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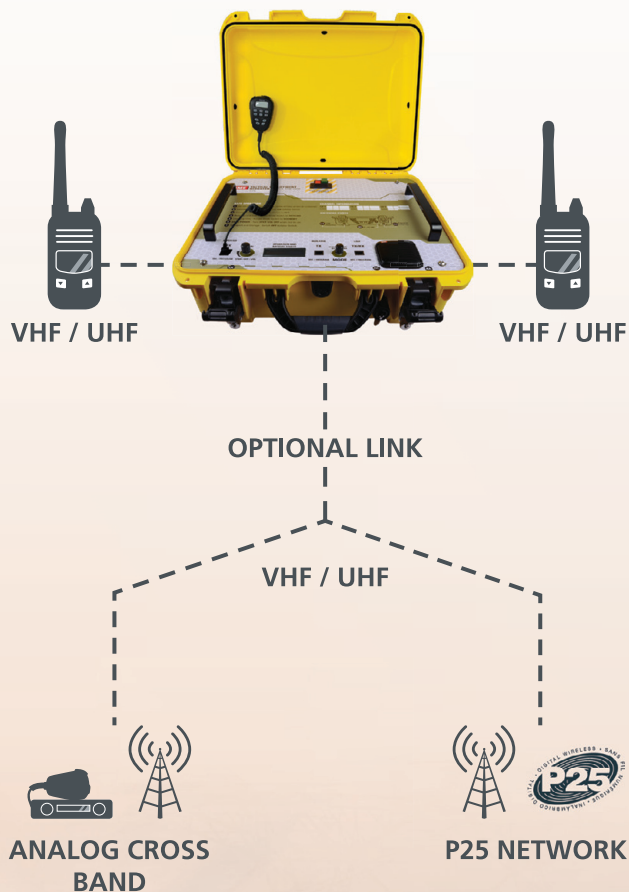


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DIGITAL CONTROL MIC

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ANTENNA MAST

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ANTENNAS

Optional top whip sections for the AE1000MAST. 1/2 wave ground independent antennas:

- VHF 136 – 174 MHz bands
- UHFL 403 – 480 MHz bands
- UHFH 450 – 520 MHz bands



BATTERY CASE

BC018 - Standard sealed lead acid batteries

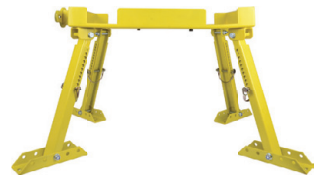
BC019 - LiFeP04 batteries

Each unit can provide up to 72 Ah supply.



BRACKET SUPPORT

Field bracket supports the repeater case and AE1000MAST.



POWER SUPPLY

100 – 240 V AC input with a 12 V DC 16 A continuous output suitable for SLA or LiFeP04 batteries.



ANALOG CONTROL MIC

MC522BC control microphone for local control of the repeater.



TACTICAL DEPLOYMENT REPEATER NETWORK





Inside

September/October 2015

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The NX-5000 series radio from JVCケンウッド provides users with a new level of functionality and versatility in a two-way radio.

The unit has the ability to handle multiple combinations from a variety of protocols such as conventional, trunking, analog, P25 Phase I and II, LTR and NXDN, with additional protocols due in 2016 via firm-ware upgrades. The various platforms are programmable on a zone-by-zone basis.

This combination of functionality and versatility of equipment configuration results in a radio that enables wide scope for customisation to meet a user's requirements.

The NX-5000 series takes the concept of a remote head to a different level, with options for single or dual control heads available, giving users the ability to control up to three radio decks. Independent volume levels can be set for each deck, zones in each of the decks can be monitored and multiple networks on multiple bands can be accessed simultaneously.

Additional features are available such as Bluetooth, GPS, Micro SD Card recording, intercom between heads, hands-free car kit, fully configurable button/functionality, customisable display, transfective LCD screen and auto brightness adjust, making the NX-5000 series mobile radio an extremely versatile piece of equipment.

The NX-5000 will be demonstrated at the Comms Connect exhibition in Melbourne in December.

JVCケンウッド Australia Pty Ltd
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Big data. Artificial intelligence. Predictive IT. Robotics. Digital disruption. These are all terms widely used in the IT world and, increasingly, in everyday life. But do they, or will they, apply to the critical communications field as well? You can bet your life they do and will, and what they represent promises to change our sector forever.

This is the conclusion I reached when I read Laurie McKenna's analysis piece in this issue of *Critical Comms* (see Spectrum at the back of the magazine), where he describes the tectonic changes coming our way. If what he says turns out to be correct — and it's hard to see how it won't — the critical communications field is in for an enormous shake-up.

From product design to manufacture, to system design and operation, it's all going to go automatic. Machines will pretty much do it all.

Initially when I read this, a chill went through me as I thought of all the potential downsides, eg, jobs lost. But when I thought about it a little longer, I came to realise that the coming disruption also represents an unprecedented opportunity, full of new, different jobs, new applications and new ways of achieving solutions. After all, the horse and buggy industry used to be huge, but it was long ago overtaken by the automobile industry. People still needed transport; the jobs just changed and shifted, that's all.

As Laurie writes, it's up to each of us to come to terms with the impending changes, and to adapt to the new reality. And isn't that what homo sapiens do best?

Jonathan Nally, Editor
cc@westwick-farrow.com.au

Calendar

October 2015

What: Critical Communications Middle East 2015

When: 5–7 October

Where: Jumeirah Beach Hotel, Dubai

Web: criticalcommunications-me.com

What: LTE Asia 2015

When: 6–8 October

Where: Suntec Singapore International Convention & Exhibition Centre

Web: asia.lteconference.com

November 2015

What: 17th annual Global MilSatCom conference and exhibition

When: 3–5 November

Where: Park Plaza Riverbank, London

Web: globalmilsatcom.com/EIN

What: MilCIS 2015

When: 10–12 November

Where: National Convention Centre, Canberra

Web: milcis.com.au

December 2015

What: Comms Connect Melbourne

When: 2–3 December

Where: Melbourne Convention & Exhibition Centre

Web: comms-connect.com.au

May 2016

What: 5th Australian & New Zealand Disaster and Emergency Management Conference

When: 30–31 May 2016

Where: Jupiters Gold Coast

Web: anzdm.com.au

What: Critical Communications World

When: 31 May – 2 June

Where: Amsterdam Rai, Amsterdam

Web: criticalcommunicationsworld.com

For a full list of dozens of industry events, see criticalcomms.com.au/events.



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THE DATA DIFFERENCE

Peter Hudson, Head of Technology and Innovation, Sepura





Adding data to voice boosts efficiency, safety and the bottom line.

Whether your operations are business or mission critical, data can add significant value. Real-time information provides the vital link needed to make better decisions and operate more efficiently. Utilising data can minimise costs by reducing the amount of time spent retrieving or filling information, but also by lowering network usage (compared to voice), allowing for expansion or other activities without the need to add extra capacity, thus avoiding additional CAPEX and OPEX costs.

Users nearly always carry a radio, so why not use it to generate efficiency and benefits for operations? This can be done either by using applications on the radio or by attaching a tablet or PC to the radio to provide a secure and cost-effective means of communication.

Utilising data can improve the speed and accuracy of communication, providing clarity, brevity and an auditable trail, as well as reducing the margin for human error.

Clarity of communication aids good and rapid decision-making and, combined with timely inputs from the field that can be automatically processed and distributed, provides a real-time view of progress and an overview of the activities being monitored.

Routine tasks and processes can be automated to save time and ensure predictability: using applications can support existing processes, streamline field work and automatically present the information needed at each step, leading to a more efficient workflow, and helping to enforce processes and ensure quality.

Integrating the collected or distributed data with IT systems provides an opportunity to use analytics and automated intelligence to improve operational efficiency and overall customer satisfaction.

Applications drive efficiency

Most modern PMR radios have large sunlight-visible displays and an ability to host applications, using either text mes-

sages, IP data or both to provide a communications platform. IP packet data is not always the optimal delivery mechanism for applications on narrowband networks; messaging (text, binary data, and status) with group delivery for radio-efficient communications can also be used. Choosing the right transport mechanism for the application can result in a very responsive and rapid service.

Table 1 shows how both narrowband and broadband data can provide a service for the typical types of application used by professional radio users. Most applications can be realised over narrowband networks if the right bearer is used and the application is 'smart' regarding the data it transfers or — more importantly — doesn't transfer across the air, resulting in very low-latency transaction times (eg, one or two seconds).

Equally, these applications can also be realised on wideband and broadband (eg, 2G, 3G, 4G) networks. Solutions can enable both narrowband and broadband solutions to be deployed in parallel, each application using the bandwidth in an optimal way to provide the best service possible.

Efficiency savings from using data

When used to access back-office data, traditional voice communications usually involve multiple transactions between the person in the control room and the person using the radio; the person in the control room searches for the relevant data and reads out the results to the radio user.

This has two disadvantages: it takes two people to complete the task and also there is a high chance of inaccuracy due to missed or misheard data when it is verbally relayed.

This sort of transaction is shown in Figure 1, and can take a minute or more to complete, depending on the amount of data to be relayed and how much repetition is required to ensure that all the data is captured.

	TETRA 1 Short data	DMR	GSM SMS	TETRA 1 IP data	Wideband IP data	Broadband IP data
Database search	✓	✓	✓	✓	✓	✓
AVL	✓	✓	✓	✓	✓	✓
Messaging/email	✓	✓	✓	✓	✓	✓
File transfer e.g. still images	✓	-	✓	✓	✓	✓
Slow scan video	-	-	-	✓	✓	✓
Streaming video	-	-	-	-	✓	✓

Table 1

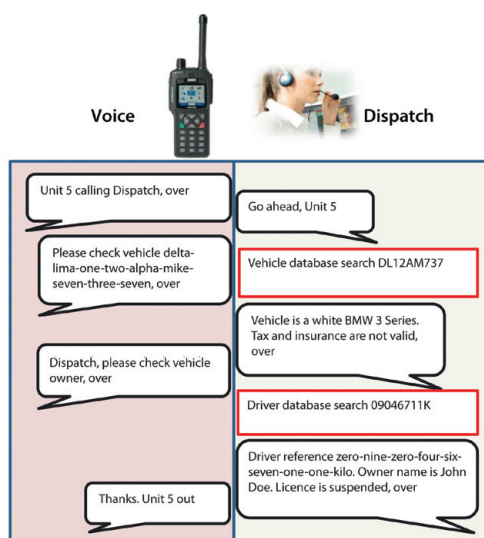


Figure 1

A typical database query from an application running on a radio goes directly to the back-end systems without intermediaries and is usually contained within one text message, as shown in Figure 2.

When these two processes are overlaid, there is a large difference in the time and resources it takes to achieve the same goal; the application is much faster and uses significantly less network capacity and resources.

In the first case, the voice channel is used for approximately 55 seconds and by two people, whereas the second application uses only two text messages and the transaction is completed in approximately 11 seconds. This makes the application 10 times more efficient.

Some requests are repeated by personnel many times each day, multiplying the benefits of using data and the return on investment for doing so. If this activity were used 2000 times per day, the daily saving would be 55 hours of effort, when compared to using voice. That's the equivalent of six extra people working every day.

Application projects are also relatively low cost, with disproportionately large savings in expensive time and resources. The benefits can be substantial when time and network costs are included — in some cases 40% or more of total benefits are from data and apps on a network. The cumulative benefits of replacing voice with voice and data are high (Figure 3).

The following case studies show the range and scope of possibilities for applications — in particular, querying or pushing data to back-end systems — across a range of sectors.

UK police stop and search

Police officers have to complete a lot of forms during the course of their policing duties; recording their encounters with the public is vital for accountability but the paperwork can sometimes be more time-consuming than the actions it sets out to verify. Any initiative that cuts down on form-filling — yet gathers information accurately and efficiently — will make officers more effective and give them more time to focus on actual policing.

