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customer magazine
3/2011

Data does more

THR9+ designed for the field user

Data apps can help secure major events

Brazil's Federal Police and their INTEGRAPOL network

WHO'S IN THIS ISSUE?

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

ANKE STURTZEL is a member in the Key Touch team in her function as press officer. 11 years ago this German fell in love with Paris where she has lived ever since. Anke loves - in addition to taking photos - to rework old furniture in her spare time.

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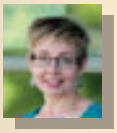
SATU LAMBERG lives a double life, providing marketing, sales support and Key Touch articles about cutting-edge technology while enjoying a lake-shore rural idyll.Three horses, four cats and a dog keep her and her family busy.



TIINA SAARISTO is Editor-in-Chief for Key Touch and has led the team of editors and contributors since early 2003. Tiina lives with her husband, daughter and cat in Helsinki, where she creates quilts and quilted objects.

TAPIO MÄKINEN has undertaken photoshoots for Key Touch Magazine and Cassidian. With his photos, Tapio aims to capture the feelings of places, events and people. Tapio has single digit handicap in golf, practises astanga yoga and is often seen cheering at his boys' basketball matches.

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.

OLE ARRHENIUS has long experience in mission critical communications, gained across many nationwide public safety radio communication projects. In his free time, Ole cycles and spends time with his family in the Finnish archipelago.

CECILE FONTAINE likes to express her creativity in marketing. An amateur photographer as well as Lapland and music lover, she is a keen traveller in arctic regions. Cecile also enjoys drawing, playing video games and sharing ideas with different cultures.

Key Touch 2/2011- November 2011

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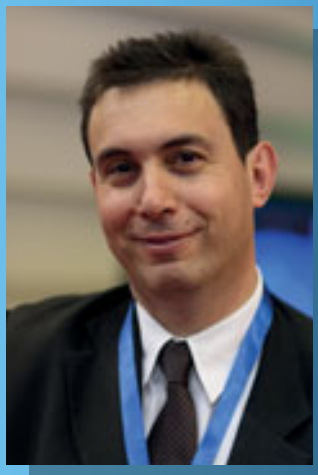
The digital pressure is rising



DIGITAL communication keeps revolutionising public safety, with data playing an ever bigger role in critical operations. Field officers around the world are checking, changing, querying and comparing an increasing volume and variety of digital information every day.

Digital information is an important part of people's day-to-day lives too, with a data-hungry public embracing a huge range of devices and services. Digital services, multimedia tools, tablets, social media and apps all interact to generate huge amounts of information.

For example, the number of text messages sent and received each day outnumbers the population of our planet. By 2015, mobile traffic will reach twenty times what it is today and an estimated 90% of that traffic will be data.

The difficulty for those charged with maintaining public safety and security is that the link between this pool of general digital information and their own information systems has been weak at best. At worst it can be extremely cumbersome or even impossible to tap into the public sphere from within their own systems. The result is that it remains impractical to access much of this information, and the pressure is growing for things to change.

Missing link – full-circle security

Planning information systems with full-circle security linking the citizen to the first responders will relieve that pressure.

Just as voice communications are already interoperable, so interoperability in data is increasingly enabling the authorities to access public data directly from the security of their own communication systems. Cyber-secure interfaces between the public domain and the authorities ensure that information-sharing can be controlled, secure and safe.

Today's tidal wave of public data presents a largely untapped resource for public safety authorities. Better information can be used to provide a faster, more targeted response, to boost efficiency or to save money. It's time for interoperability to complete the circle and access this enormous resource more effectively.

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

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THR9+ is a reliable radio to be used even with gloves on.

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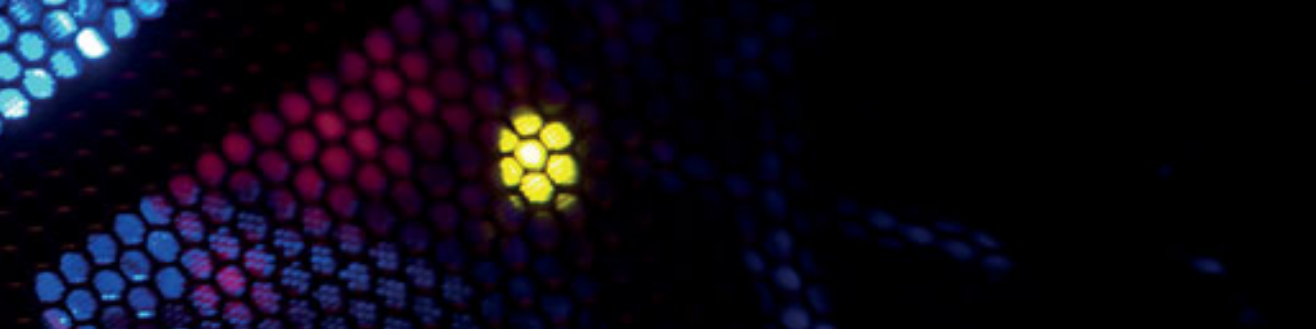


PICTURE THIS

18 Shenzhen University Games get top grades

Good planning and the superb network infrastructure in professional hands ensured that the athletes and spectators had a good time in a safe environment.

SENSATIONAL RADIOS

53 Cassidian becomes more global … in a local way

Jean-Marc Nasr is back as head of Cassidian's secure communications business. He shares his insights on the company's plans.

Just imagine what the **THR9+** could do for you

Imagine yourself as a firefighter. You're wearing fireproof clothes and boots, you have a helmet and gloves to protect your hands. You are fighting flames and saving lives. You are relying on your TETRA radio and communications with your team. You need a reliable radio that can be used even without looking at it, because you are focusing on the task at hand.

Gloves on convenience

Now you can see why the THR9+ is designed for you as a fireman or anyone else working in harsh conditions with gloves on and who mostly do not need to call free-dialled numbers or write messages. You don't need a full alphanumeric keypad, but only a few special keys, which you can use even with your gloves on. The features and functions that you need can be accessed with the ultra large 4-way navigation keys and the two additional freely programmable function keys of THR9+. Fast menu, duty key and voice feedback also provide you great user-friendly usability.

When you need to look at your radio's display, you require best-in-class readability. The large full-color QVGA display of THR9+ provides this. The display can even be reversed 180 degrees or the backlight be turned off by a single key press if that suits your needs better.

At night, or in water or dust

THR9+ has a specific night vision display colour scheme for enhanced visibility and better user

The night vision display enhances visibility and user safety when working in the dark

safety when you are working in the dark. You also appreciate highly the Lifeguard safety feature, which is the Cassidian advanced solution for man-down alert. If you fall into trouble, an accident, for example, and become immobile, the THR9+ sends an emergency alert together with your GPS coordinates, to help first aid or colleagues find you as soon as possible.

When your working environment and conditions are tough, the radio also needs to be as tough. Therefore the THR9+ has IP65 classification to resist dust and water.


POLICIA
FEDERAL
POLÍCIA
FEDERA

BIG COUNTRY - BIG NETWORK

With its vast size and remote and difficult geography, Brazil is a challenging prospect for any nationwide radio network. Throw several major events and high profile political visits into the mix and it becomes a tall order. We look at how Cassidian's Tetrapol based network INTEGRAPOL is stepping up to one of the biggest jobs in the PMR world.

A nationwide Professional Mobile Radio network to help police a country the size of Brazil is a major investment, but Brazil's Federal Police Department has certainly got a lot of use from it.

Since its introduction, the DPF (Departamento de Polícia Federal) has used the Cassidian supplied INTEGRAPOL network for several major operations and events, such as the 2007 Pan American Games in Rio de Janeiro. The DPF also supported the search for survivors and wreckage of Air France Flight 447 and more happily during Pope Benedict XVI's visit, for the swearing in of Brazilian President Dilma Roussef and Barack Obama's recent visit to the country.

Cassidian has worked with the DPF since 2005 when the contract was signed for the first phase of what was to become INTEGRAPOL, the Federal Police's National Integrated Radio Communication Network project.

The complete INTEGRAPOL network comprises nine regional networks based on TETRAPOL IP with 27 tactical management sites. With over 100 radio base stations and 220 independent digital repeaters, the network supports 9,000 terminals. Because of Brazil's large size, Tetrapol network communication coverage uses both fixed and mobile units, ensuring reliable communication in the many different areas of the country.

Secure network points to integrated future

In addition to its sophisticated encryption mechanism for voice and data communication, INTEGRAPOL also allows access to databases and GPS data to enable automatic location of vehicles and people.

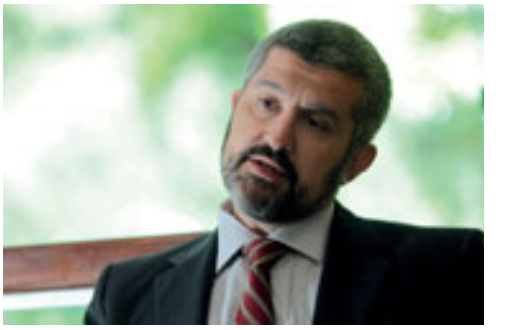
The high level of secure access provided by INTEGRAPOL will allow the integration of all DPF units with the other state public security forces. In fact, INTEGRAPOL is becoming the reference model for an integrated communication system for national public security, allowing Brazil to face the challenges posed by forthcoming major events, such as the 2014 FIFA World Cup.

Training for the streets

Tetrapol radios are also used in several DPF training programs and in the Federal Police's simulation training centre in Brasilia. Resembling an urban environment, the centre comprises 35 buildings, reproducing all the situations faced by officers in high-risk urban areas.

Here, federal police agents can train using various simulations, from containment tunnels to exposed terrain. Throughout the training, police agents have constant communications via radios connected to the Tetrapol network.

According to Federal Police Chief Marcos Ferreira dos Santos, communication has always been a major



problem but since the introduction of the Tetrapol network and the use of TPH700 radios, the issue has been effectively resolved. The platform has met the organisation's needs very well and no further communication coverage issues have been reported in Brazil's large urban centres.

INTEGRAPOL passes the test

As well as proving invaluable in training, INTEGRAPOL has passed the test of co-coordinating several real-life events. These have included the swearing-in of Brazilian President, Dilma Roussef, which presented a major security challenge.

The swearing-in featured the largest number of foreign dignitaries visiting Brazil, with 42 presidents and vice-presidents and 18 chancellors attending. The operation to protect them was extensive, involving around 700 police officers.

The group facilities offered by INTEGRAPOL were critical to the success of the operation. All the teams used Tetrapol network radios, with hierarchy levels created for each team. Coordination groups were established and communication between the coordinators was essential. One coordinator would make a request by radio or communicate an event and whoever was located closest to the named area would resolve the problem; everyone would receive the same message at the same time, which facilitated the teams' work.

Federal police officers, other police officers, and ambulance and support teams all used the network, which ensured good coordination, easy control of the teams and the encryption of sensitive and important information.

