will allow emergency call takers to respond with tools and information they do not have available today.

## Help requests from a broad range of devices

A true NG9-1-1 solution does not care about the device the request for assistance comes from, whether by telephone, VoIP phone, mobile phone, satellite phone, email, text

chat, SMS (short message service), video, chat, remote alarm, monitoring alarm, telematic crash notification, analytic-based alarm or other means. The call taker and first responders can operate with better intelligence, direction and control.

PICTURE THIS

## i3 architecture orchestrates NG9-1-1 communication

Several key elements create the foundation and the engine for the NG9-1-1 ecosystem. Let's begin with i3, which provides the framework for the NG9-1-1 architecture. i3, as defined by the National Emergency Number Association, (www.nena.org) determines how the networks, devices and components will interact to enable the multimedia communications between the people reporting incidents, the emergency call takers and responders in the field.

## ESInet enables seamless information sharing between control rooms

The next important element is the Emergency Services IP network (ESInet), which is an IP-based 'network of networks' that can be used to connect and provide communications services for all agencies involved in an emergency response.

With the ESInet, control rooms and PSAPs are no longer isolated from one another or only connected to the other control rooms that share the same selective router. Instead, they can communicate seamlessly over the ESInet using a common communications protocol, Session Initiation Protocol or SIP.

## Find call locations quicker with geospatial routing

As well as moving to SIP-based communications, the i3 standard also includes major changes in how emergency calls are routed, moving from the current tabular-based routing process to one using GIS (geographic information system) data.

The ability to use geospatial routing brings major benefits, particularly in countries where caller location information is not accurate or where street numbers are not used. NG9-1-1 uses GIS data because it is more detailed than existing tabular-based routing files and improves the accuracy of the information for the dispatcher receiving the call. In an NG9-1-1 world the call, caller ID and a validated location are embedded as a SIP object and delivered 'intelligently' across an emergency communications network to an intelligent workstation.

## Enabling networked control rooms

NG9-1-1 revolutionizes the way an emergency call is handled. It expands the call taker's ability to receive data from many sources. The i3 architecture shifts the decision process and associated database elements into the 'cloud', making it possible for control rooms and PSAPs to use the ESInet to transfer emergency calls to other control rooms along with the related incident information.

## Better service and efficiency with larger control rooms

In addition to revolutionizing the way an emergency call is handled, NG9-1-1 also brings benefits in resource allocation.

An IP infrastructure makes it easier and more cost effective to staff and plan for disaster recovery. It's no longer necessary to have one control room per province or city - with the dynamic routing capability, (Emergency Service Routing Proxy, or ESRF), control rooms are no longer restricted by location. Based on economics, agencies can decide whether it is more cost-effective to have four control centres at strategic locations within a country or province or state, or five or six.

NG9-1-1 gives Public Safety agencies the freedom to build the emergency response system they need, for today and into the future.

# Ghent fire department works **better with SAFEcommand**


**Firefighters in Belgium now automatically get the vital information they need to tackle an incident, without having to shuffle manually through stacks of paperwork that may be out of date**

When firefighters arrive at an incident, they want to get on with saving lives. They don't want to wade through reams of paper to find the vital information they need. Yet that was the situation facing the firefighters of Ghent fire department.

"Firefighters had to bring with them all kinds of information on paper - operational instructions; drawings and diagrams; instructions to find the key locker of the building," says Captain Commander Sam Gydé, head of IT for the department. "On the way to the incident, or at the incident scene, they had to browse through thick bunches of paper. Many times, the papers were not the right ones. Too often, they had to use the radio, to check things with the command centre. This obviously took a lot of valuable time."

## A better way

Looking for a more efficient way of sharing information, the fire

department discovered SAFEcommand, a system that provides real-time location intelligence for staff and vehicles.

Says Gydé: "We saw the SAFEcommand demonstration in 2011, were instantly interested, and the local Cassidian office arranged for us to visit the South Wales Fire and Rescue department in the UK to see the system in operation.