An application enables Greater Manchester Police officers to collect stop and search data on their radios by responding to a series of simple prompts on the screen. This makes data collection efficient and more accurate. The application then integrates with back-office systems to transmit the data automatically, reducing administration and, thus, saving money. Speeding up the procedure also reduces inconvenience for people who are stopped and enhances officer safety.

Greater Manchester Police calculate that the reductions in paperwork and administration will generate savings of £700,000 per year.

French railways

TETRA radios help SNCF minimise costs, accelerate communications, reduce human error and improve customer satisfaction.

SNCF is using applications on its TETRA radios to broadcast prerecorded announcements, update information panels on platforms, streamline train preparation and despatch, and make train shunting much safer.

In many cases, the data messages replace instructions spoken into an analog radio or shouted to a colleague, enabling more efficient communication. In other cases, applications update back-end systems directly, eliminating the need to relay information from the platform to a third party for data entry.

Information transmitted by the applications directly updates SNCF's back-end systems, making it much easier to carry out post-event monitoring and performance reporting, based on the more complete and accurate data. SNCF can easily see, for example, how long it takes to carry out individual operations during the train preparation process, how many trains leave each station on time and which station a train has reached.

2010 FIFA World Cup

The challenge facing the Johannesburg 2010 Organising Committee in the run-up to the World Cup was to ensure that it could efficiently deal with almost any eventuality. Swift, reliable communications were the key to managing incident response and service delivery throughout the games.

Applications were deployed on TETRA radios that enabled users at multiple venues to simultaneously submit standardised status updates and incident reports to the Johannesburg Joint Command Centre.

Melon Antenna Helmet? Maybe not, but CRS Accessories can help when you're...

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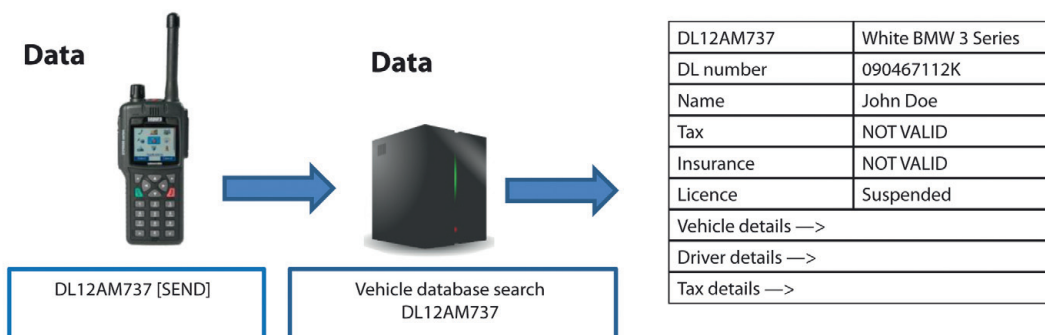


Figure 2

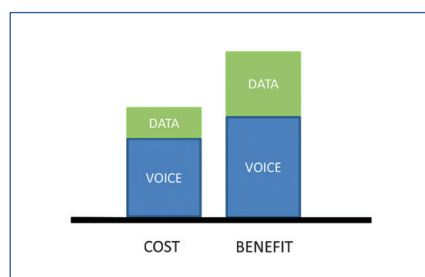


Figure 3



TRADITIONAL VOICE COMMUNICATIONS USUALLY INVOLVE MULTIPLE TRANSACTIONS BETWEEN THE PERSON IN THE CONTROL ROOM AND THE PERSON USING THE RADIO.

Users sending messages from handheld radios to the control centre could choose from a series of specially customised short data messages grouped into medical, security, fire and logistics events — including status updates on venue capacity — designed in anticipation of the situations or incidents that could occur.

As well as minimising voice traffic on the TETRA network — freeing channels for high-priority calls — every communication was automatically captured and logged for analysis and review.

Messages were categorised according to severity or type of incident, making it easy for radio dispatchers to identify and prioritise those that required action. What's more, each message, the venue from which it was sent and the identity of the user was automatically captured. Fast, accurate intelligence helped dispatchers respond swiftly to emergency situations or take action to prevent potential incidents.

Gaining minute-by-minute updates from venues on everything from logistics to medical emergencies proved the key to maintaining smooth operations throughout the event.

Parliament of India

The parliament need field-based and control room staff to have fast, straightforward access to critical information to help them carry out public safety and security operations.

The information comes from a number of sources, including back-end applications, legacy IT systems and command and control systems. To improve situational awareness,

parliament staff members need to be able to share and coordinate information with other safety and security users over a variety of networks and devices.

Data applications — including image transfer, alerting and instant messaging, multinet network messaging and mobile querying — allow information retrieval on a network-agnostic data services platform. All these applications run efficiently over both the parliament's TETRA network, as well as other commercial mobile networks, meaning that whether users have TETRA terminals or mobile phones they have the same quick and easy access to the information they need. Users can also send messages between TETRA radios and GSM phones.

This solution has increased the availability of critical information to parliament staff, improving security, enhancing decision-making and accelerating emergency response times. The parliament also deploys data applications with text and images for everyday access control and VIP support at its secure complex in the heart of New Delhi.

BMW production

BMW's manufacturing plant in Dingolfing, Germany, is the company's largest production site, manufacturing the BMW 5, 6 and 7 Series.

When maintenance repairs to a production line are quickly addressed, output and revenue are quickly restored to optimum levels, so BMW wanted to replace and improve the automatic fault notification system in the production line to gain more efficiency.

This was achieved through an entirely automatic fault notification solution that unifies voice and data and improves efficiency within the plant. Whenever a fault occurs on the production line, the maintenance team receives an automatic message via an application on their TETRA terminals; a team member must then accept the job manually. If no team representative is able to accept, the system resends the SDS up to three times, after which the request is escalated to a supervisor, who then decides who should take on the task.

The application considerably simplifies job allocation by minimising the number of interactions needed to accept or reject a job. It also provides automatic registration of job acceptance on the server, with confirmation being sent to the user on allocation.

European Union presidency

During Finland's EU presidency, a significant element of police duties centred on monitoring convoys. Instant messaging was used on both TETRA and GSM networks; with support, agents were able to message between the two technologies, enabling real-time status updates and freeing voice channels for emergency calls.

Instant messaging was also used to secure meeting places and visitor accommodation and to effect vehicle and person check-outs.

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Agilent's Electronic Measurement Group is now **Keysight Technologies**.

CITY COMMS

CAPE TOWN UPGRADES ITS TETRA NETWORK

The City of Cape Town is improving its disaster preparedness by investing R23 million to upgrade its TETRA digital radio communications network with the latest Motorola Solutions technology.

“As a responsible administration that is committed to the safety of our residents, we have an obligation to ensure that our disaster recovery teams are well-equipped to adequately respond to protect the lives of our residents,” said the City’s mayoral committee member for corporate services and compliance, Councillor Xanthea Limberg.

“The upgraded system will help to improve the response times of our public safety agencies across the city, thereby enhancing the safety of our officers on the front line who in turn need to ensure the safety of our communities.”

The City’s recently upgraded TETRA network is the largest public service and safety communications network in South Africa, serving more than 13,500 users. This includes 11,000 of the City’s Safety and Security and Utility Services officials and some 2500 external users of surrounding municipalities, including the Emergency Medical Services of the Western Cape Government.

“These TETRA radios also provide a vital communication link between the City’s Metro Police Department and the community neighbourhood watch (NHW) services. Only NHW services that have a well-managed and secure public community control room are eligible for the installation of a TETRA base radio,” said Councillor Limberg.

“We need to ensure that there is maximum protection of this essential public safety system and guard against unauthorised use and, more especially, unauthorised monitoring.”

The City of Cape Town is currently one of only three municipalities in South Africa that operates its own TETRA network, and it is by far the largest. A few municipalities in Gauteng make use of the South African Police Service TETRA network.

The current system has proven its reliability over the past 14 years. Over and above its effective public safety functionality, its reliability and 99.99% availability have shown it to be financially feasible.

Due to the complex technology being used and the need to sustain reliability and support for this essential enabler of service delivery, the system has to be upgraded every five to seven years. Because of the financial feasibility that trunking technology offers in a densely populated metropolitan area such as Cape Town, the City has managed to keep the system current and continually expands it to meet the ever-growing need for reliable and effective radio communications.

“I think it is important to place the upgrade cost in context. To install new infrastructure from scratch to replace the existing TETRA system would cost in the region of R300 million. One also needs to bear in mind that a public safety system cannot be compared with a commercial system,” said Councillor Limberg.

“The critical factor is the reliability which the current system has provided over the years. There is a need for adequate capacity during emergencies, reliable functionality and backup systems to provide the required dependability.

“The Motorola Solutions TETRA system has fulfilled our requirements over the years and the upgrade will ensure that it continues to do so.”



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FRNSW SELECTS GME CB

GME has been chosen to supply UHF CB radios to Fire & Rescue NSW (FRNSW) Community Fire Units (CFUs). The GME TX675 handheld radio underwent extensive testing and evaluation and was selected for its performance, useful features and ease of use. GME says that its Australian engineering DNA is at the heart of these products, providing high performance in real-world conditions, with intelligent software and hardware design to maximise talk time and minimise downtime. In addition to having rechargeable lithium batteries that provide up to 14 hours of operation, the TX675s can be charged via USB.

More info: bit.ly/1KDi0dE

GLOBAL SATELLITE BROADBAND

When the third Inmarsat-5 satellite becomes fully operational later this year, it will provide the technology and coverage necessary for worldwide high-speed broadband access. Each of the three Inmarsat-5 satellites use fixed, narrow, spot beams to deliver higher speeds through more compact terminals. Steerable beams direct additional capacity in real time to where it's needed to provide seamless, global broadband communications coverage to Inmarsat users worldwide on land, at sea and in the air. The first two Global Xpress satellites were launched December 2013 and February 2015. A fourth is scheduled for delivery in mid-2016.

More info: bit.ly/100fZIN

RSM NEW ZEALAND UPDATE

Earlier this year, Radio Spectrum Management (RSM) consulted on a number of changes to the fixed service bands in New Zealand. Fixed services provide long- and short-distance backhaul for telecommunications and broadcasting services. RSM received 17 feedback submissions from industry, and consequently there will be a number of changes to a number of the fixed services in the coming months, including that digital services will be allowed in STL bands, where they were not previously allowed, and the minimum spectral efficiency will be raised from 1 bit per second per hertz to 2 bits per second per hertz on new services.

More info: bit.ly/1KDhw7q



Cable analyser

The DSX-5000 Cable Analyser copper test solution enables testing and certification of twisted-pair cabling for up to 10 Gigabit Ethernet deployments, and will certify shielded and unshielded structured cabling systems from Category 3 to 6A and Class C to FA at Level V accuracy. It is available to rent from TechRentals.

The unit features high-speed testing, including a 9 s Category 6 autotest. It also has built-in Alien Crosstalk testing capability, and PLA004 (Cat 6A/Class EA), CHA004 (Cat 6A/Class EA) adapters are included.

Other features include: ProjX management system for tracking complex jobs; Taptive user interface; LinkWare management software for test analysis and professional test reports; and dedicated diagnostics.

TechRentals

www.techrentals.com.au

Console system

The Zetron AcomNOVUS integrated command-and-control system is based on the company's Acom solution. It utilises enterprise-class server architecture that can be customised to meet user requirements in a high-capacity, IP-based system.

The product provides seamless integration of telephone and radio technologies, and its web-based configuration and maintenance tools can be accessed from any PC, laptop or tablet on the system. The system can easily be expanded and updated as the need arises, enabling organisations to keep their communication technologies current and within budget. At the same time, the system's extensive support for legacy technologies enables users to transition to newer equipment at their own pace.