Federal Police Chief Marcelo Mozart Rocha Galli, who led the security operation, praised the network: "It is perfect, since it ensures flawless communication between teams and has the advantage of encryption, essential for this type of operation. In addition, we counted on a control room that monitored all communication between units and identified if there was any absence of signal or contact with the base by any one of the units. If there was an absence of contact, it could mean that the particular unit was in danger or under threat."

Success in these high profile operations means that INTEGRAPOL has established itself as a network that can deal with anything the DPF has to face in the years to come.

ASTRID and the fight against **cross border drugs traffic**

Photos: Benoît Vermeeren

The Belgian ASTRID network recently played a major role in a joint operation targeting the cross border drugs traffic between Belgium and the Netherlands.

The four-day operation, code named "Étoile" (Star), saw police and customs officials from Belgium, the Netherlands, Luxembourg and France cooperating to interrupt the flow of drugs between the countries. The scale of the operation is shown by the number of searches carried out - over the course of the four days, around 2000 vehicles, 33 trains and 4000 persons were checked.

Although the Belgian customs have their own communication groups, ASTRID's ability to support multi-organisational talk groups makes it ideal for operations of this type and scope.

Multi-police communication group

"Multi-organisational talk groups include people from many disciplines: police, customs, and defence," says inspector Frederick Vanneste, from the National Directorate of Investigation of Customs and Excise. "Ten multi-organisational or MPOL talk groups were dedicated for the operation, so that every operative team had a group of their own when several actions are managed simultaneously.

"The operation saw simultaneous actions managed at Arlon, Ostend, Mons, Brasschaat, Eeklo,

and Sint-Niklaas. In each of these places, the customs and the police had a number of multi-police communications groups to help coordinate their activities.

"As National Directorate of investigation we are in charge of coordination. These talk groups are very practical because we can scan them on the ASTRID radio wherever the teams may be. At the same time, the teams can contact us any time, thanks to a dedicated contact talk group."

Personal radio

The investigating inspectors all have a personal handheld radio that can be used in their cars via a car kit. For motorbike customs officers, deployment is continuing but from the end of 2011, every customs officer will have an ASTRID radio of their own.

Customs officers now have 340 handheld THR880i radios from Cassidian in use, with a further 17 TMR880i mobile radios in fixed installations and in control rooms.

"Good communications makes an enormous difference," declares Chief Inspector Jean Neelen. "During the intensive checks, communications between the teams had to be flawless, and I also needed a clear overview of the situation. We operate across the whole Belgian territory and must be able to communicate without a hitch with other investigation teams, for example during a pursuit."

Michele Gorga, a motorcycle officer who has been with customs since 2007, cannot easily imagine

his work without an ASTRID radio. During the operation, he was a liaison officer, communicating between the vehicles on the road and colleagues who checked the cars in the stop area.

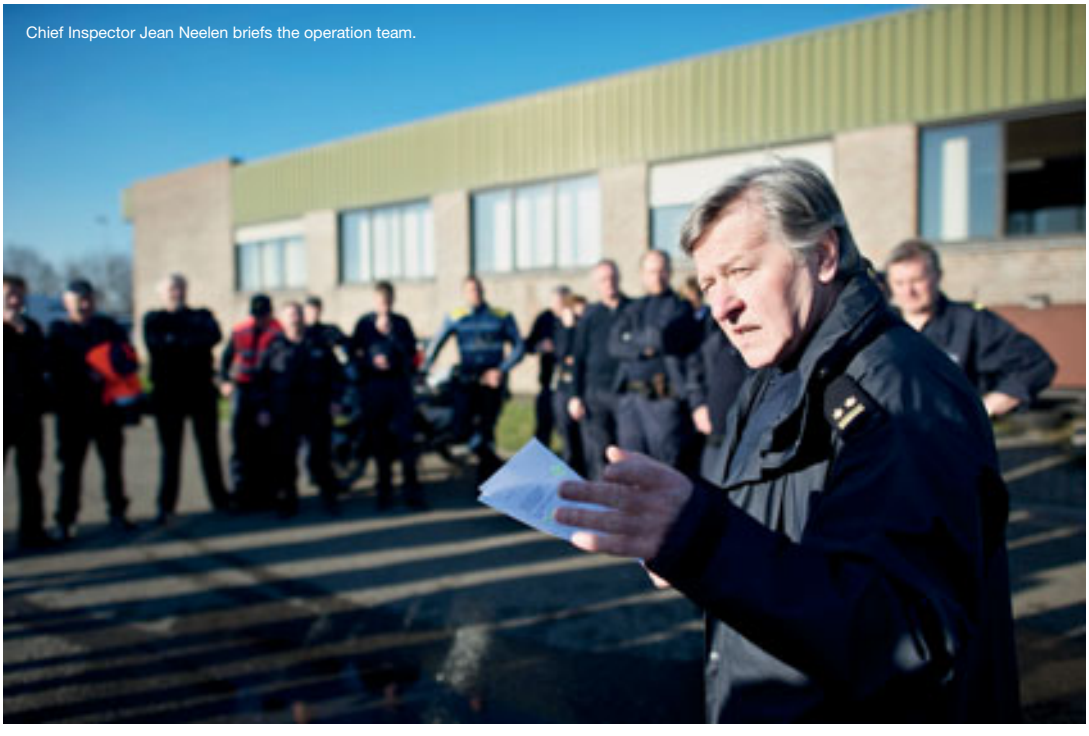
Chases throughout Belgium

"When we divert a vehicle, one biker will drive in front of it and another will follow," explains Gorga. "This is when we need reliable communications. Communications are also important if there is a chase. If another team happens to be close by, they can come in as reinforcements. We can also communicate all offences over the radio, such as speeding or other committed offences.

"Just recently, we were involved in a chase that started in Minderhout, which is in the Antwerp province on the Dutch border, and which ended at the northern Belgian-French border. In this kind of situation, seamless communications with a liaison officer are extremely important. He can also call for backup from the federal police, for example to put up a roadblock. In this case, the chased vehicle turned out to be carrying 35kg of drugs."

"We will certainly not make such a catch today and will be satisfied with stopping small quantities and one counterfeit weapon," says Gorga.

Nonetheless, one of the drivers had on board half a kilo of cannabis 'for his personal use'. The individual was arrested.



Chief Inspector Jean Neelen briefs the operation team.

IN THE NUMBERS

PICTURE THIS

1,716,000,000,000 short data messages per year on the VIRVE network

minutes of communication in 2010 on the ASTRID network. **12,000,000**

1,600,000 calls in the secure radio network on the busiest day of the Beijing Games

estimated number of years between two failures of radio-to-radio voice calls in Cassidian's TETRA system **1,140**

574 km/h speed at which a TETRA call is proven to continue uninterrupted, thanks to TETRA radios' ability to handover between base stations

call setup time in a group call regardless of the size of the group **~300 ms**

~50 W power consumption of one TB3p mini base station

Myth-buster

– five wrong ideas about TETRA in medical care

TETRA is saving lives in hospitals around the world, but still people have tired old ideas about what it can and can't do. Here, we look at the real-life experiences of the North Karelia Central Hospital in Finland to bust five common myths about TETRA in medical care.

According to Hirvonen, the THR880i is a terrific radio terminal for the hospital environment since it supports all critical functions. "For example, the secondary PTT is a great feature. Sometimes I complete a whole eight-hour shift and don't have to take the radio off its holster at all. I can use the radio without looking at it, all through the shift."

MYTH 1

"To prepare for a major incident, health organisations only need a couple of authority radios that can be used when the time comes."

To bust this myth, let's look at medical teams at the North Karelia Central Hospital in Finland. Back in 2008 almost no one at the hospital knew how to use digital communications. In the beginning, there were 10 "users" who shared one radio device. Today, there are around 600 users, all of whom use VIRVE routinely.

Jari Hirvonen, emergency nurse at the hospital, firmly believes that adopting radio communication for everyday use is the key to using it effectively in a serious situation. And during a major incident, VIRVE must be used as it allows a concerted effort between several agencies..

When lives are at stake, the vital people should be reachable at all times. People tend to think that GSM will take care of things, but disturbances mean the system can be down when it is needed most. For any larger event, the system becomes congested and is just not available when reachability may be a matter of life or death.

MYTH 2

"TETRA communications, being designed from public safety and security organisations' point of view, are of no benefit for healthcare organisations."

Using TETRA communications surely brings benefits in emergency medical care. As an example – suppose someone with the ability to make a cast is needed for evening on-call duty . All it takes is one short text message to the whole group, with one push of the Send button. In two seconds, the message has been delivered to everyone and the right person can then confirm with a status message.

"It has never taken us more than three minutes to reach all of the 80 people in the group," says Hirvonen. Using GSM calls, only three people could be reached in those three minutes.

Another example is email, which can take more than an hour to reach the recipient. There are situations when sending an email is the best choice for communication - equally, there are situations where email would not work. For example, when asking for an update on available beds for treatment when there is a need to know where several patients can be transported to, email just would not work. It would take too long! The best choice for this purpose is a group addressed text message, which is sent to all necessary addresses at once.

MYTH 3

"No-one will want to use this kind of communication anyway."

Jaana Saviranta, emergency nurse at the hospital, remembers how difficult things could be when the rescue organisation used noisy analogue radios that sometimes made it hard to understand communications. "I also appreciate the significant time saving compared to what went on before" she says. "It is great that one can talk to everyone, as a one-to-one call using the PTT.

"It is also a matter of safety. When alone with a patient, if a situation arises, the radio allows a quick call for support. For example, when wheeling a patient bed somewhere, it's easy to call for backup on the radio if the patient suddenly seizes.

"Before, everyone had to let the emergency reception know their whereabouts and if someone was needed, the reception nurse would look for the person Now, if someone is needed, a single announcement to the group – or a one-to-one call – is all it takes."

MYTH 4

"Training is difficult and expensive."

Training in the use of the radios can be made part of the standard induction process, like it is for medics and many other new staff. Realistic and effective training does not require an elaborate network, because a simulation can be much better. The simulator can be set to match the trainees' real operational environment.

For example, the hospital has a TETRAsim classroom simulator system which, in the hands of two employees acting as trainers, has proven its power in ensuring the competence of users. In the classroom, the trainees can repeat the exercises until they are sure of their own competence. This way, each trainee's speed of learning can be taken into account.

It's not enough to know which buttons to press on the radio – it is practice using them in realistic situations that counts.

MYTH 5

"GSM is so much handier to use than TETRA."

Firstly GSM is not reliable enough. There are numerous examples of what happens in public cellular networks when there is a major incident. Everyone wants to call home, an emergency number, or the office and this blocks the networks. Emergency medical care need reliable communications at all times.

And when GSM works? Says Saviranta about her hospital experiences: "When I started as a hospital nurse, we adopted GSM phones since the technology was becoming commonplace. Now, we no longer want to use GSM in work-related tasks because it is so much effort."