"There's a good back office solution and the front end is very easy to use. We knew right there and then that SAFEcommand would deliver what we needed from the system."

Now, when the alarm goes, the firefighters simply get their gear, climb into the fire trucks and go. There is no need to look for folders or papers as the vehicle already has everything they need.

SAFEcommand puts frontline fire crews in direct contact with the command and control room via a vehicle-based computer, as well as giving them easy access to resources such as tactical plans, risk information and standard operating procedures. The firefighter only needs to tap on the map display, which is centered on the incident. Users, both in the vehicles and in the command and control room, have information on the incident available immediately, as well as status updates and location information.

Captain Commander Sam Gydé, head of IT for the Ghent fire department

**All information at hand…**

Gydé outlined the great benefits that SAFECommand is bringing to the service: "It was frustrating to have to call the C&C and ask them to send the contact number. SAFEcommand shows the contact numbers, and we save precious minutes not having to ask for them over the radio.

"We also see on the map where the building key lockers are. The keys to the doors of the building are kept in the key lockers which the firefighters can open with their own keys. Sometimes, the lockers are not easy to find without the map information."

For fire hydrants alone, there are several pieces of information critical to firefighters. SAFEcommand can show the location of fire hydrants on the map, as well as other vital information such as if they are working, when they were last checked and their sizes.

SAFEcommand also saves time on status reporting, automatically and accurately recording ar-

rival and departure times on site.

The system allows field units to plan their actions on the way to the incident. The solution shows how a building is located, or the easiest way to get to the back of a house. With car crashes, SAFEcommand shows fire crews the easiest way to cut the vehicle to rescue casualties.

**…easily uploaded**

Operators update files, maps and drawings from the command and control room to vehicles at the incident location by pushing information over a data connection. The system also allows the vehicles to send various status messages, requests and location information to the command and control room.

On call, several carriers are used, currently broadband, 2G networks, TETRA, as well as Wi-Fi near the fire stations. A secure MVNO making use of all available 3G mobile networks would be ideal, and the local TETRA operator ASTRID is planning to implement this.

When the vehicle is back at the brigade HQ, the data are automatically uploaded through Wi-Fi.

Concludes Gydé: "SAFEcommand makes our life easier. In tough situations, it's a great support."

These articles are based on stories from Astrid's own customer magazine SW!TCH.

# In my experience...


Photo: Christophe Vander Eecken

Filip Ledoux is the team leader for 25 Red Cross volunteers that operate ambulances in Tielt, Belgium. He explains why ASTRID radios are important to him and his team.

"As ambulance men, we use a mobile radio in the ambulance. And now that the 112 emergency call centre at Bruges has adopted ASTRID, they can send the incident location directly to the ambulance, where we see it on the GPS. This is very practical," he says.

"We need to know very well how to operate and work with the radio because we need it most in stressful situations. ASTRID radio training is part of our training for ambulance work. We also have the opportunity to take annual refresher courses."

# Radios enable **cross-agency cooperation**

# Waterloo

The battle of Waterloo took place in June 2013 in Waterloo, 15 km south of Brussels. At least, its re-enactment did, with 900 actors stationed in and around Waterloo for the weekend.

The "troops" slept in tents on straw, ate like the soldiers in 1815 and brought the struggle between Napoleon's and Wellington's armies to life.

Organisers relied on a more up-to-date solution in the shape of ASTRID radios, which they used to communicate. The two army camps were 5 km apart, which is too far for run-of-the-mill walkie-talkies.

ASTRID not only provided the necessary coverage, but also enabled the organisers to keep in touch with town staff, who have ASTRID radios of their own.

During the event, 45 police officers, fire fighters and medical rescue personnel from Waterloo secured the safety of the 8,000 visitors who had come to watch the re-enactment. With demonstrations and

Customs officers on the motorway in the region of Namur, Belgium, did not hesitate to help the victims of a car accident that they came across when returning from an operation. Even though their base was some distance away, their ASTRID radios made it easy for the officers to contact the nearby provincial control room in Namur. Controllers then dispatched traffic police, fire fighters and medics to the scene without delay.