Zetron Australasia

www.zetron.com



Noise-cancelling headset

The CRS HDHSOHD dual-input, 'over the head', heavy-duty noise-cancelling headset enables the user to connect one headset to two different radios, with a separate PTT for each radio on each earmuff (one red and one black PTT on each earmuff). It also has a listen-only input for receiving audio from a third device if required.

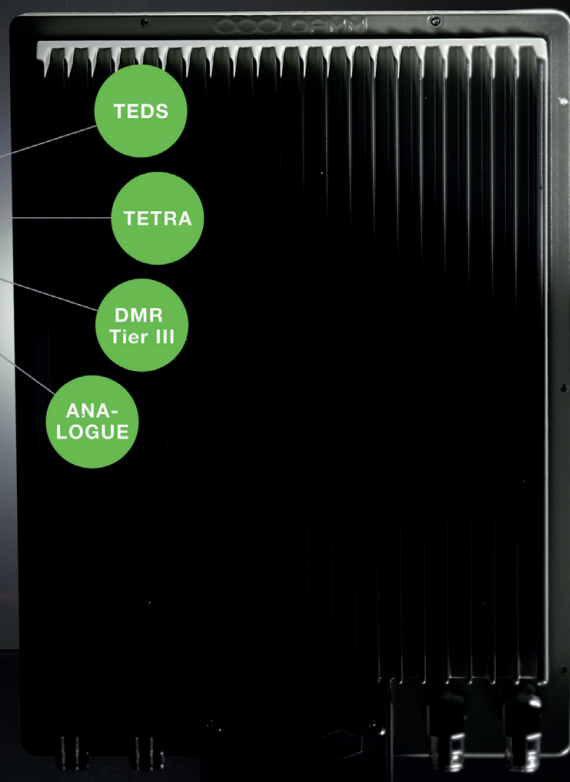
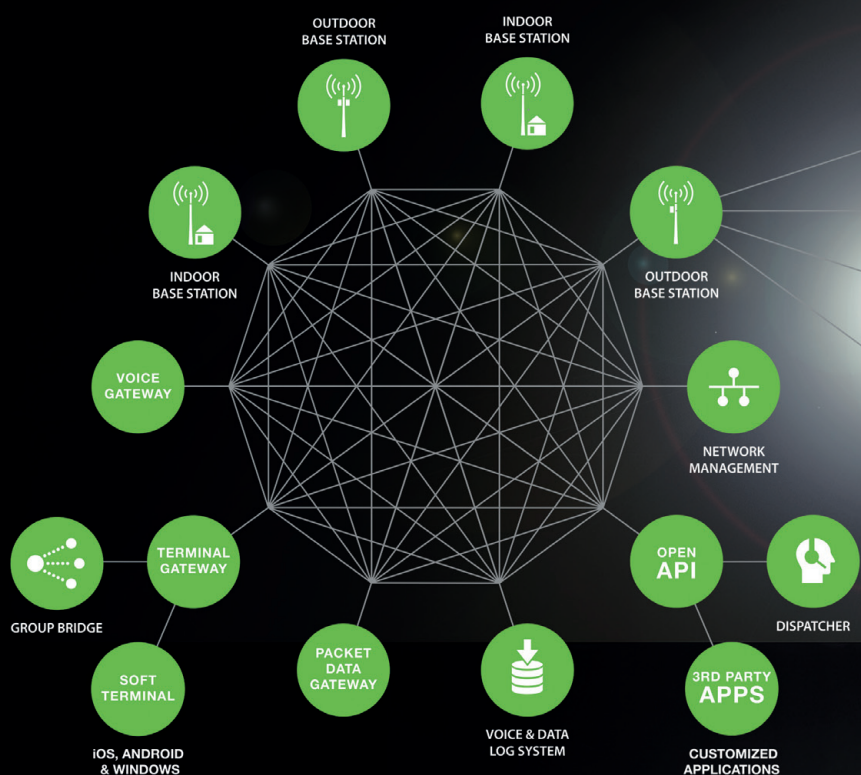
The boom can be fitted with a dynamic microphone for high-noise environments, eg, motor racing, or an electret microphone for normal environments, eg, construction and forklift operators. The unit has been fitted with

strain relief, meaning that all the pressure is placed on the Kevlar-reinforced cable; if the cable gets caught in machinery, the strain relief prevents damage occurring to the earmuff.

The headset and cable come with a positive-action earmuff PTT and inline PTT. NRR is -24 db.

CRS Accessories

www.crsaccessories.com.au



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COMMS CONNECT MELBOURNE 2015

CONFERENCE AND EXHIBITION

Don't miss this world-class line-up of speakers, workshops and exhibitors.

The 9th national Comms Connect conference and exhibition is on again in Melbourne. More than 1500 people are expected to attend, from a broad range of industry sectors, including utilities, public safety, government (local, state and federal), transport, mining, oil and gas, security, defence, backhaul and telemetry, and the wider commercial environment.

The conference will feature individual presentations, panel sessions, keynotes and workshops covering a myriad of topics of interest to everyone in the critical communications field: latest technologies; regulation and government policy; case studies; security; the Internet of Things; and many more.

With 80+ exhibitors and 75+ speakers taking part, Melbourne's Convention and Exhibition Centre will be the place to be from 1 to 3 December 2015.

Keynote and plenary addresses

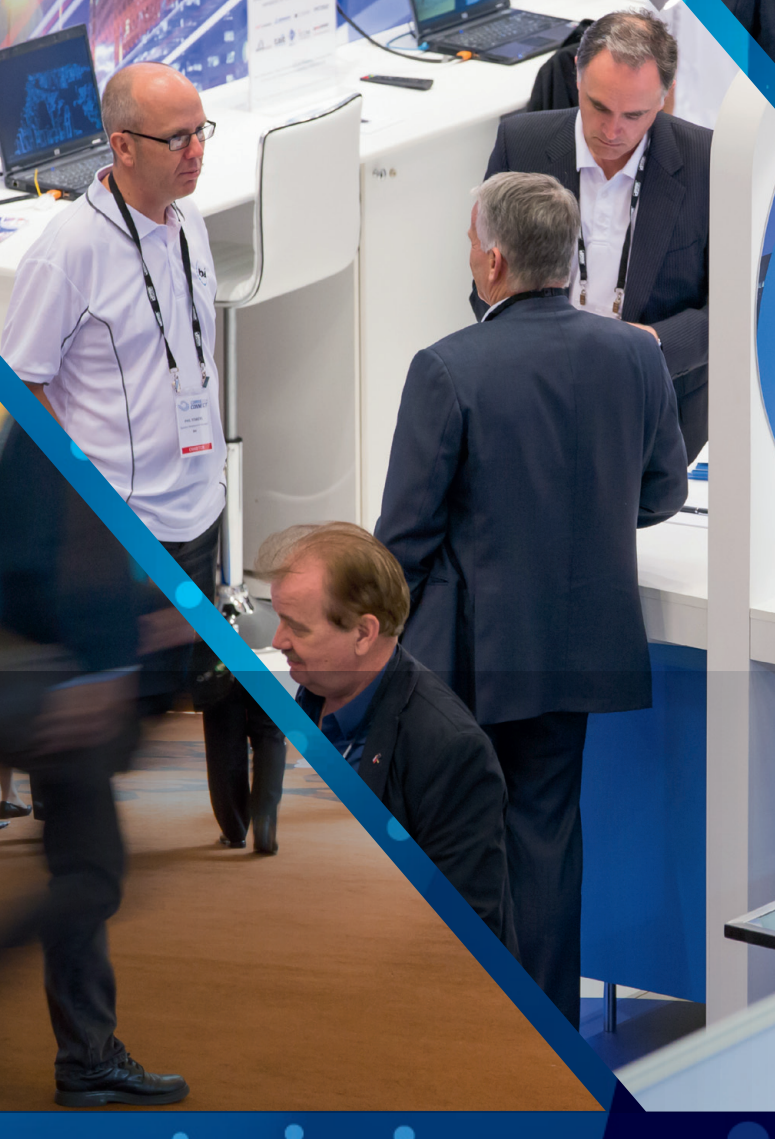
The organisers have secured a number of very high-profile keynote speakers to begin the sessions on the first and second days, including:

- Rod Gilmour, Chairman of the NSW Telco Authority, who will speak about strategic developments in operational communications;
- Dale McFee, Deputy Minister of Corrections and Policing, Ministry of Justice, Government of Saskatchewan, Canada, who will speak of the importance of information management in building a national community safety model;
- Michael Lawrey, Executive Director, Defence Engagement, Telstra, who will present on the topic of critical communications in the defence landscape; and
- Declan Ganley, CEO, Rivada Networks, who will speak on the topic of dynamic spectrum arbitrage: a new model for building, sharing and paying for public safety mobile broadband.

There are too many speakers to list them all here (the full range can be seen on the Comms Connect website, comms-connect.com.au), but here is selection that covers a range of topics:

- Queensland's Government Wireless Network. This will be the subject of two panel sessions, the first of which will be on 2 December and have three representatives from Mingara Australasia (Gerard Cusick, Andrew Wellwood and Alistair Hope), who will discuss operational governance in a non-partitioned trunked radio environment. This will be followed the next day by a panel comprising Margaret Kimber (Department of Science, Information Technology and Innovation), Acting Superintendent Paul Smeath (Queensland Fire and Emergency Service), Inspector Thomas Hassall (Queensland Ambulance Service) and Acting Inspector Sean Maskell (Queensland Police Service), who will lead a discussion on providing a secure, fully integrated communications network for police and emergency services.
- The impact of disruptive technologies on the radio industry, which will be presented by Lawrence McKenna, Telecommunications Section Manager, Wood & Grieve Engineers. (See his opinion piece in the Spectrum column in the Sep/Oct issue of *Critical Comms*.)
- Andrew Findlay from Vertel will speak about the rise of virtualisation — is it a threat or opportunity for land mobile radio?
- Jan Thompson, Head of Public Safety, Industry and Society at Ericsson, will speak about multiagency awareness: capturing and making sense of data for safety and transport applications.
- David Jarvis, UXC Saltbush, will present on the topic of cyber attacks — target profiling and protection. This presentation went down very well at the mini Comms Connect Brisbane industry day earlier this year.

Plus there will be presentations and case studies on communications in motorsport; body-worn video; PMR and telemetry for utilities;



REGISTER NOW!

www.comms-connect.com.au

WHERE: Melbourne Convention & Exhibition Centre

WHEN: 1 December (pre-Conference workshops)
2–3 December (Conference & Exhibition)

presentation of the national industry awards. Full registration details are available on the ARCIA website (www.arcia.org.au).

Make sure you take advantage of this once-per-year opportunity to take part in Comms Connect Melbourne, Australasia's leading critical communications conference and exhibition, featuring a who's who of experts from industry, government and academia.

Comms Connect New Zealand

In exciting news for the industry, the Radio Frequency Users Association of New Zealand has announced it has reached an agreement with Westwick-Farrow Media to take over the organisation of the annual conference and exhibition that takes place in Wellington, New Zealand.

"Westwick-Farrow Media is a well-known event organiser in the wireless communications sector and has been providing very successful and growing conferences in Australia in conjunction with our Australian counterpart ARCIA," said RFUANZ Chairman David Thomson.

The new conference will be known as Comms Connect NZ and will be organised by WF Media in association with the RFUANZ. The conference will continue to address topics and developments specific for the New Zealand market, but at the same time it will benefit from international contacts Westwick-Farrow Media has developed over the years.