Shenzhen University Games get top grades

Supporting the games, secure radio networks from Cassidian provided stable, reliable and efficient communications services throughout the 12-day event. The Shenzhen 350 MHz City Emergency Response Digital Trunking Network and the Shenzhen 800MHz Metro TETRA network joined forces to ensure smooth communication and coordination over the entire Shenzhen metropolitan area. The traffic from almost 32,000 subscribers from various government authorities and organizations registered in the network during the event could easily have brought a lesser network to its knees. But the 350MHz network in Shenzhen, equipped with three DXT3 switches , around 90 TB3 base stations and over 100 dispatching workstations, ensured seamless communication that was not compromised at any time.

The network is the first TETRA network in China to be fully integrated with all public safety command and control centres. Galvin Wong, head of Cassidian PMR activities in Asia-Pacific says: "We are proud that Cassidian contributed to securing an event of such importance. Seamless communication during the 2011 Shenzhen University Games shows that the TETRA network enables true cooperation between agencies in one of China's most congested metropolitan areas, home to almost 15 million people."

Setting a new record

The inauguration ceremony placed exceptional demands on communications. Engineers registered over 1.84 million calls in the radio network from the 32,000 subscribers on the day of

FACTS ABOUT THE NETWORKS

- The Shenzhen Police 350 MHz Emergency Command Digital Trunking Network is the largest 350MHz public security TETRA network in China, providing services to the governmental, public security safety and the Game Organizing Committee.
- The Cassidian TETRA system broke the traffic load record of Universiades on the opening ceremony, while maintaining reliable operation supported by four teams.
- The Shenzhen Metro 800MHz TETRA Network is the largest metro integrated TETRA network in the world, covering five metro lines running through the whole of Shenzhen city, with an average daily passenger flow of around two million.
- The reliable and stable TETRA system ran smoothly during the opening day supported by two Cassidian groups.

Nearly 8,000 student athletes from 152 countries attended the 26th Summer Universidade in Shenzhen, China, this summer, making it the world's second largest sporting event. Aimed at young intellectuals, the programme included chess as well as more physical sports such as cycling and swimming.

the opening ceremony – a new record in the history of the Games. During busy hours, the number of calls made topped 140,000,

Getting the big picture

Command and control personnel at the central control room had access to live video feed from surveillance cameras. This proved to be invaluable when assessing the need to alert public security officers, police, fire brigades or first-aid medical workers on a given location. It also covered many of the linked event facilities, which comprised 41 competition and 22 training venues and associated hotels, and formed a vital addition to the intial coverage provided by the City Emergency Response TETRA network.

Good planning and team play

The games were another success for Cassidian following the Beijing Games in 2008 and Guangzhou Asian Games in 2010. When everything goes well during events of this magnitude, it is usually the result of countless hours of good planning. So it was with the 2011 Shenzhen University Games, with vital support from a management team, a local engineer team and a foreign expert team.

The good planning and a superb network infrastructure in professional hands ensured that the athletes and spectators had a good time in a safe environment.

Four days, 4,500 computer enthusiasts

One of the world's largest gatherings of computing fans recently saw 4,500 enthusiasts descending on a sports arena in Helsinki. Ensuring everything ran smoothly was down to a dedicated team of volunteers backed by a TETRA network

Over one long weekend in early August, some 4,500 computer enthusiasts from around the world, most bringing their own computers, converged on Helsinki for ASSEMBLY Summer 2011. Ensuring this twice-yearly festival runs smoothly and securely is a big task for the event's team of more than 200 volunteers.

Held at Hartwall Areena, which is better known as an ice hockey and concert venue, the festival was fuelled by the dedication and enthusiasm of its delegates. Despite designated quiet sleeping areas, many people simply crashed out and slept on inflatable mattresses in the corridors, in fact anywhere they could find. Some delegates even managed to sleep at their keyboard – it's clearly an exhausting business being a computer devotee.

People attended to meet like-minded friends, play games, surf the net, chat and enjoy a packed programme of activities that included competitions, live gigs, raves, gaming, seminars, robot wars and AssemblyTV.

Control centre with a difference

Although it all looked chaotic, some serious organisation ensured every-

thing went smoothly and securely. The organiser's control centre was a stadium dressing room. An unusual setting for a hi-tech control centre, the room was manned day and night, with committed volunteers sleeping on its hard benches surrounded by a bustle of activity. It even featured a shower and sauna – this is Finland after all!

Yet from this unusual control hub, the organising team fielded every issue that arose during the event, helping everyone to get the experience they wanted. A major tool in this task was a Cassidian TETRA system comprising a standalone base station and 70 TETRA radios, most on loan from Cassidian.

As TETRA allows different groups to have different priorities, the organisers could use priority scanning to make sure everyone heard the most important information, even if ongoing traffic was on a lower priority group. This capability was used several times to notify people immediately of any changes in the event's network. For example, whenever a computer left the network, staff could pinpoint the location and send someone out to check the situation in minutes. The TETRA system proved to be a great help to the organizers in co-operating with each other, without the risk of eavesdropping.

Dealing with cyber-attacks

Surprisingly, protecting the network against cyber-attacks was not the foremost security priority. As Matti Antila, head of the PartyNet network crew told Key Touch: "We build and install the local area network, mainly using equipment on loan from various businesses. Protecting the more than 200 pieces of equipment on loan from sponsors and partners is vital. This very expensive equipment makes up the event's local area communications network and ensuring nothing is stolen or misplaced is our key priority."

Another task for Antila's crew was to ensure no illegal or harmful software found its way onto the PartyNet. The main risk has traditionally been infected computers that pose a threat when hooked up. When a risk is detected, the crew or other experts from partner organisations help the computer owner to clean out the potential threat.

"We have only ever had one major cyber-attack directed against our network. The attitude towards hacking in Finland is generally about using the technique for positive things. Most of the threats we experience come from abroad," says Antila.

Fast response with TETRA

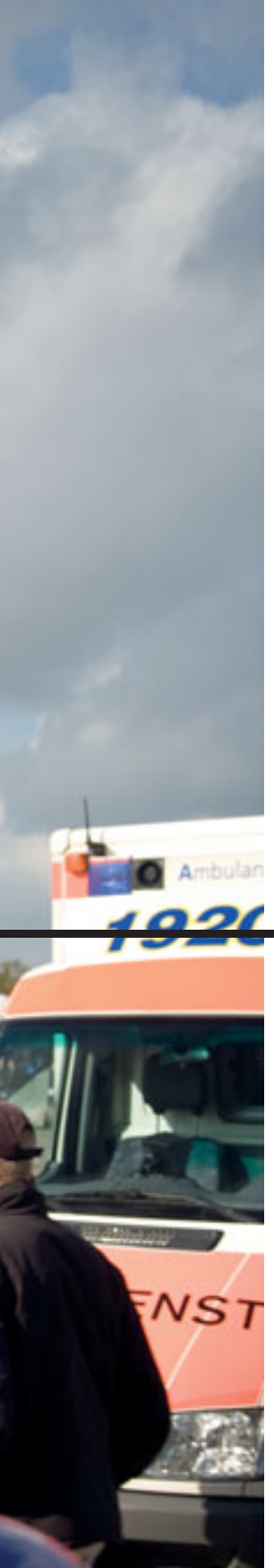
With the event secured, what are the typical issues that the PartyNet team needed to deal with? According to Antila most call-outs were caused when someone unplugged something. "All such incidents have to be checked. On the setting-up day, visitors are busy connecting their computers and this is the peak time for hitches to occur. Local area network elements are accidentally switched off as people do the wrong things when trying to plug in their computers," explains Antila.

In one instance, a couple of visitors became confused about whether a piece of equipment could be switched off or not. When Antila showed up almost immediately, he overheard the two people discussing the consequences of their actions, but it was clear they knew the network was being monitored constantly. "They were surprised, though, by the speed of our response when I showed up to help them out."

All in all, ASSEMBLY Summer 2011 turned out to be another great success in the event's 20-year history.

DATA APPS
can help secure major events

Organisations that look after security at large events must be ready for anything. Here are just a few examples of apps that could help in achieving that. The first four can already be used in today's radio networks.



FIELD PROVEN APPS

POLICE, FIRE AND RESCUE

Location tracking apps allow dispatchers to monitor the location of officers and units using GPS or other tracking technology embedded in radios and display it on an electronic map. Extending tracking indoors can also benefit fire and rescue services.

Even better - TEDS (direct access) will enable more frequent position updates without jeopardising voice traffic throughput.

POLICE

Cameras in parking areas can **snap licence plates and a local app can read them**. A handheld device can also do the same while an officer patrols the area. The numbers are easy to send over radio using messaging or WAP, so another app can compare them against a database of stolen vehicles, for example.

POLICE

An officer can enter a person's name or social security number into a form on the handheld or vehicle radio to run an **automatic background check against several databases**. Results can be returned in a second. Finnish police officers routinely use such an application.

EMERGENCY MEDICAL CARE

Medical telemetry apps continuously transmit data from an inbound emergency patient to emergency room staff. PMR networks, designed for high availability, provide a more reliable alternative to commercial networks, which tend to drop calls made on the move.

ALSO POSSIBLE OVER TETRA

POLICE

Driver's license scans can relay information from documents in the field far quicker than manually inputting data. The PD400 solution from Cassidian can work in TETRA 1, but it runs more smoothly over TEDS.

FIRE AND RESCUE

Individual monitoring of firefighters involves sensors that detect heart rate, carbon dioxide levels, temperature and blood pressure and transmit the information to commanders.

Cassidian has demonstrated these apps over TETRA. Some specialist equipment also includes similar facilities. For instance, Drager's smoke diving gear uses dedicated local area radio technology. Similar results could be achieved over a TETRA 1 network or in direct mode (DMO).

DATA APPS

COMING SOON

POLICE

Facial recognition transmits a photo from a digital camera to an application that compares it to a database using facial recognition software. A camera could monitor people as they queue, for instance, snapping pictures on demand. Images could then be transmitted over the radio network to the application at a command centre. With more bandwidth, an application could scan a crowd for a specific face or for patterns of movement.

This is plausible at the data speeds available over TEDS. The big question is how much resolution the still image requires. If the image was vectorised locally and only the vectors were transmitted to the facial recognition system then the over-the-air traffic would reduce further. Generally, these applications will be too data-heavy for TETRA 1 or narrowband TETRAPOL.

POLICE

Live fingerprint scanning could enable the police to identify people as they stop them.

The PD400 solution for one finger runs easily over TEDS, but a full palm scan requires a LAN connection.

FIRE AND RESCUE

Indoor location/tracking apps could track firefighters inside venues, where GPS cannot reach. Read more about possible solutions for indoor tracking on page xx.

FIRE AND RESCUE

Bulk data files such as building and floor plans could be wirelessly transmitted to the field from a central data warehouse to facilitate decision making.

It may be more efficient to have big files stored locally, but it is feasible to transmit the information over TEDS. Very large files might be transferred more smoothly over broadband.