The officers' fast action certainly saved lives. They gave CPR to a young girl and directed the traffic to avoid additional accidents until the emergency services arrived. The incident took place in January 2013.


# revisited

Q&A sessions in addition to the re-enactment, it was a great opportunity to grab some hands-on history.

So while infantry and cavalry forces clashed on the battlefield, there was one other crucial difference between events in 1815 and 2013. There were no real-life casualities in 2013!

# Junior fire fighters **get to grips with TETRA radios**

Finland's next generation of public safety specialists got a head start over the summer with a special, week-long camp for members of the young people's fire brigade and their trainers. More than 500 people took part in the Baptism of fire camp at Padasjoki, which featured a range of safety skills training courses tailored to different age groups.

Just as they do during professional public safety operations, the team caring for the junior fire fighters spent the week communicating over a radio system based on TETRA technology – namely a Cassidian base station and 50 Cassidian radios. Good radio communication was vital to help the organisers to co-ordinate activities, which often took place over a wide area.

Teemu Lehtinen, head of safety at the camp, said the TETRA radio technology functioned extremely well in providing effective communications throughout the week: "It was great to have our own network as well as dedicated talk groups. Communications [worked] without jams or interruptions and, as a system, TETRA was very easy to use. One reason for this is that the functions are the same as in [Finland's public safety] network, VIRVE. Also the radio equipment was familiar already from the fire department's operations."

The camp organisers also took the chance to try out the new TH1n radio from Cassidian. The experiences were generally very positive, even though some of the features of the new radio are slightly different from the older models, such as the volume adjustment and talk group selection. Some features were instant hits with the team, such as the new counterbalance shoulder holster. This solution bends over the wearer's shoulder and is held firmly in place by magnets.

Cassidian has now worked successfully with the camp organisers for several years, according to Mr. Lehtinen: "It's great that we have been able to use reliable communications during the camp, as well as test-try innovative models [and] carrying solutions."

# A training centre to address growing cyber security threat

Cassidian CyberSecurity has opened a training centre to improve the knowledge and expertise of anyone from Cassidian/EADS and its customers involved in fighting cyber security threats. Increasingly sophisticated attacks have made it essential to train and regularly update experts, analysts and operators in dealing with new attack scenarios.

With facilities in France, Germany and the United Kingdom that include auditoriums, classrooms, and test and experimentation platforms, the CyberSecurity Training Centre focuses on three main areas.

**Hands-on and academic training**

First, the centre provides awareness and technical training for cyber security experts. The 50 modules in the courses are based on practical exercises in coping with new vulnerabilities in areas such as prevention, detection and reaction.

The CyberSecurity Training Centre also offers an academic cooperation programme that develops partnerships with universities, engineering schools and cyber security professionals in areas such as risk assessment, practical exercises in fighting cybercrime, doctrine and legal aspects.

The third aspect aims to raise the awareness of high-ranking managers with regard to IT security issues and to train them in close collaboration with the government offices responsible for national security.

All these programmes take into account national security restrictions and specific aspects of each of the three home countries. These programmes are available for all audiences and tailored to each specific need, both for internal Cassidian staff, EADS employees and external customers.

The French space agency, CNES, has recently awarded Cassidian CyberSecurity a contract to provide its staff with cyber security awareness. The contract will cover all users of its information systems, including basic users, managers, decision makers and IT managers.

**Boost overall security**

The objectives are to improve the overall security level, educate managers and executives with a view to implementing an effective information system security policy, raise the awareness of teams to the new threats emerging on a daily basis and, finally, empower and change the behaviour of users by instilling in them a true security culture.

# A 3D vision of the future of public safety

3D motion sensing cameras are familiar to most people thanks to the popularity of Microsoft Kinect. But they are not all about fun and games. In fact, the shrinking size and weight of the cameras mean that we are going to be seeing these motion sensing technologies embedded in a range of public safety equipment in the coming years.