Paul Davis, Events Director for WF Media and lead organiser of the Comms Connect events, said, "Having worked with RFUANZ for a number of years to help promote the Wellington conference via our numerous media channels — including *Critical Comms* magazine and website — the team and I are very excited to be organising the show from 2016. We have existing relationships with quite a few of the 2015 exhibitors, sponsors and speakers and look forward to working with all stakeholders, especially the RFUANZ, to further develop what is already a very successful event for New Zealand radiocommunications users and industry."

"The conference and exhibition has become an important focal point for the New Zealand radio industry and with this new arrangement in place, the RFUANZ committee has ensured that it is secured for years to come and will continue to grow," said Thomson.

"RFUANZ will continue to organise the gala dinner on the evening of the first day of the conference, during which we will continue to honour those individuals who have made a difference to the industry."

The Comms Connect New Zealand 2016 conference and exhibition will be held on 14 and 15 April at Te Papa Museum, Wellington, in conjunction with the RFUANZ Gala Dinner on the 14th.

Comms Connect
www.comms-connect.com.au

satellite M2M; Wi-Fi and CCTV for councils; GIS dispatch solutions; 400 MHz implementation; Next-Gen 000; mining; SCADA; TETRA for gas pipelines; enhanced P25 ecosystems using open standards; and many more.

Having received numerous requests to help explain Australia's vast and complex communications system of networks, Comms Connect decided to develop a National Communications Interoperability Mind Map. Jennifer Goddard, Director of the Buzan Centre, and co-founder of Mindwerx International, will be attending and will be soliciting input to the mind map throughout the conference. She will present her results in the final session on the second day.

Training workshops

Six workshops will be held on Tuesday, 1 December, which is the day before the main conference sessions commence. The topics will be:

- Advanced radio over IP
- Dispelling the myths of microwave radio
- Evolutionary paths from 2G PMR to critical LTE
- Public safety mobile broadband: governance, operating models and funding
- Will the DMR product manufacturers now have to respond to use needs — is it a whole new paradigm?
- Big changes heralded with long-range digital radio: time to review what these changes will mean for public safety and business users.

These workshops tend to fill up quickly, so make sure you get your registration in as soon as possible.

ARCIA Gala Dinner and Awards ceremony

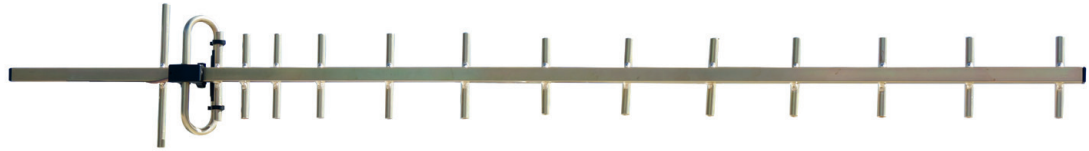
You're also encouraged to register for the Annual Gala Dinner of the Australian Radio Communications Industry Association, which will be held on the evening of 2 December. The evening will include

Speakers: 75+

Exhibitors: 80+

Training workshops: 6

Conference streams: Public Safety & Emergency Management, Industry and Technology



Yagi antenna

RFI has released the YW15-6989 Yagi antenna, featuring 15 dBi of gain and providing enhanced performance across its broad operating frequency range of 698–890 MHz. It is suitable for use with 700/800 MHz enhanced 3G and 4G cellular networks' services, as well as with private LTE and two-way radio networks in the 700/800 MHz frequency bands.

The high gain of the model will provide improved performance in rural and remote network environments in a range of applications, including fixed cellular and radio applications such as telemetry and M2M, point-to-point and point-to-multipoint links, and control stations.

RFI

www.rfi.com.au



Multimeter

The Fluke 28II Ex is a completely sealed, IP67-rated, intrinsically safe digital multimeter that is suitable for hazardous environments. It is available to rent from Tech Rentals.

The device provides true-rms readings for AC voltage and current for accurate measurement of nonlinear signals, and handles frequency measurements to 200 kHz, as well as testing involving resistance, conductance, diodes, capacitance and temperature. Other features include: measures up to 1000 V, 10 A AC and DC; 10,000 μ F capacitance range; Ex certifications from world's leading certification bodies; and backlit keypad and large bright display.

TechRentals

www.techrentals.com.au

Radio

Panasonic has released the EY37A2 radio that is specifically designed for on-site and outdoor use by workers.

The radio has a robust body design with a protective cage, as well as an LED light on the front that illuminates the controls at night or in dark areas. The radio features high-quality speakers for dynamic bass sound and comes with Bluetooth connectivity so users can stream and play back music via their smartphone or download apps such as DAB+ for live streaming of digital radio. The radio also features five sound settings and includes FM/AM radio and alarm.

The product also has a USB charging port, and users of Panasonic Power Tools can power the radio with their existing Panasonic 14.4 or 18 V Li-ion batteries. AC power can also be used. The unit is IP64 rated for protection against water sprays and dust.

Panasonic Australia Pty Limited

www.panasonic.com.au

Uninterruptible power supplies

Eaton has launched the 9EHD range of high-efficiency 'heavy duty' uninterruptible power supplies (UPSs), developed to perform reliably in industrial environments.

Available in three-phase input/output ratings from 10-200 kVA and single-phase outputs up to 100 kVA, the range combines a compact footprint with the ability to operate continuously in ambient temperatures of up to 50°C. Its modular construction enables service repairs to be made in less than 90 min.

With a transformer-free design and sensing and control circuitry, 98% efficiency can be achieved while still providing maximum load protection. Advanced Battery Management technology counters the effects of high ambient temperature, extending battery life by up to 50% to lower the total cost of ownership (TCO) and enhance safety by reducing the possibility of thermal runaway.

For extremely critical applications requiring parallel redundancy, Eaton's patented Hot Sync technology enables load sharing between parallel systems without the need for a dedicated communication line, eliminating a potential single point of failure and increasing power availability.

A large graphical LCD panel shows UPS status and allows access to measurements, controls and settings. As standard, the units have integral USB and RS232 ports as well as two Eaton Mini-Slots that can accommodate optional connectivity cards, including types for use with Ethernet and Modbus networks.

Eaton Industries Pty Ltd

www.eatonelectric.com.au

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CONTROL ROOM/PSAP MARKET

According to a recently published IHS report (Command and Control Rooms/PSAPs Market – 2015), the global market for command and control room technologies and services is projected to exceed US\$7 billion by 2019. As expectations towards emergency response change, further development of control rooms will be critical to handle the capabilities of future technologies. Along with changing legislation and initiatives such as Next Generation 911 and 112 and FirstNet, the market has become more dynamic, offering tremendous opportunity to suppliers who can enhance current technology. Across public safety, transportation and utilities is an increasing interest in analytical applications and data analysis.

More info: bit.ly/1ETFxEJ

WA POLICE UPGRADE

In a contract valued at more than \$11 million, the Western Australia Police (WAPOL) service has selected Motorola Solutions to upgrade its computer-aided dispatch system. Motorola Solutions' PremierOne CAD system and locally developed mobility application Mobile Intelligence Client will integrate critical information between the agency's databases, command centre and operational officers. The upgrade is connected with WAPOL's Connect 2020 program, which supports the agency's Frontline 2020 reform program by significantly strengthening the connection between internal systems, external agencies and the public as well as providing access to the right information anywhere, anytime.

More info: bit.ly/1Fx9563

SEPURA CHAIRMAN STEPS DOWN

John Hughes has stepped down as chairman of the board of Sepura after five years at the helm, succeeded by Russell King. Russell King has been a non-executive director of Sepura since July 2014 and serves on a number of committees and boards of other companies. "I am confident that the Company has a strong future ahead of it and I am delighted to pass the role of Chairman to Russell King whose extensive experience and skills will, I am sure, serve Sepura well during the next phases of its growth," said Hughes.

More info: bit.ly/1JTFFTz



Radio communication analyser supports LTE-A

The Anritsu MT8821C Radio Communication Analyser is an all-in-one RF tester with the capability for supporting LTE-A as well as all other adopted technologies.

With eight transmitter ports and two receiver ports, a single system will perform LTE-Advanced Carrier Aggregation (CA) with up to four Component Carriers (CCs) using 2 x 2 MIMO, as well as two Component Carrier aggregation (2CCs) in the uplink. A built-in RF combiner simplifies configuration of complex test environments for LTE-A CA, while reducing test environment calibration procedures.

The MT8821C supports 2G to 4G wireless tests, making it a single-instrument solution to validate co-existing UEs integrating multiple technologies. As well as supporting LTE-A, the unit operates as network simulator supporting LTE, W-CDMA/HSPA, GSM/GPRS/EGPRS, TD-SCDMA/HSPA, and CDMA2000 1X/1xEVDO technologies. Covering 30 MHz to 6 GHz, it can conduct RF TRx tests in compliance with the 3GPP and 3GPP2 standards, as well as parametric and functional tests such as maximum throughput.

Preset measurement parameters for test items specified by the 3GPP RF test standards eliminate set-up and operation errors. Additionally, engineers can establish and change test parameters easily using a new GUI that is accessed through a 12.1" touch screen. An advanced parameter search function enables complex user test settings to be quickly and reliably configured, and automatic PASS/FAIL of measured results according to test specification shortens test times for greater cost efficiencies.

Anritsu Pty Ltd

www.anritsu.com

Power monitor

The Bird Channel Power Monitor comprises a 1RU central processor and a variety of sensors that work together to monitor all components of a radio system, including each individual radio, the combiner, the feed lines and antenna.

The Channel Power Monitor hosts its own webpage for set-up and display of all measurement parameters, enabling users to access the system from any computer, tablet or phone on a network.

Vicom Australia Pty Ltd

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FUTURE FRAMEWORK

SPECTRUM MANAGEMENT TO CHANGE

Jonathan Nally

The federal government has agreed to implement all recommendations of the Department of Communications' Spectrum Review.

The federal government has announced its response to the Spectrum Review, undertaken by the Department of Communications in conjunction with the Australian Communications and Media Authority. In a joint statement released on 25 August, the Minister for Communications, Malcolm Turnbull, and the Parliamentary Secretary to the Minister, Paul Fletcher, indicated that the government would implement all of the recommendations of the review.

"Spectrum is a critical enabler of Australia's current and future communications infrastructure. However, the legislative framework for managing spectrum in Australia has become outdated," the statement said.

"Implementing the review's recommendations will reduce the regulatory burden on spectrum users by making interactions with the framework, including allocation processes, simpler and faster.

"The framework will be simpler, more efficient, flexible and sustainable to support new and innovative technologies and services while providing certainty of spectrum access rights for users."

The review of Australia's spectrum policy and management was instigated in May 2014 by the Minister for Communications. The final report was issued early this year.

The review's terms of reference were quite broad, requiring it to consider ways to:

- simplify the regulatory framework to reduce its complexity and impact on spectrum users and administrators, as well as eliminate unnecessary and excessive regulatory provisions;
- improve the flexibility of the framework and its ability to facilitate new and emerging services, including advancements that offer greater potential for efficient spectrum use, while continuing to manage interference and providing certainty for incumbents;

- ensure efficient allocation, ongoing use and management of spectrum, and incentivise its efficient use by all commercial, public and community spectrum users;
- consider institutional arrangements and ensure an appropriate level of ministerial oversight of spectrum policy and management, by identifying appropriate roles for the Minister, the Australian Communications and Media Authority, the Department of Communications and others involved in spectrum management;
- promote consistency across legislation and sectors, including in relation to compliance mechanisms, technical regulation and the planning and licensing of spectrum;
- develop an appropriate framework to consider public interest spectrum issues;
- develop a whole-of-government approach to spectrum policy;
- develop a whole-of-economy approach to valuation of spectrum that includes consideration of the broader economic and social benefits.

What the review found

The report acknowledged that spectrum "is a critical input to a networked and digital economy and society" that "supports a wide range of services that promote economic growth and enhance social wellbeing".