LOOKING FURTHER AHEAD

POLICE

Police officers already record what happens when they stop a vehicle. Today the footage is captured by a camera on the dashboard and recorded on a disk installed in the police car. **Streaming video** would enable dispatchers to monitor evolving incidents in real time. The camera could also be made more easily deployable, so it could be positioned almost anywhere to record and transmit continuous images to remote vehicles or to a command centre. SWAT teams could even stream video from helmet-mounted cameras.

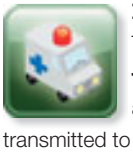
These scenarios are plausible with TEDS within certain limits. For example, a solution might include local high-quality storage and deliver a lower frame rate and resolution to the remote observers, provided the number of users per cell is limited. A storyboard approach might send a thumbnail image each second, for example. Controllers could then request more info from the app when something notable happens. Norwegian company Ansur is working with Cassidian on this approach.

The extra capacity of high-speed broadband would provide a smoother result and more live feeds.

FIRE AND RESCUE

Firefighters can also benefit from **streaming video**. The app could be used to transmit footage from a fire scene or from the site of an accident to external commanders.

A combination of transmission media could be used, such as an internal WLAN relaying to an external TEDS or broadband network.



EMERGENCY MEDICAL CARE

The ability to **observe patients visually while in transit** could improve care in an emergency. Similarly, images could be transmitted to ambulance staff while en route so they can arrive at an accident better prepared to help.

Royal Wedding in Monaco: **A security success story**

Security was tight for the Royal wedding of H.S.H. Albert of Monaco and Charlene Wittstock, with some 200,000 visitors converging on the small Principality from the 30th of June to the 2nd of July 2011. Months of preparation went into the event's security, which entailed coordinating the activities of 520 Monegasque carabiniers across Monaco, supported by four bomb disposal experts, 300 gendarmes and air security from the French government.

Cassidian was proud to be part of the arrangements with the installation of a Claricor TETRA network built for the event. The versatile radio network and terminals were central to managing the secure transport of 4,000 VIPs and officials between the nearest French airports of St Tropez and Nice, assuring their security and comfort during the festivities. TETRA communications also supported the management of concerts by The Eagles and Jean Michel Jarre, including lighting, sound systems, laser and fireworks shows.

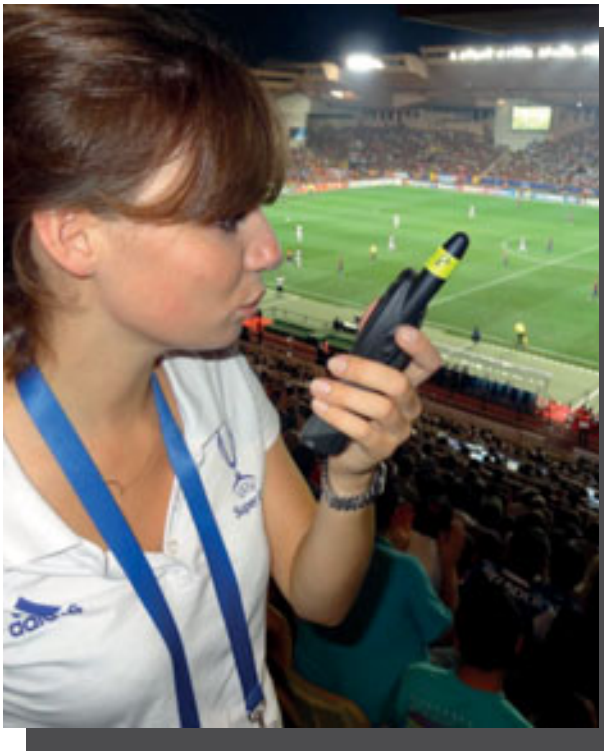
Cassidian THR9i and THR880i handheld radios enabled security forces to cover the entire event, demonstrating the efficiency of TETRA in adapting to help ensure security under all circumstances.

At the heart of European Football

Following earlier successful work on the Royal Wedding security, Cassidian had soon another opportunity to provide communications facilities in the Principality of Monaco,

Football professionals and supporters alike were held in suspense in late August, when three major events in the calendar of European football took place. At the Grimaldi Forum, there was the year nomination and the drawing of lots that determined the 2012 fixtures, while the UEFA 2011 Super Cup was held in the Louis II Stadium, setting up eventual winners Barcelona against Porto.

MINT, a local integrator company, was the exclusive TETRA Claricor network fitter for the events and provided 90 Cassidian THR880i terminals to supervise the management of 68 cars transporting VIPs and participants.



Cassidian Communications to provide mobile radio for Sedgwick County

Cassidian Communications has signed a contract with the County of Sedgwick, Kansas to provide a digital, trunked P25 Land Mobile Radio (LMR) system.

The contract will supply the County with a complete 800 MHz turnkey radio communications solution including hardware, software, system engineering, installation and maintenance through 2026. The new 10-site, simulcast network, based on Cassidian Communications' CORP25 radio solution, will support all of the public safety agencies and communities within the County, including the city of Wichita. The agreement will also provide Sedgwick County with the Cassidian Communications emergency notification solution.

"Having successfully used the Cassidian Communications 9-1-1 call handling solution over the last 15 years, we are sure they are the right choice for our radio access needs," says Robert Lamkey, director of public safety for Sedgwick County. "The addition of the CORP25 network – along with their emergency notification solution – demonstrates exactly how confident we are in Cassidian Communications and their experience and expertise in public safety communications."

SIRDEE network beats earth-quake and fire

Recent emergency situations in Spain have shown the resilience of the country's SIRDEE (Sistema de Radiocomunicaciones Digitales de Emergencia del Estado) network. Based on Cassidian's TETRAPOL technology, the network played a significant role in organising and coordinating emergency services during the recent earthquake that hit the town of Lorca in July.

While the public mobile networks suffered severely from heavy traffic which made communication very difficult for the population, all SIRDEE communications worked perfectly. With extra public security professionals working in the area, the system had to deal with 264% more users. Instead of the usual 20 individual calls per hour, the system had to handle 128, a 640% increase, while the occupation rate of the traffic channels rose from 20% to 72%, a 360% increase.

SIRDEE also delivered a first class service during the major fire on Ibiza in May 2011, the largest forest fire ever in that part of the Balearic Islands. For a whole week, over 2,000 hectares of pine forest on the island burned uncontrollably. SIRDEE enabled the emergency forces to work under very difficult circumstances. Calls during peak time increased from the usual three to 136, and the number of active groups of three rose to six. The base station in the area recorded a 20% to 144% increase in traffic, with a minimum of rejected calls.

Deployed since 2000, the SIRDEE network is the national mobile voice and data communications network based on an infrastructure of TETRAPOL digital security radio communications technology supplied by Cassidian. Apart from the MoI organisations – Guardia Civil and National Police –, several other users have joined SIRDEE, including the Traffic Police, the Spanish Navy and several regional municipal services.

Photographer: Juhana Hietaranta

Tracking in locations where GPS won't go

Digital radios equipped with GPS help when it is vital to know the whereabouts of units or people in the field. But GPS won't work indoors. So how do you track a firefighter who has rushed into a smoke-laden, flame-filled building, a police officer chasing a suspect inside a shopping mall, or someone working deep within a mine?

At present, tracking a person where GPS doesn't reach can only be done over radio – by the person describing his or her location.

But all this is about to change, with new positioning solutions and data communication technologies that make it possible to track people reliably in places where GPS signals can't be received.

Tracking position…

Cassidian recently demonstrated a unique combination of data sensing and real-time transfer over a TEDS (TETRA Enhanced Data Services) capable TETRA network.

The demonstration involved an innovative indoor positioning solution that uses an accelerometer and a gyroscope. These are microelectro-mechanical system (MEMS) sensors that can sense both dynamic acceleration, such as shock or vibration, and static acceleration, such as inclination or gravity.

In practice, the sensors measure the changes in a person's position, with the stream of tracking data from the sensors transmitted via TETRA/TEDS radio to a positioning application. The application, at a command centre for example, makes it possible for an incident commander to see the person's location on a digital map of the building.

… and watching health data

The demonstration tracked the person's location indoors, but also his vital life signs. Being able to monitor a person's health status – pulse or oxygen level, for example - can help save lives.

Needs no advance set-up

The TEDS capability in the TETRA radio network brings the necessary data capacity for advanced sensing solutions. Unlike traditional WiFi-based indoor positioning, the demonstrated solution does not require an expensive and difficult network set-up in advance.

What is Direct Mode in TETRAPOL? (and how to use it)

Even when you are outside your network's coverage area, did you know you can still communicate with other TETRAPOL users? This is possible using 'Direct Mode'. It's a useful feature when you cannot or do not need to connect to the network, yet really need to speak to a colleague.

How to use Direct Mode

Select the Direct Mode feature on the radio. Select the channel that is used for Direct Mode.

When you now press the push-to-talk button, the radio terminal switches to transmit mode straight away without interacting with the network.

To exit a Direct Mode call, simply press the red key to end the call, or start another communication. Of course, if the user moves out of the terminal's radio range, the call will drop.

Of course, the radio terminal must have Direct Mode rights, and Direct Mode channels must already have been allocated.

What happens in Direct Mode

When in Direct Mode, the radio terminal still monitors the network to receive network calls when there is no traffic on the direct channel. You can also make an emergency call in Direct Mode - the emergency call then goes to all terminals that are in range.

Security features

There are several features in TETRAPOL that prevent a stolen terminal from accessing Direct Mode.

The first one is the PIN code that must be entered when starting the terminal, while the second is the ciphering key needed for Direct Mode communication. The last feature is

that the terminal must be registered at least once on the network, meaning that a terminal that has never been registered to a network cannot enter Direct Mode.

How to make a **one-to-one call in TETRAPOL**

Sometimes you may want to talk to another TETRAPOL user directly and without anyone overhearing your conversation. Such calls are easy to make, providing both users are registered on the network and within coverage. Calls are also possible over a telephone network via PBX. The call can even be ciphered for added security.

Here's how to do it.

First, dial the calling ID on the terminal keyboard. You can also select the calling ID from the terminal's directory or from a list of previous calls (redial).

The person you are calling can then take your call by pressing the green key, rejecting it with the red key, or simply not answering, in which case the network will eventually reject the call.

To end the call, simply press the red key to hang up.

Finally, it's worth knowing that the connection is not like a normal mobile phone call – you cannot speak at the same time as the person you are calling. The call is more like a traditional radio connection with a push-to-talk procedure.

DID YOU KNOW ...
...about TGR990 Gateway and Repeater?

Did you know that radio users operating in direct mode (DMO) inside a building can communicate with colleagues using network mode (TMO) outside? The TMO-DMO Gateway functionality in the TGR990 enables individual and group calls to be transferred along with status and text messages.

Did you know that the TGR990 can also act as a DMO Repeater? This function expands the operational range of direct mode and keeps users in contact with each other in places where the network is unavailable. This might be the case in remote locations beyond TMO coverage, or inside buildings, tunnels and basements, where walls may reduce coverage. Staying connected with voice calls and messages enhances the safety of users in very demanding situations and environments.