Delicode Ltd is a start-up based in Helsinki that specialises in designing and developing software and user interfaces for these novel sensor technologies. Working together with Cassidian and the Laurea University of Applied Sciences, Delicode is currently researching applications that combine a 3D camera with a very small unmanned drone, or Micro Air Vehicle (MAV).

Cassidian gave its customers a chance to find out how it feels to fly during an event, allowing those who were brave enough to experience how advanced computer vision and controls allowed them to pilot the Micro Air Vehicle with their own body movements. The demonstration was based on Delicode's NI mate™ software toolkit.

**Innovative ideas from users**

During the experiment security professionals were also asked how they might use this type of innovation in their work.

The first idea was to mount a depth camera on a fire fighter's helmet, which could send video back to the team leader or commander from the scene of an accident, especially in challenging visibility conditions. The ability of 3D motion sensing cameras to 'see' in total darkness was also highlighted as potentially helpful for police and defence agencies, who could use them for surveillance and tracking.

Delegates also identified more routine public safety situations where the cameras might be helpful, such as keeping an eye on student move-

ments in and around schools or safeguarding workers in industrial environments, where people are sharing space with potentially hazardous machinery and equipment.

Add an MAV into the equation and the possibilities are even wider, from peeping over walls to checking radio towers without sending personnel up a ladder. They could also race above traffic jams to check out the scene of a road accident, or could be used routinely to monitor traffic flows and improve highway controls. They could even be sent through metro tunnels to provide rapid feedback on any underground issues.

Their ability to access tricky areas would enable these depth vision enabled 'flying eyes' to make short work of searching difficult terrain to pinpoint missing people during search and rescue operations in remote areas. Conversely, they could make crowd control easier at mass events, improving the safety of thousands of people at once.

Public safety and security operations must evolve constantly to meet the changing needs of today's societies. New sensor technologies will play a vital role in providing a cost-effective way of serving the public better in the future.

# Innovation for **everyday use**

The revolutionary new TH1n radio from Cassidian has a smart accessory interface, which makes it far easier to work with the latest smart, multipurpose accessories that can operate as cameras and code readers, such as the 3-in-1 Multi Handset.

For example, the interface enables accessories to take pictures and show them on the radio's built-in screen before storing, sending them or reading barcodes. At the same time, users can transmit voice or control the radio through the same smart interface, just as they would through the TH1n's own keypad.

This interface also supports accessories with voice feedback commands, keeping the user's eye focused on the job in hand rather than fixed on the radio or its accessories. Voice, data and remote control functions are all available.

The same solution is available also for THR8 and THR9i series radios.

# Critical Communications World draws the crowds

More than 3,000 communications professionals thronged Paris Nord Villepinte for this year's Critical Communications World for the chance to learn, network and do business.

Cassidian was a major exhibitor, presenting its latest radios and the most secure networks, as well as adaptable command and control systems. Highlights of the Cassidian stand included Taqto® 2, a smart terminal management solution, RCS9500 Radio Console System, the new Clarricor® 3 professional radio system capable of serving up to 5,000 users, an integrated LTE PMR solution, TETRAPOL Tactical cells and Smart Grids, as well as solutions for operators and cyber security.

The event was a great opportunity to meet a wide range of professionals all under the same roof. The Cassidian stand was popular throughout the whole event.

Next year's event is in Bangkok on the 27-29 May 2014, so stay tuned for news of Cassidian's participation.

# Critical Communications World organizers acclaim TH1n

IIR's Liz De Bruijn with the TH1n radio.

Cassidian's ground-breaking TH1n radio received much praise from the organizer (IIR Telecoms & Technology) of Critical Communications World which used the devices to help run the event. These two quotes are typical of the comments:

"Without them we wouldn't be able to talk to each other. The radios are incredibly easy to use, with excellent voice quality. Communication works wherever we are at the event." Sarah Bishop, IIR Event Manager

"Smallest and lightest handset we have used in 12 years with great functionality. Really easy to switch groups." Russell Bacon, IIR Sales Manager

# TETRA tested in multinational Barents exercise

**This September saw Norway, Sweden, Finland and Russia cooperate in Barents Rescue 2013, an exercise held in the Tromsø area of northern Norway. The exercise aimed to develop and improve collaboration and communications between the northern area authorities in the event of disasters.**


In the exercise, "the accident" happened close to Tromsø on the edge of Storfjorden fjord. A massive boulder collapsed into the fjord, causing a huge wave as well as landslides. Not to make the authorities' work too easy, the organizers also programmed a road traffic accident in a tunnel close by. The youth camp organized in the region, as well as mountain hikers, made the accident scene even more demanding.