The review found that spectrum's "role as an economic driver, and the value it returns to society, is increasing", quoting figures from a projection of the economic value of spectrum in Australia undertaken by the Centre for International Economics (CIE) that suggest the national benefits could be as much as \$177 billion over a 15-year period.



Former Minister for Communications Malcolm Turnbull. Image courtesy CeBIT Australia under CC.

The report also acknowledged that the “current legislative framework for the management of spectrum is over 20 years old”. The report’s authors added that when the framework was introduced, it was “progressive by international standards in its use of market mechanisms, administrative and commons approaches. However, since its introduction there has been a proliferation of new digital technologies and communications services resulting in significant changes in market structures.”

The report’s authors recognised the value of contributions from a variety of stakeholders, which enabled them to identify “substantial deficiencies with the current legislative framework”, finding that “current spectrum management arrangements are slow, rigid and administratively cumbersome”. They cite the example of the reallocation of the digital dividend (694–820 MHz), which took around three years and required 16 legislative instruments to be issued by the Minister or the ACMA. “Spectrum not being allocated quickly and easily imposes unnecessary costs on both industry and government,” said the report.

Recommendations

The review came up with three recommendations, which boil down to:

- replacing the current legislative framework with outcomes-focused legislation, which facilitates timely allocations, greater flexibility

of use — including through sharing and trading of spectrum — and improved certainty for market participants;

- improving the integrity and consistency of the framework by incorporating the management of broadcasting spectrum and better integrating public sector agencies through the reporting of their spectrum holdings and allowing those agencies to lease, sell or share that spectrum for their own benefit;
- reviewing spectrum pricing arrangements to make these consistent and transparent in order to support efficient use and to facilitate secondary markets.

The government has said that the review recommendations now need to go through a process of detailed legislative and regulatory reform, which the department says will be undertaken in close consultation with stakeholders. The reforms will:

- establish a single licensing system based on the parameters of the licence, including duration and renewal rights;
- clarify the roles and responsibilities of the Minister and the ACMA;
- provide for transparent and timely spectrum allocation and reallocation processes and methods, and allow for allocation and reallocation of encumbered spectrum;
- provide more opportunities for spectrum users to participate in spectrum management, through delegation of functions and user-driven dispute resolution;
- manage broadcasting spectrum in the same way as other spectrum while recognising that the holders of broadcasting licences and the national broadcasters would be provided with certainty of access to spectrum to deliver broadcasting services;
- streamline device supply schemes;
- improve compliance and enforcement by introducing proportionate and graduated enforcement mechanisms for breaches of either the law or licence conditions;
- ensure that the rights of existing licence holders are not diminished in the transition to the new framework.

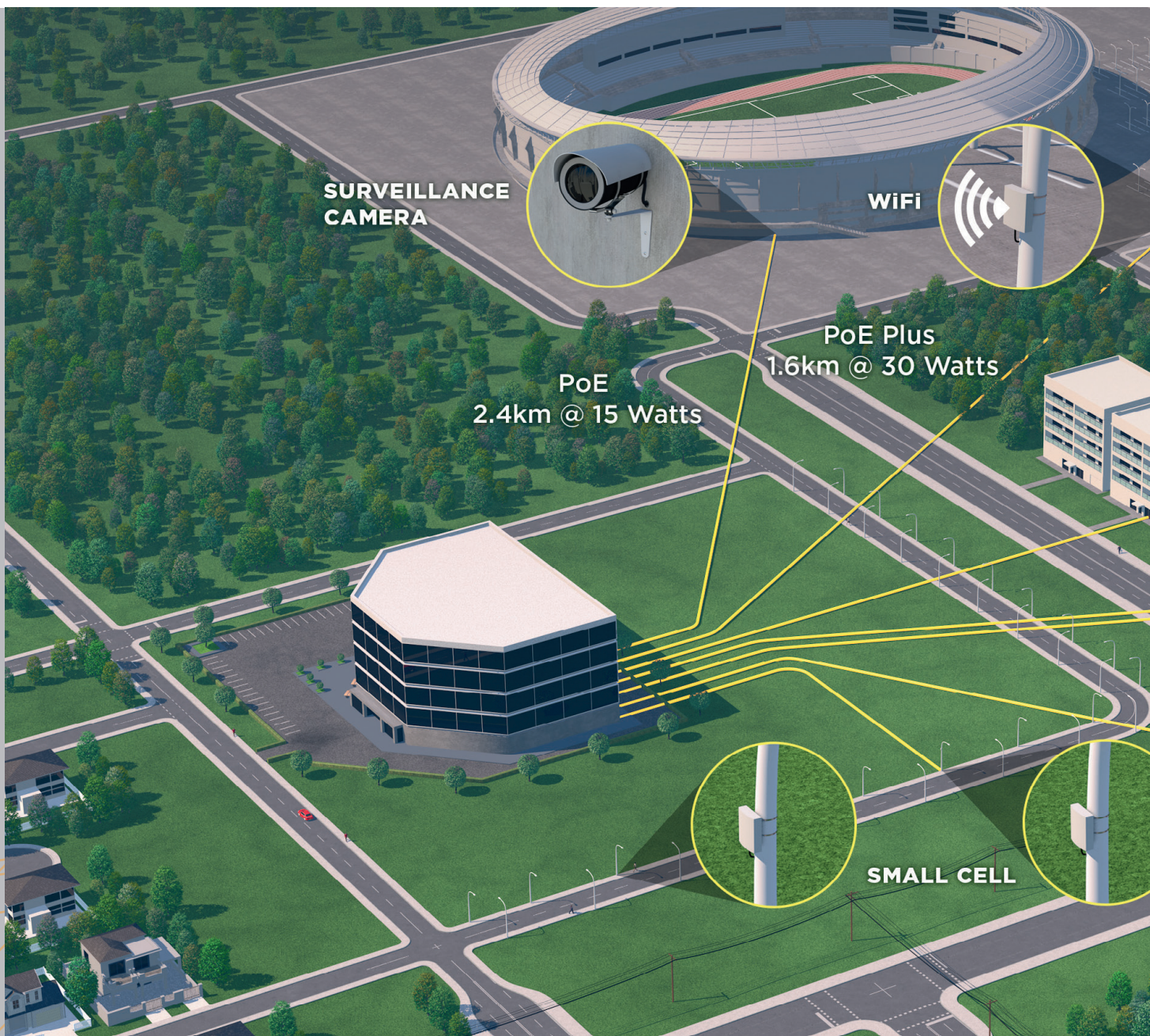
Enactment of the recommendations will follow the passage of appropriate legislation and will involve ongoing consultation with stakeholders. The department expects this to take some years to complete.

Transition period

The government has said that “the guiding principle for the transition is that the rights of existing licence holders will not be diminished in the transition”. The new licensing system is intended to be progressively rolled out from mid-2017, and will provide licensees with the ability to select the option which best suits their needs:

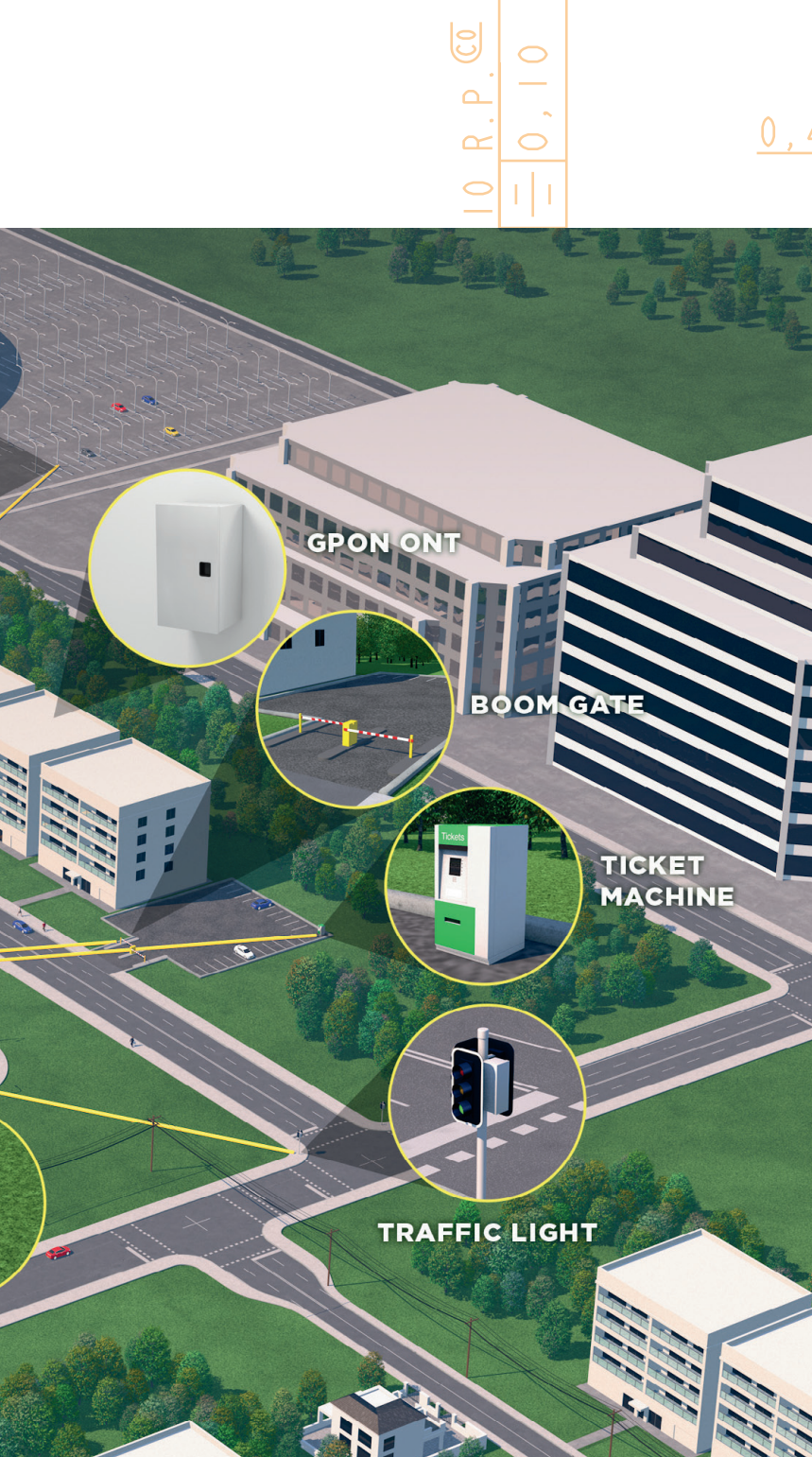
- retaining their current licensing arrangement until expiry; or
- where new arrangements become available earlier, transitioning to new licensing arrangements before the formal expiration of their current licences.

The government also said that those seeking new licences will be issued licences under the old arrangements until the new system is in place and a licence type suitable for their proposed use is available.



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Iridium Extreme PTT works pole-to-pole wherever it is needed and can be used on-foot, in-vehicle, or in-building with available accessories. Call set-up and inter-call performance are in line with traditional solutions, automatic programming and registration can be done via easy-to-use menu navigation, and PTT communications are kept private with AES 256 encryption.

In PTT mode, teams have access to situational awareness and control features including: automatic registration; over-the-air talk group programming; PTT service status; dynamic talk group selection and monitoring; device talker ID; device talker distance and bearing; and visual and audio talk group scan. Coverage areas, device security and talk group configuration can all be adjusted over the air as needed by administrators using the web-based Iridium Push-to-Talk (PTT) Command Centre tool, simplifying support and maintenance.

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DEEP FREEZE DEPLOYMENT

Anthony Hoffman

The author spent 13 months in Antarctica in charge of radio, telephone and satellite networks.