Three modes in one radio

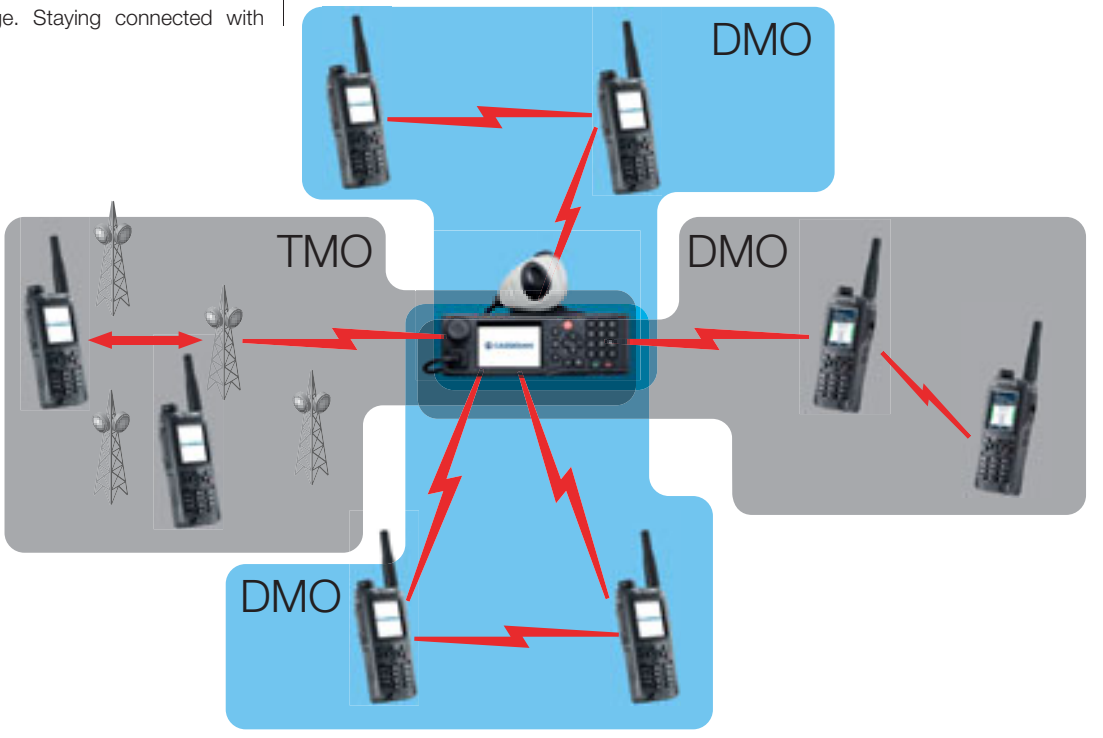
In addition to being a Gateway or a Repeater, the TGR990 can function as a normal TETRA radio. One of the three modes can be active at a time. Changing mode is very quick and easy, as some of the number keys can be programmed as shortcuts. Just press the key and an icon of the activated mode appears on the display to show its readiness for this function.

TGR990 is designed for special circumstances, extending radio coverage at the edge of the TETRA network and even beyond.

Gateway concept
Provides connectivity between Direct mode operation and TETRA network.

Repeater concept
Repeater extends the DMO coverage

Only one mode can be active at a time.



8 is a lucky number

Number 8 represents wealth and prosperity in many Asian cultures, perhaps one of the reasons why the **THR8 hand-portable** from Cassidian has become such a popular TETRA radio in the area. It continues the success started by the THR880i , but offers even more advanced features than its predecessor.

User safety takes priority in the demanding working conditions and environment of PMR professionals. This is why police and other field officers particularly appreciate the Lifeguard feature, an advanced solution which tells colleagues when there is a "man down". It works by recognizing when the radio has stopped moving, or has remained horizontal for too long. If the officer is not able to respond to the user alert, the THR8 automatically triggers an alarm and sends GPS coordinates to a predefined destination, allowing help to be sent.

Because of the extremely wide set of configuration possibilities, such as special keys and eight profiles, the THR8 is an excellent choice for both office and field use. Different user groups can really benefit from the radio's ability to adapt to changing situations and user demands. Many users like to use the vibrating alert in noisy environments, some want to adjust the display upwards when wearing it on the belt or even turn the display off so that outsiders cannot read it.

Fire fighters particularly value the THR8's IP65 classification. Also useful for them is the extended usage time provided by the heavy duty battery, a critical feature in "on fire" situations where charging is not possible. Voice feedback and excellent audio quality lets the user concentrate on the task in hand and use the radio eyes-free and hands-free.

Electricity companies, power stations and other utilities can benefit from the Java™ platform for meter reading and other applications. Also, the largest and sharpest QVGA colour display on the market is a great advantage to all user groups.

The THR8 is designed for the 800 MHz frequency band, which is widely used in China and other Asian countries.

Delivering coverage fast has never been so easy

Temporary communications coverage is often needed to get the job done – whether that's delivering security at a major event or completing a big engineering project on time. Whatever the need, the world's smallest base station makes rolling out coverage easier than ever.

The TB3p mini TETRA base station from Cassidian is the smallest base station in the world, yet it packs in the same powerful features as its big brother, the TB3. These include fast TEDS data, air-interface encryption, Type 1 handover and base station fallback.

Difficult locations

Setting up a temporary network in difficult locations such as caves or underground excavations is easy with theTB3p because it is not much bigger than a common laptop. The new mini base station can also be operated and maintained remotely, so it can be installed in tight places with very limited accessibility.

The base station consumes only about 50 Watts – less than a conventional 60 Watt light bulb, and less than one tenth of the consumption of a macro base station. This provides additional flexibility during installation, operation and maintenance in demanding conditions, since the base station can remain online with a power supply comparable to that of a car battery.

Keep on the move

Major civil projects such as roads and railways are constantly "on the move". Because the TB3p can be installed in a vehicle together with a pneumatic antenna mast, the temporary network extension can keep pace as the construction team moves the project along.

In other words, the TB3p base station enables a mobile and "siteless" TETRA network. If a conventional TETRA network exists nearby, the TB3p can link to the wider network providing a secure communications channel covering a large geographical area. This is a tremendous benefit for professionals working in remote or difficult locations, since they can immediately alert the nearest rescue and medical crew if something goes wrong. In addition to the operational and safety benefits, the mini base station even saves money, thanks to its size and robust, low-maintenance design.

Want more from your TETRA radio? **Here's how.**

The best radio is easy to use, yet offers smart features. And with Java™ you can get your radio to work better for you in many ways. In earlier issues of Key Touch®, we showed you some ideas for what you can do - here are three more

More information shared more efficiently

A Java application may be the smartest way to share pictures over TETRA. Because it can use SDS messages as a data carrier for rich content, an image can be compressed and sent using SDS. How smart is that? This is only possible with Java. And, thanks to group addressing, the image can be sent to a group of users at once, a feature not available in commercial networks like GSM.

An extremely efficient way to deliver data, it could be used to quickly send an image of a wanted person to everyone involved in border security to prevent the suspect leaving the country.

Work more easily

A Java application can be used to provide an easy-to-use user interface to an external device such as a barcode reader, for example, which could be given a "keyboard and display" on your radio. The end user has the same user interface to control both his terminal and the external device, making it is possible to integrate the device as part of a chain or give a "keyboard and display" to a device which wouldn't have it otherwise.

Automate for speedy accuracy

A Java application could make it easier and quicker to fill in a form by pre-filling it with information from the radio terminal's folders, its gallery, or contacts. Likewise, a Java application can access the GPS receiver built into the radio, or the terminal PEI. This not only saves time but also avoids human error through automated reading and writing of data.

Users and organisations can use Java to get more value out of their radios: Java support is available in THR880i, THR880i Ex, TMR880i, THR9, THR9i, THR9 Ex, THR9+ and THR8 TETRA radios from Cassidian, the only TETRA terminal manufacturer to offer it.

Here today, **here for the future**

A sunny Budapest in Spring was the venue for the latest TETRA World Congress. And a sunny future for TETRA was the big message, with plenty of excellent presentations and vendors showing the latest developments.

Overall, the event underlined optimism about TETRA's future, with delegates confident it will remain the best multivendor mission-critical technology for at least another 15 years.

Although no new technology trend was identified, there was a clear call for further advances of TETRA and TEDS. Some developments had already been taken, with the TEDS Direct Access standard moving into its final phase and the prospect of TEDS interoperability testing against the current standard. More vendors presented their own TEDS solutions and Cassidian introduced the TB3p eco-efficient mini base station.

The industry is responding to the needs of national safety authorities through broadband standardisation, operators are looking for continuous broadband spectrum and the industry is responding with solutions such as Cassidian's multi-path data router supporting LTE on 400 MHz, a world first.

Those with access to continuous spectrum will soon have a good choice of products to answer their broadband data needs, however, mission-critical voice and data, such as messaging and field commanding data will continue to run on TETRA / TEDS.

Here and now

New markets are becoming more interested in TETRA, with utilities looking to use it to increase security and transform their business. Small and medium sized TETRA vendors declared their commitment to bringing TETRA to the important North American non-public safety market.

Here for more

The need to conduct overall public safety communication more efficiently is another pointer to TETRA's secure future, while full-circle security is gaining ground. Radio, IT, dispatching, and command and control are increasingly seen as parts of the mission-critical end-to-end service. Cassidian was prominent in showing full-circle security solutions to achieve this, such as a vehicle concept that integrates the onboard information systems with the incident information available to the command and control centre.

Budapest confirmed TETRA's future. With best-in-class technology for group communication services, market demand is growing and users are gaining ever more benefits.

TWO-WHEEL TALKING

Who's the lucky Hungarian police officer getting to ride this gleaming beauty? Whoever it is they can always stay in touch thanks to the advanced Cassidian motorcycle communication solution* with extended range Bluetooth helmet integration.

* The motorcycle communication solution is based on the TMR880i with control panel fitted into the bike next to the standard controls.Cassidian showed the solution at TETRA World Congress 2011 in Hungary.

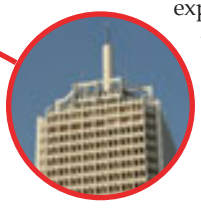
Catch up on an eventful year

Key Touch takes a whistlestop tour of three recent events and looks forward to future opportunities to share the good news about the latest mobile security solutions.

TETRA World Congress – The backbone of the TWC community

The Hungexpo centre in Budapest hosted the 13th annual TETRA World Congress on 24-27 May. As the biggest TETRA event in the calendar, TWC witnessed a record number of attendees in spite of the current challenging economic environment. New equipment, products and devices all made their debut, including the world´s smallest TETRA base station – the TB3p from Cassidian.

The next TWC is already scheduled for May in Dubai's World Trade Center. The Congress never fails to attract professionals from around the world, which is why it provides an unrivalled opportunity to network and share experiences. Remember to dress for the climate, since the temperature in Dubai often reaches over 40oC. Hope to see you there next year.