The exercise made use of the Finnish TETRA network, VIRVE. State Security Networks Ltd, which operates VIRVE, enabled reception in the Storfjorden area using a satellite connection. This meant that the Finnish authorities were able take part in the exercise from Finland. This use of the Finnish public authority network in Norway for an international rescue exercise was a unique aspect of the event.

The exercise tested a portable base station concept as part of a public authority business development plan.

Network manager Harri Hildén says: “The purpose was to provide TETRA service in the disaster area and it succeeded beyond expectations. In addition, we were able to test the station wagon and we found few technical issues that need development.”

Barents Rescue 2013 was organized by Norway's security and emergency preparedness agency. In 2015, it will be Finland’s turn.

# We've got it **covered**

**Men in hard hats and female police officers are among those fighting it out for the title of the greatest Key Touch /TETRA Touch magazine cover.**


1 Tetra Touch 2/2005


2 Tetra Touch 1/2006


3 Tetra Touch 2/2006


4 Tetra Touch 1/2007


5 Tetra Touch 2/2007


6 Tetra Touch 3/2007


7 Tetra Touch 1/2008
Russian issue


8 Key Touch 1/2008


9 Tetra Touch 2/2008

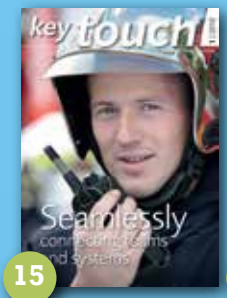

10 Key Touch 3/2008


11 Tetra Touch 4/2008


12 Key Touch 1/2009


13 Key Touch 2/2009


14 Key Touch 3/2009




15 Key Touch 1/2010


16 Key Touch 2/2010


17 Key Touch 3/2010


18 Key Touch 2010 Brazilian issue


19 Key Touch 1/2011


20 Key Touch 2011 Brazilian issue


21 Key Touch 2/2011


22 Key Touch 2011/2012 German issue

## Have a look at these 29 beauties and get voting.

Send your vote to keytouch@cassidian.com by stating the number (1-29) of your favourite cover in the email body.

Voters will be entered into a draw for the chance to win a small prize.

Send in your vote on **15 December 2013** at the latest.


23 Key Touch 3/2011


24 Key Touch 1/2012


25 Key Touch 2/2012


26 Key Touch 3/2012


27 Key Touch 1/2013


28 Key Touch 2/2013


29 Key Touch 3/2013

# Worth its weight in gold

**Quality content wins Key Touch a prestigious award**

Key Touch magazine won a Gold award in the Content Marketing Awards 2013, against stiff competition from over 800 other entries.

Presented by Content Marketing Institute and sponsored by McMurry/TMG, the Content Marketing Awards recognize those who create content for organisations. Entries were submitted by brands and marketing agencies from around the world.

"We are extremely pleased to receive the Content Marketing award for Key Touch," says Tiina Saaristo, the Editor-in-Chief of the magazine. "The award shows that Key Touch is providing readers with relevant content that they find invaluable in assessing modern radio communications systems and related solutions."

The Content Marketing Awards program was open to all agencies, companies, organisations and institutions involved in producing content marketing. The entries considered were all produced in 2012, with Key Touch represented by its issue 2/2012.

The entries were judged by a panel of leading content marketing industry influencers and experts. They evaluated the entries on how well they fulfilled their goal or mission and on the quality of the product. The print publication categories were judged by criteria such as information and/or entertainment value, relevance, appropriateness for the audience, visual appeal and pass-along potential.

www.contentmarketingawards.com