Credit: Andrew Mandemaker/Wikipedia.

Anthony Hoffman's move to Antarctica was completely unplanned. One day he was senior hardware design engineer with Tait Communications' custom integration team in Christchurch, the next he had signed up as communications engineer at New Zealand's scientific research station in Antarctica.

He is currently working his third 13-month stint on the ice. In this article he shares the triumphs and challenges of managing multiple communications networks in one of the harshest environments on the planet.

My very abrupt shift in career came about in 2010. Initially, when I was presented with the Antarctic position, it did not sound at all appealing, working in the cold and dark for months on end. Until they mentioned free food and cheap beer.

In what now seems like a blur, I found myself in a new home here at Scott Base on Ross Island in Antarctica, right next door to the American McMurdo Station and with an active volcano, Mt Erebus, in the neighbourhood.

My responsibilities primarily involve maintenance and operations of two-way radio networks, the telephone network and the satellite link (voice and data) between Scott Base and New Zealand. Apparently it's not an easy task to find someone familiar with all

three technologies, who is also prepared to be away from home for a continuous 13-month period. However, two-way radio is my specialist field, and I had maintained telephone networks in the past. I was given brief training at a satellite ground station, but the final specialist training was cancelled due to the 2010 Christchurch earthquake. So it was a steep self-learning curve on the cryptic Nortel telephone exchange language, how to fusion splice optical fibre cables and many more new skills.

Scott Base is operated by Antarctica New Zealand, and while I'm not employed by this government entity, I share some responsibilities with their staff. This includes doing duty as fire crew, kitchen hand, bartender, plus offering my technical skillset to others on base, including the electrician and science technician. (Prior to deployment, Antarctica New Zealand provides two weeks of intensive Antarctic awareness training and firefighting.) Other responsibilities that come my way include repairing all things electronic and, of course, DJ duties for our FM radio station.

The majority of my daily work is with two-way radio as this is our primary form of communications. With no cellular network, reliable radio communications are crucial to operations and safety.

The local area is served by a network of Tait VHF FM analog base stations with Codan HF radio used for deep field work.

REMOTE COMMS



The author on the ice in Antarctica.

“

“THE LOCAL AREA IS SERVED BY A NETWORK OF TAIT VHF FM ANALOG BASE STATIONS WITH CODAN HF RADIO USED FOR DEEP FIELD WORK.”



Scott Base communications are a combination of VHF, HF and satellite.



Fixing a simple plug can take hours due to the effect of the extreme cold on hands: 20 seconds of work, followed by minutes of warming up again.

Mountaintop radio sites are solar powered and are deployed by helicopter in October each year at the beginning of the summer season. With no sunlight to provide power over winter, the radio equipment and batteries are returned to Scott Base each February at the end of the summer science season.

The telephone and satellite network infrastructure is a mixture of modern analog and digital equipment that usually requires little attention, but the ability to fault-find is essential if and when it fails. The satellite link delivers more than 10 off-continent telephone circuits and a number of leased data circuits, ranging in speeds from 32 kbps to 1.5 Mbps, and which provide email, internet and other services. When a problem arises, it can be challenging to restore essential communications quickly.

Cold challenges

Over summer, the scientists often need training and support with unfamiliar communications equipment. They also have specialist electronic equipment that invariably breaks at some point and needs urgent repairs.

Year-round, field communications at sub-zero temperatures present many challenges. For example, the best portable radio battery chemistry for performance in the cold is Ni-Cad; however, most manufacturers no longer support this older technology, favouring instead lithium batteries, which perform poorly at low temperatures.

In winter we're left with a skeleton crew, between 10 and 14 staff. The long dark haul from March to October is when we maintain, upgrade and keep things working. I've completed many hardware and software projects over past winters, including telemetry systems to remotely monitor and control radio sites, technical documentation

and general improvements. There are no flights between March and August, so careful planning is required to get all parts pre-ordered and delivered before that final flight in March. You can't possibly plan for every eventuality, so you become very good at improvising and making do with what you've got.

Working outside in winter is difficult and time-consuming. For example, coaxial cable cannot flex at -40°C without shattering the insulation. Flex the cable a little too far and it shatters, and you have to start again. It's impossible to terminate a connector while wearing thick gloves, so you need to work with bare hands. Your hands become numb after 20 seconds, so you then need to spend several minutes warming them inside your thick jacket before doing a little more. This is why a one-minute job of terminating an N-type connector can take several hours.

Returning to New Zealand at the end of the 13-month contract is a most unusual and disconcerting experience. When you step off the US Air Force C-17 at Christchurch Airport, the air is hot and humid. Traffic and cut grass smell intense. Common sights like busy roads, rain, children, dogs, television and advertising all seem alien.

I'm often asked if I'll do another season. Certainly it is interesting work, but what keeps me returning most of all is the great people I have the pleasure of working with. They're all handpicked for their skillsets, their ability to work together as a team and to live together as a family.

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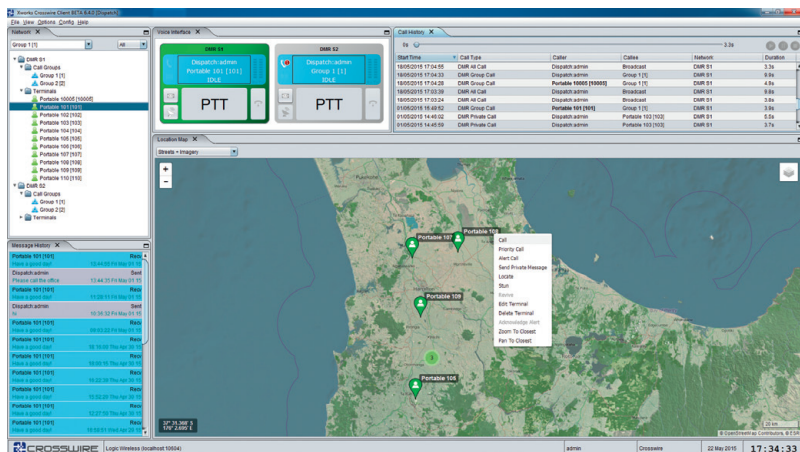
PT6500



PT3600



For more information, please contact: Matt Kelly 0409 999 917



Two-way radio solution

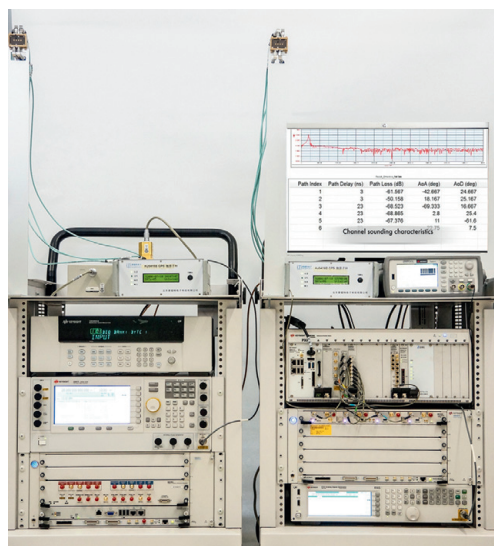
The Logic Wireless ANZ Crosswire Lite is a complete two-way radio application solution for small to medium-sized fleets of 10 to 50 radio terminal units.

Designed as an entry-level dispatch option, Crosswire Lite provides all the core functionality of a full enterprise solution, such as voice calling, text messaging, integrated GPS location mapping, voice recording, selcall services and cross patching of various radio networks.

The package can be configured for analog, DMR Tier 2 and DMR Tier 3 (Tait) systems, and is supplied already installed on an Intel NUC mini-PC platform complete with monitor and peripherals. The package includes all the required hardware and pre-installed Crosswire software elements to enable a simple 'out of box' dispatch solution.

Logic Wireless Pty Ltd

www.logicwireless.com.au



delay measurements with system-wide calibrations, precise timing and synchronisation. They will also save time and disk space by using the multichannel, real-time data processing and correlation of the channel impulse response data (CIR) offered by the M9703A high-speed digitiser FPGAs. Engineers can use Keysight's SystemVue system-level design and simulation software platform to calculate channel parameter estimations and perform link-level simulations and validation of 5G designs with the imported channel models.

Keysight's 5G Channel Sounding Reference Solution also enables: Tx/Rx up to 44 GHz with 1 GHz bandwidth for four or eight MIMO channels; capture of multiple phase-coherent channels for real-time CIR data processing in FPGAs; flexibility and scalability to add more channels and tests as 5G standards evolve; and customisation of waveforms, models for channel parameter extractions and system integration.

Keysight Technologies Aust Pty Ltd

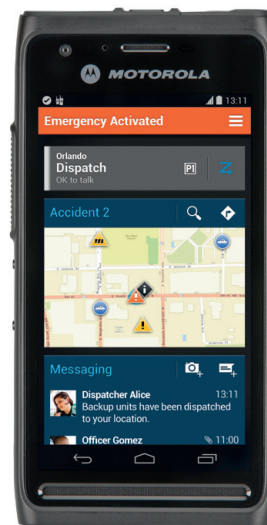
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Handheld communicator

The Motorola Solutions LEX L10 is a handheld device that has

been purpose-built to address the unique requirements experienced within the public safety and mining sectors throughout Australia and New Zealand.

The ruggedised, IP67-rated device provides a level of capability and resilience not available on consumer-grade smartphones while delivering mission-critical intelligence into the hands of device users. Conceived and



designed for real-world, front-line public safety and mining sector use, it can serve a range of day-to-day scenarios, combining the features of traditional, two-way radio push-to-talk, enhanced audio and specialised applications to support everyday operations as well as response to critical incidents.

No bigger than the average consumer smartphone, the LEX L10 connects to broadband to receive and record the information that users need, when they need it. The device runs on Android and features a quad-core Qualcomm MSM8974AB Snapdragon processor and 4G LTE connectivity.

When running the WAVE Work Group Communications software, the LEX L10 becomes interoperable with any broadband-connected device or LMR radio system — opening up the ability to stream real-time video for situational awareness, operate drones and gain access to dynamic resource mapping.

The LEX L10 will be available in Australia and New Zealand from late 2015.

Motorola Solutions Australia Pty Ltd

www.motorolasolutions.com.au

P25 repeater/base station

Codan Radio Communications has Stratus Lite as part of the next-generation capability for its Stratus product portfolio.

The compact P25 repeater/base station has an optional expansion to a full Stratus repeater to enable future LTE (3G/4G) capability. It has all the strengths of a standard Codan repeater — low power consumption, ruggedness and rapid deployment — while also enabling the user to upgrade with an LTE modem, a universal interface card and cellular networks-optimised P25 DFSI firmware to enable P25 communications over LTE.

Codan Limited

www.codan.com.au



Two-way radio

The Hytera PD372 is a pocket-sized (107 x 55 x 23 mm, 160 g) and versatile two-way radio which is suitable for hospitality and other industries where a compact but rugged radio is needed.

The unit has four programmable buttons, a micro USB port for easy charging and a compact antenna design. Dual mode ensures smooth migration from analog to digital. In digital mode, the radio operates for up to 12 h using a duty cycle of 5-5-90.

The PD372's voice communication includes private, group and all call. It can be enabled to continuously scan each analog and digital channel.

Hytera Communications Co. Ltd

www.hytera.com.au



Power meter and voltmeter

The compact, robust Rohde & Schwarz NRP2 base unit with colour display supports up to four R&S NRP-Zxx or NR-Pxx/SN power sensors and all sensor-dependent measurement functions. Measured values are displayed numerically or graphically, depending on the measurement function.

Rohde & Schwarz power sensors are intelligent standalone instruments with a flexible connection concept. The comprehensive USB-capable sensor portfolio is designed to operate with the power meter base unit or a PC/laptop. The power sensor family can also be controlled via LAN.