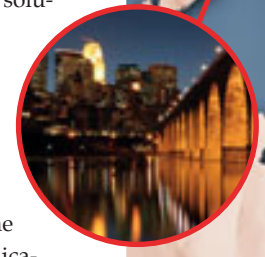
APCO in the land of opportunity

The 77th APCO International Conference and Expo took place this year in Philadelphia, Pennsylvania, on 7-10 August. Yet again it provided an ideal place to explore new products and services and connect with like-minded people and organisations.

More than 5,400 people attended, which is an 11% increase over last year's event. The huge expo area had 709 booths on display and occupied over 6,500 m^2.

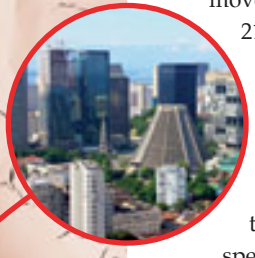
Cassidian took the opportunity to highlight the power of interoperability solutions with great results.

Next year's APCO will take place in Minneapolis, Minnesota, on 19-22 August. Will it outstrip this year's mammoth event, when some 2,600 public safety communication officials and 300 exhibiting companies took part? Let's wait and see.



Staying in touch with South America

Santa Catarina in Brazil was the venue for last year's Interseg conference for public safety professionals, and this year the event moved to Rio de Janeiro on 21-23 August.



As the biggest gathering of public safety professionals in South America, Interseg is always a great chance to get up to speed, and a special edition of Key Touch magazine in Portuguese was produced to support local users at the 2011 event.

Four-year old boy is 9-1-1 hero

A four-year old boy has been given an award for saving his mother's life by dialling 9-1-1 when she became incapacitated following a medical emergency.

The award, given by 9-1-1 for Kids and presented on the Cassidian Communications stand at APCO (Association of Public Communiations Officers) 2011 National Conference, recognised Isaiah May as a Youth Hero for his quick thinking and calm behaviour during the crisis. Isaiah's mother Cara had read a book with him called "It's Time to Call 9-1-1: What to Do in an Emergency" and Isaiah remembered exactly what to do when his mother suddenly collapsed on the bathroom floor due to severe abdominal pain at their home in Troy, Pennsylvania.

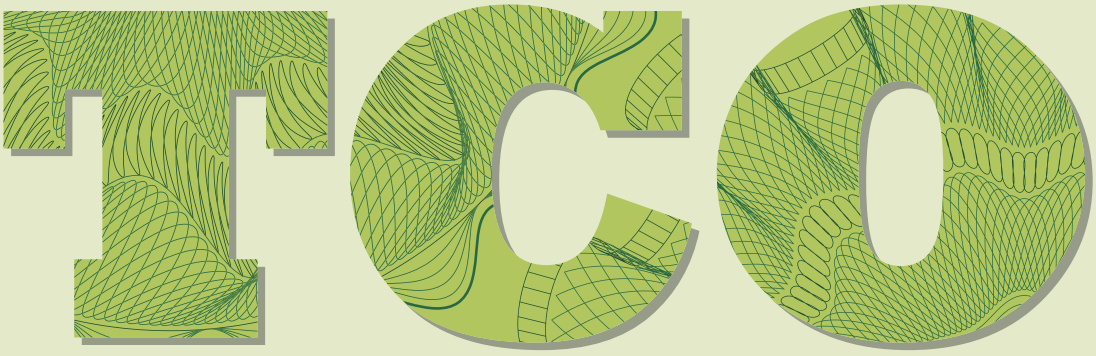
Both his mother and the emergency service staff are amazed at how well Isaiah coped.

"I always taught him if something ever happens, you dial 9-1-11," Cara May said. "It had been quite a long time since he read it, and he remembered it. It's amazing. He did a wonderful job; he did a great job."

Isaiah calmly anwered the 9-1-1 dispatcher's questions, giving all the information needed to direct emergency services to their home. Director Robert Repasky said: "It was incredible, not only that he answered all the (9-1-1 dispatcher's) questions, but he was calm and gave a description of the house, a description of the vehicles outside, he knew the address…"

The 9-1-1 Local Heroes® Medal of Honor is given to a young person who distinguishes himself or herself by calling 9-1-1 to help save a life or property, or to report a crime.

TOTALLY COMMITTED TO TCO



When budgets are under scrutiny, network owners seek ways to cut the Total Cost of Ownership (TCO) of their networks. Some 50-80% of the long-term cost of a network comes from operational expenditure (OPEX), so taking a close look at how to save on these expenses can really pay off. We review proven ways to save money in professional mobile radio.

Proper sizing, lower costs

The wise buyer will size the network with operational costs in mind before purchasing. A network with versatile priority and hierarchy features helps avoid setting up unnecessary capacity 'just in case'. For example, mission critical data won't require the cost of adding extra capacity if the network supports data in a smart way.

Right three choices

Build the most cost-effective networks using these three key principles:

1. Cut the cost of transmission by building a flexible and scalable network.
2. Lower the cost of maintenance by using high-capacity switches - It minimises the number of network elements needed and the small footprint of the switches saves rental expenditure at the sites.
3. Minimise site rental costs by using base stations with large coverage - fewer sites are needed for optimal network coverage.

Using energy-efficient equipment also helps minimise electricity consumption. The right choices not only yield savings every year, but are eco-friendly, too.

New options in transmission

Evolution in telecom transmission has made it possible to connect the radio network equipment in different configurations and thus use only a small amount of transmission capacity. The new trend of IP transmission can drive down transmission costs even further.

Smart operators will choose solutions that can take advantage of the new, cheaper transmission networks. And the best way to adopt these new possibilities is to opt for a solution which can connect to current and new transmission systems at the same time. This is the only way to ensure a smooth upgrade path.

Efficient network operation

When the technical management of the network infrastructure is separate from the operational management of talk groups and communications, it's possible to operate even a large network with a small staff, yet run a 24/7 network operator service. User organisations have the operational management at hand as part of their daily work.

Cassidian's TETRA system, for example, is designed with Total Cost of Ownership (TCO) in mind. The system ticks all the boxes and helps cut costs where it counts the most – in OPEX. Contact your local sales representative to discuss ways to run your network in the most economical way.

Memorable ISI milestones

TETRA inter-system interoperability has been on the agenda of TETRA users and industry for the last 10 years. Here we track its progress...

2002

First tests of cross-border communications in Germany, Netherlands and Belgium for the 3-country pilot (3CP).

2003

The 3CP defined the operational requirements for cross-border-co-operation, leading to the TETRA community in ETSI TC TETRA producing an ISI standard. The TETRA Association developed comprehensive TIP specifications to test and certify ISI interoperability between manufacturers.

2008

The first ISI Phase I certificate was granted to the interconnection between two EADS [Cassidian] TETRA networks.

2009

Cassidian [EADS] and Motorola achieved ISI certificates for their TETRA releases, Motorola Dimetra IP rel6.1-ISI as well as Cassidian TETRA Release 5.5, the software in use today in many European networks. These TETRA releases support terminal migration, individual call, status and SDS over ISI.

- celebrating European interoperability

The time is ripe for ISI deployment. Germany's BOS Digital Radio Network will soon have a comprehensive set of ISI functions. Support for TETRA authentication as well as group calls, based on the ISI standard, will remove the last technical challenges remaining from the Cross-Border Communications (CBC) trial. Support for uncoordinated terminal numbering makes operational activation of ISI calls for any terminals in both networks easy, while support for more than two networks fulfils the requirements of the 3CP, where more than two networks are connected.

2010 **2011** **Beyond 2011**

Using an ISI interface, the BOSNET and RAKEL networks and Cassidian conducted a cross-border-communication (CBC) trial between the maritime border guards of Sweden and Germany. The technical trial and an operational exercise revealed the challenges in implementing ISI in practice in operational networks, as well as key challenges facing operational forces in handling such incidents.

An ISI interface, based on the TA certified ISI between Motorola and Cassidian [EADS], was set up between the Motorola and Cassidian operational TETRA networks in Romania and the supported functionality successfully tested.

Initiatives to take ISI into operational use have started in several countries. The consistent work of TETRA users, operators and manufacturers over 10 years is now bearing fruit. The technical solutions for the much needed international and cross-network interoperability between TETRA networks is in place and now is time for TETRA operators and end users to make it operational. One more piece is in place for the possibility of public safety officers in different nations to work together more efficiently.

Adopting a better role model

Trying to reach the the gate security officer? With alias profiles, just press a button and speak to them, whoever they are.

The staff in an organisation often have several different functions to fulfil, meaning the role people play can depend on the time of day or week. This is further complicated by shift pattterns and holidays, meaning that the health and safety officer this week is not the same person as last week.

The way radios are used needs to reflect this. Alias Profiles allow one user to fill different "roles" using the same radio terminal, with the user's rights and priorities changing with the role.

An example would be a "fire chief" Alias Profile - when someone wants to communicate with the fire chief, there is no need to know who (or which radio) is doing the job at that moment. Just call the chief and you will reach the right person.

Alias Profiles allow one radio user to adopt several communication profiles in the same radio and are particularly useful when a user fills a role that is not normal for them. For example, a team member may need to step in as a team leader. The user will, of course, need a different communication profile in the role of team leader than they do in their everyday role.

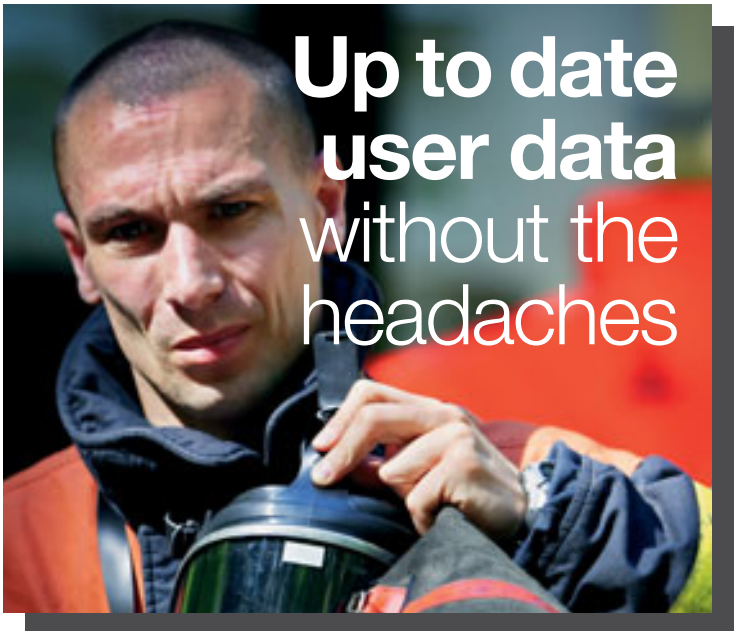
The Alias Profile also helps identify the radio terminal that is used in a particular role. If someone needs to reach a person who has a particular role, for example, the smoke diver on duty, the surgeon on duty, or the current shift's security guard, there is no need to know which particular radio unit this person is carrying. The role "moves" to the radio that the person in the role at the time is carrying.

Alias Profiles bring many benefits:

- **Easily remembered role numbers.** There is no need to change the number that people call to reach someone in a specific role, regardless of who is on duty. The numbers can remain the same, making it easier to use mnemonics or other memory joggers to make dialling and addressing easier.
- **Grab a spare radio and go.** A radio user, registered on the system with a radio, can further register (or log in) using an Alias or Role. Each has a specific profile – usually related to a special task or operational identity – so spare radios can be brought into use very quickly.
- **Pooled radios.** Users can share a common pool of radios, since a specific communication profile can be associated to an Alias or Role. This comes into instant use in whichever radio terminal they use. Organisations can use Alias identities as each radio user's personal identity.
- **Roles have numbers.** It is possible to define tactical numbers that will reach whoever is in a certain role. There is no need to know who this person is or which radio they are carrying.
- **More roles than one.** One user can log in with two different Roles at a time. Users can take on an additional role-specific identity and receive calls and messages addressed to both Roles.
- **Assuming a role does not mean abandoning your own identity.** Regardless of the role, the user will also receive the calls and messages that are addressed to their own radio unit using that number.
- **Simple to call a train or bus.** An Alias identity is useful when a radio is fitted into a vehicle. The Alias can be associated to a train or bus route, for example. There is no need to know which particular train or bus (with its mounted radio terminal) is in use - the correct train or bus can be reached.

ALIAS PROFILES IS A FEATURE INCLUDED AS AN OPTION IN TETRA SYSTEM RELEASE 6.

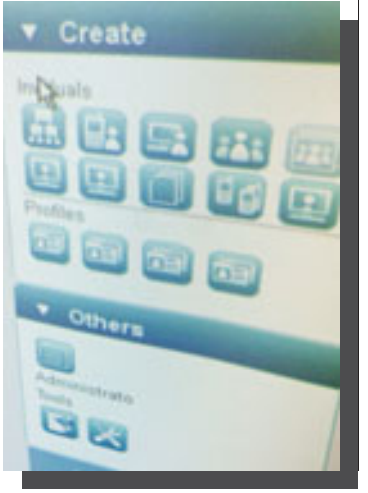
With many thousands of users on a typical TETRA network, managing every user individually is an enormous, time-consuming job. Cassidian's Tactilon has the answer – it's simple, reduces workloads and cuts costs substantially



Up to date user data without the headaches

Instead of managing individual subscribers one by one, the new Tactilon tool from Cassidian enables TETRA operators and user organisations to manage subscriber attributes en masse, saving huge amounts of time.

The new tool introduces a system of profiles, which allow different users to be given different communications attributes depending on their scope of work. For example, an ambulance unit profile, a police car profile and a mobile border guard profile could each be defined once and then applied to any number of users as appropriate. Numbering, authentication keys, talk groups, priorities, rights, and so on can all be managed in this way.



Auto-updates boost efficiency

Another advantage of Tactilon is that any changes to profiles will be automatically updated for all users who have that profile. These mass operations will simplify network administration and boost efficiency.

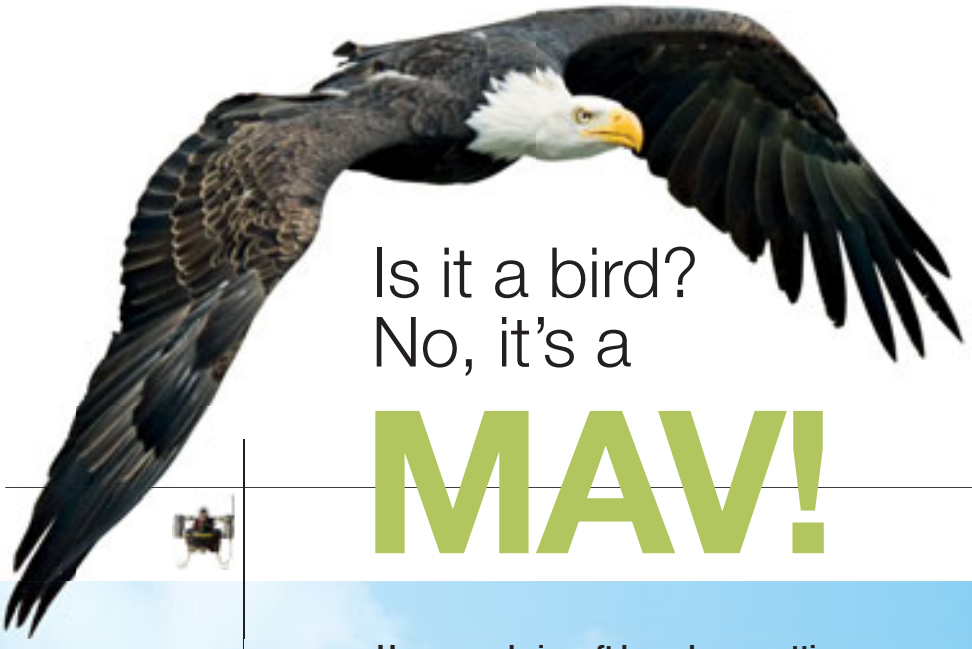
The new approach will be particularly useful when introducing a new set of users to a TETRA network, but it will also make it far simpler to manage existing subscribers.

Tactilon also improves security in shared TETRA networks, because it allows administrators in one user organisation to manage the attributes of their own subscribers without support from the network operator and without giving them access to subscribers from other user organisations.

Simple to use

User organisations can access the Tactilon via a simple web-based interface, without the need to install any specialised equipment. The application itself is installed on a central server by the network operator.

In future the new tool will interface with the Taqto terminal parameterisation tool and with terminal programming tools from other manufacturers to provide maximum flexibility.



Is it a bird? No, it's a MAV!

Unmanned aircraft have been getting smaller, and more useful. They are increasingly popular with civilian agencies, such as police, fire and rescue services, and a variety of monitoring or regulatory authorities.

Small unmanned aircraft are nothing new. In fact, pilotless aircraft predate the Wright brothers' piloted flights of 1903, but the modern concept of using small or "micro" Unmanned Aerial Vehicles (UAVs) for surveillance originated in the 1970s at the US Naval Research Laboratory (NRL). At first, the smallest of the systems developed were called Micro-UAVs, but developers realized that "unmanned" was obvious in this context and adopted the term Micro Air Vehicles (MAVs).

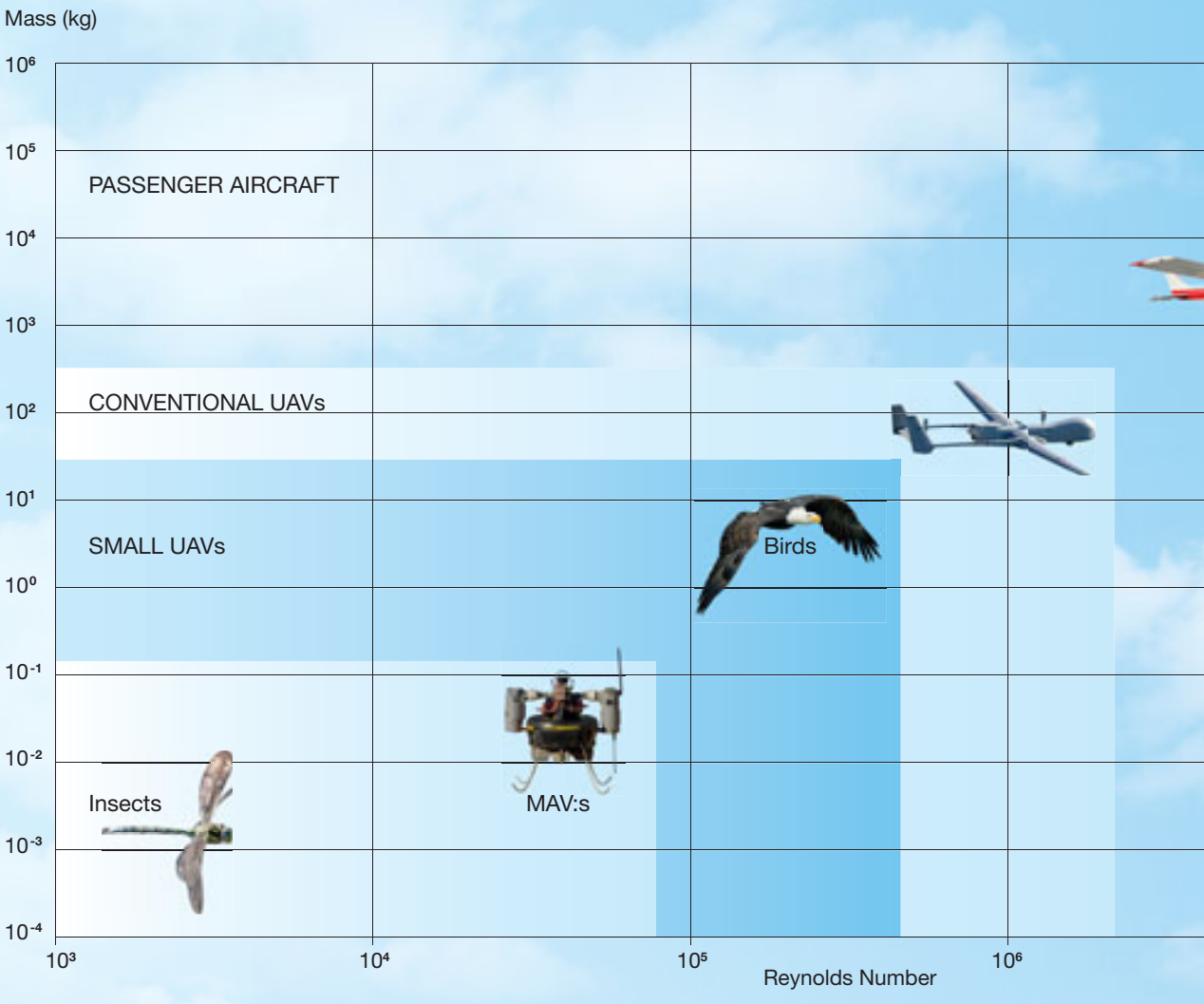
As well as military organizations, many universities have become active in developing MAVs, with the first university competition held in 1997 at the University of Florida. The first European Micro Air Vehicle (EMAV) Conference was held in 2004 in Germany.