Rohde & Schwarz (Australia) Pty Ltd

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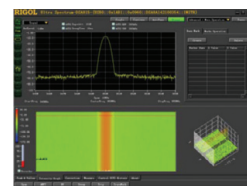
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SIMULCAST SOLUTION

A modern IP-based simulcast network is bringing multiple benefits to a county's emergency services.

Door County is located in the US state of Wisconsin, with a total area of 1248 square kilometres, over 480 kilometres of shoreline and five state parks. Dubbed the 'Cape Cod of the Midwest', it has become a popular vacation and tourist destination. Although it has a normal population of about 30,000, numbers can reach as high as 250,000 in the summer and a total of almost two million per year.

As part of efforts to improve the region's communications network under updated government regulations, Door County was looking to upgrade its existing multicast system after one of its fire departments secured a grant to address the reduced quality of coverage and paging as a result of the FCC narrowband mandate enforcement. Simoco Group, along with partner Bay Electronics, was selected to supply an IP-based Simulcast System.

Simulcast enables the 18 municipalities within the county to broadcast the same signal across multiple overlapping sites on the same frequency at the same time and without interference. This means that its 72 law enforcement officers, 26 paramedics, 486 firefighters and emergency medical responders, and 150 response vehicles can efficiently communicate in any location.

Based on the original RF design and system specifications as provided by Door County's consultant, G.J. Therkelsen and Associates, Bay Electronics designed, supplied, installed and networked the system to create an enhanced county-wide communication system by interfacing the 911 dispatch centre to 11 sites. It comprises Simoco's Solar2 Simulcast technology, which interoperates with a number of receivers, repeaters and microwave radios designed by Simoco and other manufacturers.

The Simoco Solar2 Simulcast is built around a distributed IP network, which means it can enhance the reach, reliability, expandability and quality of radiocommunications. The driving factor in the selection of Simoco's Solar2 Simulcast solution was the desire to use an IP solution in lieu of an analog-based solution.

Multiple benefits

Since the installation was completed, the Simulcast solution has enabled the county's emergency services to broadcast across multiple overlapping sites on the same frequency and across wide areas. This has brought radiocommunications to areas that previously had poor quality, or little or no coverage.



BECAUSE THE SYSTEM IS IP BASED, THE SYSTEM MAINTENANCE PROVIDER CAN REMOTELY LOGIN TO CHECK OVERALL SYSTEM HEALTH AS WELL AS RESPOND TO ISSUES THAT MAY ARISE.

to change channels as they moved throughout the county, which created further delays and room for human error. With the new Simulcast system, however, users can stay on their main working channel anywhere in the county.

"The new Simoco Solar2 Simulcast system has exceeded our expectations. The local and county responders are now able to use a radio system that is not only user friendly but also meets the current needs of the emergency response community," said Chris Hecht, fire chief at Sister Bay and Liberty Grove Fire Department (which secured the grant on behalf of Door County).

"I knew the Simulcast system would be cutting-edge technology before we proposed the system to Door County. Once we finished the interfaces and adjusted the audio timing and levels, we were pleasantly surprised with the outcome," said Rick Nielson, president of Bay Electronics. "The system not only performs extremely well from a Simulcast point of view, but the audio quality far exceeds what the county had before. The audio quality is superb."

Because the system is IP based, Bay Electronics — as the system maintenance provider — is able to take advantage of remote access capabilities and diagnostics. It can remotely log in to the system to check overall system health as well as respond to issues that may arise. This capability benefits the county in the fact that its teams can respond, diagnose and correct issues far more quickly. Day and night, response times for diagnostics have been impeccable — and this is paramount in the 911 world.

"Emergency services around the world depend on reliable radio systems to deliver wide area coverage in times of need. Door County is no exception. Without a reliable communications system in the region, people's lives and property are at risk of being in serious danger," said Gary Correia, vice president of sales and business development at Simoco Americas. "With an IP-based Simulcast system that is able to synchronise multiple duplicated frequencies (regardless of the size and complexity of the requirements), Door County is able to effectively manage a comprehensive Simulcast network and benefit from wide area coverage in the event of an emergency."

*Simoco Australasia Pty Ltd
www.simocogroup.com*

Door County has reported that the system has provided many benefits to its emergency services staff, including a significant improvement in emergency alerting and radio coverage. The Simulcast solution has delivered coverage that has even exceeded some of the prediction models identified during the consultation period.

Another benefit was the capability for redundancy in equipment and coverage to reduce the potential of critical infrastructure failures. Door County has been able to add additional Traffic Managers in order to prevent a single point of failure. This meant that if for any reason the primary Traffic Managers should be interrupted because of a power or network glitch, the system would automatically revert to the secondary Traffic Managers in a matter of seconds.

The Simulcast System increased frequency efficiency, freeing up surplus frequencies to create secondary channels not previously available. Simulcast has not only increased the coverage and quality of their primary channels, but also created new resources available to all users county-wide.

From an individual user perspective, the local and county responders are now able to use a radio system that is not only user friendly but also meets the ongoing demands of the emergency response community. The previous multicast systems forced users

UK EMERGENCY NETWORK

The first contract to provide a replacement communications system for the emergency services has been awarded to Kellogg Brown & Root Limited (KBR), the UK Home Office has announced. KBR will now become the delivery partner for the Emergency Services Mobile Communications Programme (ESMCP), a Home Office-led, cross-departmental program set up to provide cheaper, better and smarter communications services for the emergency services, called the Emergency Services Network (ESN). The contracts for the existing systems provided by Airwave Solutions Ltd will begin to expire in 2017. Re-competition is legally required by the expiry in 2020 of the existing contracts.

More info: bit.ly/1Oxd5Zk

TAIT APPOINTS BUSINESS LEADER



Tait Communications has appointed Craig Clapper as its president of global solutions and business development. To be based at Tait's US offices, Clapper

will be charged with developing the global business and building new opportunities with customers and partners as Tait continues to grow as an internationally focused critical communications partner. Clapper takes over the role from interim president Judd Cain, who has been with Tait for four years and recently moved from Houston to the UK to lead Tait's UK and EMEA business from its new regional headquarters in Cambridge.

More info: bit.ly/1iw214F

ENERSYS ACQUIRES ICS INDUSTRIES

EnerSys has announced that it has completed the acquisition of Melbourne-based ICS Industries. ICS is a full line shelter designer, manufacturer, installation and maintenance services company serving the telecommunications, utilities, data centre, natural resources and transport industries in Australia and in the Asia Pacific. It has office, warehouse and manufacturing facilities in Melbourne, Sydney, Brisbane, Adelaide and Perth. The acquisition will result in a larger reserve power, site solutions, field services and motive power business in Australia.

More info: bit.ly/1LOsz9p



Wireless test set

Keysight Technologies has enhanced the E7515A UXM wireless test set to address leading-edge LTE-A carrier aggregation (CA) test requirements. New capabilities include support for downlink 4CC1, 256 QAM and LTE-U with up to three

unlicensed carriers, as well as FDD-TDD mixed CA and uplink intra- and inter-band CA measurements. Coupled with the UXM's integrated, independent fading for each component carrier and cell, these advancements allow validation engineers to ensure their latest LTE-A devices will perform as expected in a true network environment.

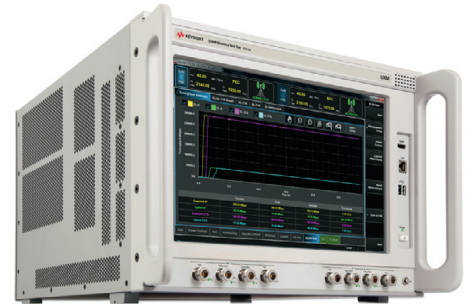
The UXM's large touch-screen display and intuitive user interface provide easy access to complex network emulation and bring a wealth of functional test capability in an accessible stack-based environment, including support for the new 3GPP category 0 for low-power, low-cost machine-to-machine (M2M) devices.

Also new to the UXM is the addition of W-CDMA/HSPA+ test capabilities, enabling 3G data throughput testing with integrated fading and CPC statistics, inter-RAT mobility and handover verification, and time-aligned multiformat logging.

The latest UXM enhancements enable LTE/W-CDMA inter-RAT cell reselection, connected data handovers and release with redirect in a single UXM test set, including support for CSFB and SRVCC. Validation engineers can also connect two UXMs in an array to test mobility between up to four LTE cells, and handover between LTE-A multicarrier and W-CDMA/HSPA+ connections.

Keysight Technologies Aust Pty Ltd

www.keysight.com



LTE antennas

The Fez is low-profile LTE antenna series that has been designed for durability and versatility in the field. Antennas in the range feature a high-performance wideband LTE cellular element covering 698 to 2700 MHz, with models available also featuring a dual-band 2.4 and 4.9-6 GHz Wi-Fi element and/or a GPS element.

With a robust and ground plane independent design, The Fez is built to provide dependable performance with a small and discreet footprint, and needs just a single hole to mount. Supplied with short fly-leads to keep connections simple, The Fez can be kitted out with Panorama's low-loss extension cables of various lengths, in order to provide a bespoke connectivity solution. This approach enables users to select their desired terminations and cable lengths. In terms of electrical performance, The Fez has 2 dBi peak gain on its cellular and Wi-Fi elements. In addition, the active GPS patch features 26 dB of low noise amplified gain to ensure consistent satellite signals.

Panorama Antennas Australia

www.panorama-antennas.com



UHF CB radios

GME has released the SoundPath full-function LCD speaker microphone with the TX3350 and TX3550S 5 W, 80-channel UHF CB radios.

Featuring a built-in speaker with clear audio within a compact and ergonomic design, SoundPath diverts the audio through a convex path around the microphone bollard, while maintaining compact size.

The TX3350 combines the space-saving benefits of a super-compact radio and full-function speaker microphone all in the palm of a hand.

The unit can be discretely installed in almost any location within a vehicle without the need for extension speakers.

The TX3550S is the flagship of the 'S' series and includes: ScanSuite, a group of scanning technologies enabling uninterrupted conversations even on congested channels; TurboScan, which scans 80 channels in under 2 s; Network Scan, a dynamic intelligent channel selection for uninterrupted conversation; and AutoSkip for avoiding nuisance channels. It also has 95 user-programmable receive channels to listen in on local emergency services.

Both units feature CTCSS, DCS Privacy and SelCall, DSP radio technology, advanced signal management and dynamic volume control.

Standard Communications Pty Ltd

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Industry Talking

The annual general meeting of ARCIA was recently held and I was delighted to be nominated and accept the position of President again; so I am sorry, you will have to put up with me for another 12 months. Seriously, I would sincerely like to thank all those members who give so much time working with and promoting the association. In particular, I would like to highlight the efforts of Martin McLeod from Gencom in Newcastle who has stepped down as vice president of the association. Martin has been a tower of strength and a voice of reason for many years and the association is indebted to him. We also have some new members stepping up to the plate and I am really looking forward to seeing their contributions.

The end of the year is really taking shape with planning for Comms Connect Melbourne and the ARCIA annual Gala Dinner well underway. ARCIA will again be calling for award nominations, so make sure you nominate those who you think are deserving of recognition.

Members who have been to state events this year will know that ARCIA has started to recognise industry contributions at a state level; these state winners will be forwarded to the annual gala dinner for one of the national awards. These new awards have been warmly received and certainly appreciated by the recipients. The latest winner at the ARCIA Queensland event was Nick Stefanou from Mobile Communications Qld. Nick's passion for the industry is renowned and the award recognised his commitment to innovation and the spirit of giving it a go! Nick's efforts over many years are indicative of what our industry does every day, solving problems and delivering solutions.