Shrinking size, growing capabilities

MAVs come in all shapes and sizes and the precise distinction between "small UAV" and "MAV" is a matter of taste. The MITE2 (Micro Tactical Expendable – 2) developed by NRL in the mid-1990s had a wingspan of 36.8 cm and today there are several MAVs with a wingspan of 15 cm or below. Some systems, such as the Honeywell T-Hawk,

Mass versus Reynolds number for various flying animals and aircraft

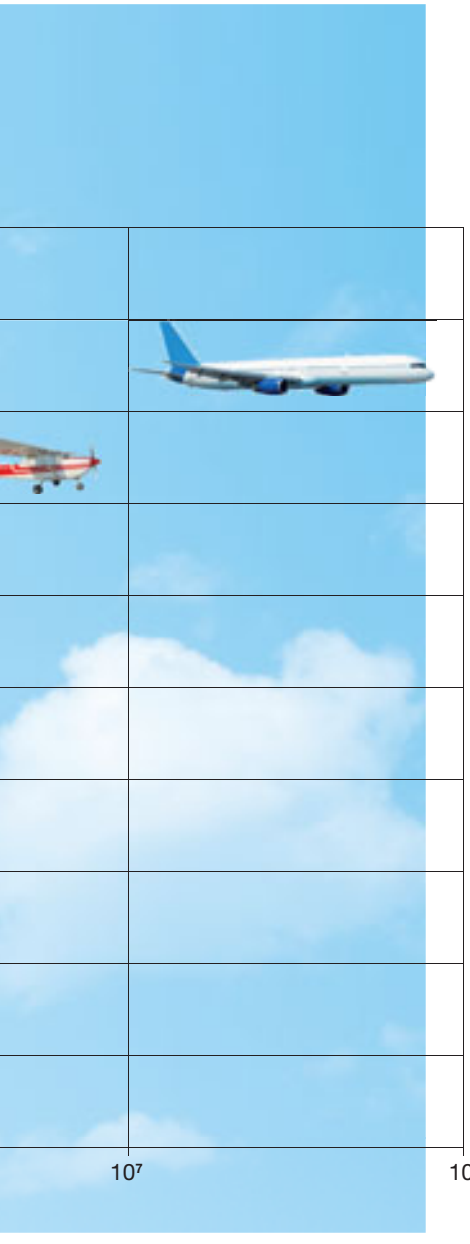
Reynolds number is a factor in the calculation of a body's drag characteristics, important when calculating the optimal cruise speeds for low drag (and therefore long range) profiles for aircraft.



are significantly larger, about the size of a small office waste bucket and weighing 11 kg. Some MAVS are based on a fixed-wing design like a conventional aircraft, while others use a rotary-wing like a helicopter or flapping-wing design, similar to a bird or insect.

Smaller, more capable MAVs have been made possible by the miniaturization of electronic components and sensors, as well as improved battery technology. In particular, low-mass and low-power-consuming communications, navigation and control systems have advanced rapidly, pointing the way to extremely low-cost and capable MAVs.

New applications are being devised too. The most impor-



tant is surveillance, where the primary payloads are optical or infrared cameras. These provide "over the hill" intelligence and rapid-response "eyes in the air" for military and civilian authorities.

Keeping airspace safe

One of the major challenges is the safe operation of MAVs in civilian airspace. Although MAVs can generally be operated by amateurs below 121.9 meters (400 feet), professional users must comply with detailed regulations. In the US, a Certificate of Authorization (COA) or Special Airworthiness Certificate is required from the FAA, which is drafting special rules for MAVs for civilian uses.

Over 250 COAs have been issued to public agencies to operate UAVs in US airspace as of 26 July 2011. It is difficult to say how many of these are for MAVs, but there are a few well-documented examples. For instance, the Miami-Dade Police has been granted a COA to fly several T-Hawks for testing.

In the EU, individual Member States regulate the use of all aircraft below 150 kg maximum take-off mass. The UK's Civil Aviation Authority (CAA), for example, has a special classification for small UAVs (under 20 kg) that can fly relatively unrestricted under 121.9 m (400 ft). MAVs under 7 kg have fewer restrictions, and special rules apply for surveillance.

European research takes off

In Europe, there is growing interest in professional MAV use. Several manufacturers are based in Europe, and MAVs have been used by civilian agencies in several EU Member States, including the Dutch Police, State Police Saxony (Germany), French Police and UK Police and Fire brigades. The European Commission has already funded some MAV research projects, such as the FP5 project "Micro Air Vehicles for Multipurpose Remote Monitoring and Sensing "(MARVEL), and FP6 project "micro DRone autOnomous Navigation and Environment Sensing" (μDrones). Future calls for tender are also expected to address MAV research.

With shrinking size, growing capabilities and funding support for new developments, MAVs are set to play a big role in the data gathering tasks of public bodies.

Keep up to date with our latest videos

Sit back and view these PMR-related videos on the Key Touch® website.

THR9+
The THR9+ radio gives gloves-on access to TETRA. For an even better look at this radio than the story on page 7, tune in to www.keytouch.info

Future in-vehicle communication.
Vehicles are getting more and more information, media, task-specific applications and control related equipment. Take a look at this video to see the future in action.

Instant response.
This video shows many practical TETRA radio features that help first responders in their work.

These are just a few examples. All Key Touch videos are here: http://www.keytouch.info/features/videos_and_podcasts/

What you liked best in **Key Touch 2/2011**

It's time to reveal which articles in the previous issue of Key Touch appealed most to our readers. "Mounting up to defend public security", which discussed the special skills needed to become an awe-inspiring police officer on horseback, was first past the post as the most interesting article in our poll. With so much focus on the latest technology in the rest of the magazine, it's good to see that traditional public safety measures still play a valuable role in many parts of the world.

Seamless communication in patient care also attracted attention in our runner-up article "VIRVE communication saves lives". An honourable third place went to "The future of mobile apps over PMR", which addressed the opportunities that smart applications will provide for field-based professionals in the near future.

GIVE US FEEDBACK AND WIN A PRIZE!

Let us know what you think about the latest issue of Key Touch magazine by voting for the best article. Visit **www.keytouch.info** and tell us what you think. You could even win a prize!

Navigating through the JARGON JUNGLE

It can be tricky keeping up with the jargon in many fields, but in a fast-moving area such as IT or communications new terms are always emerging. Key Touch presents a summary of essential PMR-related terms to help keep readers up to date with the latest talking points.

TETRA and TETRAPOL are radio communications technologies. Networks based on TETRA and TETRAPOL used widely to meet the mission-critical mobile radio needs of users in public safety agencies, utilities and other organisations that require seamless voice and data communications and services.

Narrowband describes communications links that carry voice and data in a bandwidth lower than 64 kbits per second.

Broadband digital communication technology provides data speeds of 2 Mbits per second and beyond for transmission of rich content and multimedia.

Base stations are wireless communications stations installed in a fixed location or sometimes in a mobile unit to provide local radio coverage. They continuously transmit and receive information from mobile terminals and route the traffic throughout the network.

Radio terminals are communications terminals that can operate in direct mode operation (DMO) by functioning like walkie-talkies or in network mode operation, using the services of radio network infrastructure.

Radio accessories are gadgets and tools that can be attached physically or wirelessly to a radio terminal to help professionals with diverse operational requirements and working conditions in their daily jobs. An example would be a wireless in-ear microphone or a multi-unit charger.

TEDS stands for TETRA Enhanced Data Services, which is an extension and enhancement to the existing data services provided by TETRA. It is designed to meet the requirements of higher bandwidth applications in a network, such as picture and low resolution video-based applications.

Radio spectrum is the frequency band allocated for use in a radio communications network. For example, the 380-385 and 390-395 MHz bands are used by public safety professional mobile radio in Europe.

Cassidian becomes more global
... in a local way

A reshaping of the organisation is underway at Cassidian, with the aim being to provide the highest levels of support using local resources to PMR users around the world. Expert support on the doorstep will be critical as PMR operators move to next generation networks based on LTE technology. Former CEO Jean-Marc Nasr is back as head of Cassidian's secure communications business, and Key Touch quizzed him about the company's plans.

Key Touch: *What's the thinking behind the transformation of Cassidian?*

Jean Marc: We want to transform Cassidian from being seen as predominantly a West European-based company exporting to the rest of the world into a company where customers in markets such as South Africa and Brazil see us as local. Of course we'll continue to have a very strong presence in Europe and support our customers there as we have always done, but we're also going to invest extensively outside Europe and build more resources in regions such as Asia Pacific, Middle East and Latin America.

We already have a presence in 20 countries today, but we're going to strengthen that presence so that markets around the world can benefit from access to a broader Cassidian portfolio and a more responsive organisation. This increased customer proximity will allow us to resolve any questions locally and more rapidly, without having to refer back to our organisation in Europe. Local engineers will have more local understanding and be able to provide solutions tailored to local needs.

Key Touch: *Which priorities can we expect to influence your activities in the short term and looking further ahead?*

Jean Marc: We have transformed Cassidian and now we have to deliver on our commitments. That's my top priority. By the end of next year I want all our customers to understand how using our solutions is in their best interests. Together with our new Sales organization, I'll be visiting all our customers one by one so I can understand their future challenges.

Looking ahead, we've already invested a lot in the past two years in developing broadband for PMR. We're also partnering with Alcatel Lucent on Long Term Evolution (LTE). We understand secure communications and they have expertise in LTE technology, so it's a good mix for our customers. Other LTE vendors are sup-

plying commercial operator networks, but only we have the PMR experience to provide the level of resilience that our customers in public safety and the military need.

The emergency lane of a motorway is a good analogy – commercial networks may get jammed up and go down, but our systems provide an emergency lane that authorities can rely on to stay open during any crisis.

Key Touch: *How do you see the market for PMR developing?*
Jean Marc: I think we'll increasingly see PMR solutions popping up in market segments outside public safety, such as transport and oil and gas, for example. Three years ago they said they'd be dealing with commercial operators, but an important influence is the need for security in communications and securing our critical infrastructure. Governments need their key industries to be secure, as well as their key public services. This is another good example where the PMR layer provides an emergency lane. We'll see secure networks across individual sites like airports, which are then linked to each other by commercial networks.

We're extending our cyber security capability within Cassidian in anticipation. It will become one of our main technology areas in the future, impacting on all our areas of business.

Key Touch: *What's the biggest challenge facing the PMR market over the next five years?*
Jean Marc: Over the next few years the dominant trend in PMR systems will be the deployment of LTE technology to provide superior broadband capabilities for public safety radio users. LTE is one of the hottest topics in the commercial mobile communications world and is being deployed commercially already. Our task, and a major focus of our investment, is to make this exciting new technology suitable for emergency services communications so that it can reliably enhance the work of officers in the field and help to make the world a safer place.

Spectrum availability could be a big issue, however, especially in Europe. There are still many areas where there's no block of frequencies allocated to PMR broadband as yet and the industry needs that assurance to encourage investment and drive the development of a healthy ecosystem.

Key Touch: *Thank you Jean Marc*

Be prepared

TPH700 Ex

In your work, you can't know where the next alarm will come from.

You could be rescuing people from a train carrying flammable substances. Or helping evacuate a chemical plant that threatens to explode. You need to be ready for whatever comes your way and have the right tools for the job.

The new ATEX-approved TPH700 Ex TETRAPOL radio brings safe, reliable and effective communication in potentially explosive environments. Robust and user friendly, it offers exactly the same functionality as the regular TPH700– vital when you use both regular and intrinsically safe radios.

With the TPH700 Ex you will be prepared for any eventuality.