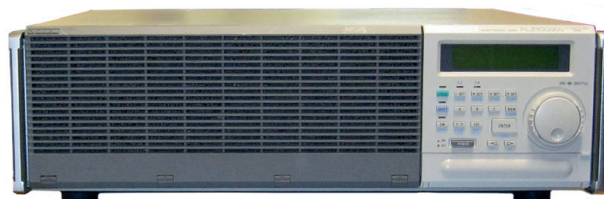
The Department of Communications has announced a review of the Radio Communications Act: see www.communications.gov.au/departmental-news/new-directions-spectrum-announced. This review has the potential to profoundly change the way our industry manages spectrum and delivers wireless solutions. I encourage all members to engage with the ARCIA committee on these matters. ARCIA will advocate on behalf of our industry to policymakers but we need to be informed to ensure we have consistent and relevant information.

In my last article I lamented on the lack of coordination on federal government mobile black spot funding — in my view a missed opportunity to utilise important community co-funded infrastructure for public safety communications. Anyone involved building networks knows that site acquisition and planning is one of the most significant costs for network deployment. I am very happy to report that the clever people in Western Australia in the Industry & Innovation section of the Department of Commerce have proved me wrong. In WA, the state government has also co-funded black spot infrastructure for the benefit of local communities and tourism, and at the same time built into the program site access for emergency service organisations.

Finally, the ARCIA committee is keenly aware that we must improve membership benefits, and as part of that thinking we are planning a major rework of our website. We believe that the website should be the focal point for information and guidelines to assist the entire industry. If you have suggestions for content for our website, please let the committee know.



Hamish Duff, President
Australian Radio Communications
Industry Association



Electronic load

The Kikusui PLZ1003W Electronic Load has a 1000 W power rating with a voltage range of 1.5 to 120 V and current range from 0 to 200 A. This unit is used to simulate and carry out actual load tests on power supply units, including alkaline and other types of batteries. It is available to rent from TechRentals.

The PLZ1003W has four operation modes — constant current, constant resistance, constant voltage and constant power (CC/CV/CR/CP).

The PLZ1003W is designed to meet more complex loading conditions and increase the ease of operation through CPU control. This includes features such as constant power mode for battery discharge tests and a sequence function that allows complicated current simulations. Other features include: step function and backup memory; trigger signal output useful for waveform monitoring; three memory function; and parallel operations offering increased current and power capabilities.

For more information, click [here](#).

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www.emctech.com.au





Wireless test system

The National Instruments Wireless Test System (WTS) combines advances in PXI hardware to offer a single platform for multi-standard, multi-DUT and multi-port testing. When used with flexible test sequencing software, such as the TestStand Wireless Test Module, manufacturers can significantly improve instrument utilisation when testing multiple devices in parallel.

The WTS integrates into a manufacturing line with ready-to-run test sequences for devices that use chipsets from suppliers such as Qualcomm and Broadcom, as well as integrated DUT and remote automation control.

With support for wireless standards from LTE Advanced to 802.11ac to Bluetooth Low Energy, the WTS is designed for manufacturing test of WLAN access points, cellular handsets, infotainment systems and other multi-standard devices that include cellular, wireless connectivity and navigation standards. Software-designed PXI vector signal transceiver technology inside the WTS delivers good RF performance in the manufacturing test environment and a platform that can scale with the evolving requirements of RF test.

National Instruments Australia

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VHF transceiver

The Icom NZ IC-F1000D can be programmed for Type-D single-site trunking and digital conventional modes as well as analog mode per channel. The IDAS digital mode employs 4-level FSK modulation and the NXDN common air interface, offering true 6.25 kHz spectrum efficiency, higher security and better audio clarity even at the fringes of the communication range.

The following IDAS features are programmable: PTT ID (TX), individual/group calls, radio check (RX), stun/kill/revive (RX), remote monitor (RX), emergency (TX), call alert (RX), digital voice scrambler (15-bit), status call (power on/off status and GPS request) and voting scan for multisite conventional operation.

The IC-F1000D has motion detection, man down and lone worker functions, and is IP67 rated and MIL-STD 810 tested. The large 36 mm speaker of the transceiver provides clear 800 mW audio. The built-in BTL amplifier increases the audio output power and delivers loud and intelligible voice to a radio operator working in noisy environments. With an optional GPS speaker-microphone, GPS position data can be attached to a voice or data transmission such as responding to a GPS request status call.

The IC-F1000D has built-in 2-Tone, 5-Tone, CTCSS and DTCS signalling capability for analog mode group communication and selective calling, and can be used as an analog transceiver ready for future digital migration. Other features include: DTMF autodial memories, surveillance function, escalating alarm, VOX, channel announcement function, and a red emergency switch on the top panel.

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COMMAND AND CONTROL

Bengaluru City Police's mobile command vehicle has state-of-the-art surveillance and communications equipment.

Located in southern India in the state of Karnataka, Bengaluru (formerly Bangalore) is a bustling, diverse metropolis that is known for its high concentration of high-tech firms. It has been dubbed the 'Silicon Valley of Asia' because it is the nation's leading exporter of information technology.

With a population of over 10 million, Bengaluru is a true megacity. The third most populous city in India, not only is Bengaluru large, it is booming — the population has more than doubled in size since 2001.

Such explosive growth can create considerable law-enforcement and security challenges. That's why India-based Mistral Solutions was recently chosen to provide the Bengaluru City Police (BCP) with a new mobile command-and-control vehicle equipped with Zetron's Digital Console System (DCS) 5020.

Implemented in August 2014, the vehicle is delivering the centralised communication and surveillance capabilities the BCP needs to deploy its operations quickly and manage events effectively on the ground.

The BCP is responsible for the city's law-enforcement and security activities. This includes maintaining law and order, providing security when needed, participating in community crime-prevention activities and managing traffic.

The BCP fulfils its mission through a network of 'beats' that are staffed by foot-patrol and vehicle-patrol officers, day and night. Additional support is provided by special mobile-patrol units; traffic-patrol units; and armed, mobile strike-force units that are stationed in strategic areas throughout the city.

Modernisation plan

To keep pace with Bengaluru's growth and establishment as a major technological hub, the Karnataka state government recently invested in a police modernisation plan to update the BCP's security and law-enforcement operations. This included obtaining and equipping a new mobile command vehicle.

The equipment the BCP had used previously for such events was time consuming and cumbersome to set up. Surveillance cameras and power and data cables had to be installed several days before an event. Communications took place over walkie-talkies that were not centrally coordinated. Not only was it difficult to set up for planned events, but it did not support the rapid deployment or centralisation required to effectively manage quickly developing situations or emergencies.

"The BCP wanted a new command vehicle that would provide improved security and surveillance, and a communication infrastructure that they could deploy in a matter of hours," explains Pawan Vashisht, Mistral Solutions' general manager for homeland security. "This would improve police presence at public gatherings such as parades, religious functions, political rallies, cricket matches and mega exhibitions, and would help ensure the safety and security of citizens and VIPs attending these events."

In November 2013, the BCP issued an RFP for a mobile command-and-control vehicle equipped with state-of-the-art surveillance and communications equipment.

The proposals it received in response underwent technical and business evaluations. As a result of this process, Mistral Solutions was awarded the project for its proposal featuring Zetron's DCS-5020 integrated dispatch system.



Based in India, Mistral is a systems design and engineering company that provides services and solutions for customers in the fields of defence and homeland security.

Vashisht explains some of the reasons why Mistral and Zetron were chosen for the project. "Mistral has a well-established reputation for partnering with global technology leaders to provide solutions that meet clients' needs very effectively," he says. "Plus, the Karnataka State Police were already using a Zetron system that they were very happy with, so they provided a great reference for Zetron. Compared to other solutions, the DCS-5020 is a more appropriate size for vehicle deployment and offers better sound quality. And while the other solutions proposed were button based, the DCS-5020 is PC based and utilises touch screens. This makes it much easier to learn and operate. When all of these factors were taken into account, it was clear that the DCS-5020 offered the best features for this application; it also came in at a better price."

The integrated communications solution chosen to equip the command vehicle included: two Zetron DCS-5020 digital switches; two basic, dual radio-module channels; two telephone exchange modules; and one operator console with push-to-talk (PTT) footswitch, headset, PTT microphone and an instant-recall recorder licence.

Surveillance equipment included: a mast-mounted, pan-tilt-zoom (PTZ) camera and Wi-Fi antenna; six wireless, battery-powered cameras; two wireless transceivers with body cameras; and two operator stations.

Challenges of a mobile environment

Implementing multiple systems in a mobile environment required some creative problem solving. For instance, because the equipment was being installed in a medium-sized vehicle, the available rack space for the dispatch console and other systems was severely limited. So Mistral set up the equipment to make highly efficient use of the space.

“THE VEHICLE IS DELIVERING THE CENTRALISED COMMUNICATION AND SURVEILLANCE CAPABILITIES THE BCP NEEDS TO DEPLOY ITS OPERATIONS QUICKLY AND MANAGE EVENTS ON THE GROUND.”

The equipment also had to be installed to withstand the rigours of its mobile setting. "Mistral put the IT racks on a 'ruggedised' base with shock and vibration mounts," explains Vashisht. "With the help of Zetron's Australasia team, Mistral also designed and installed rack-mount trays for the speakers to minimise vibration."

"We are very proud that, as a result of our partnership with Mistral, Zetron consoles have been successfully deployed in a mobile public-safety application in India," said Zetron Australasia Vice President and General Manager Ranjan Bhagat. "Emerging Asian economies such as India can benefit greatly from unifying disparate technologies to provide a common operating picture for their rapid-response efforts. This project clearly demonstrates how combining Zetron communication technologies with Mistral's powerful systems-integration capabilities can produce fully integrated communications solutions that are particularly effective for this market."

Once the equipment installation was complete, operators were introduced to the DCS-5020 and other systems through a one-day, hands-on training session. Mistral's team followed this up by accompanying the police on several deployments to make sure operators felt confident using the new equipment.

"Even operators who are not very familiar with English were able to quickly understand the touch screens, icons and features on the DCS-5020," says Vashisht. "Within a short time, they were operating the equipment very successfully in the field."

Successful deployments

The new mobile command vehicle has been in use for the better part of a year and has been deployed successfully at a number of events. It was part of the post-incident surveillance effort in response to the late-December 2014 bomb blast on Church Street in Bengaluru. It was also used on New Year's Eve to ensure the safety of the crowd in the Bengaluru Central Business District, and it was deployed again during the 2015 Republic Day Parade in January.

"The DCS-5020 has greatly improved the speed and agility with which the BCP is able to respond to events as they happen," says Vashisht. "It is also delivering important functionality that allows the BCP to conference and patch across different systems and agencies, which is critical during a large-scale event."

As is so often the case, the success of one project gives rise to others. Mistral is already planning to provide the DCS-5020 to police control rooms that dispatch help whenever a citizen calls in with an emergency.

"Zetron's flexible command-and-control systems are the perfect supplement to the end-to-end solution offerings we provide to law enforcement, homeland security and other markets throughout India," said Mistral CEO Mujahid Alam. "The Zetron Australasian team's excellent support helped ensure a satisfying experience for the end user. We look forward to working with Zetron on other projects in India."

Zetron Australasia
www.zetron.com

Smartphone app

Codan Radio Communications has launched the Stratus Storm smartphone app as part of the next-generation capability for its Stratus product portfolio.

The Stratus Storm app enables non-radio-carrying users to seamlessly communicate on the company's P25 network, providing a direct link into a Stratus wide-area network from anywhere with cellular coverage. The app is supported on both Android and iOS platforms.

Codan Limited

www.codan.com.au

Base station panel antennas

RFI has added to its base station antenna range with the release of the BPA series of UHF panel antennas. These models are compatible with both analog and digital technologies; are suitable for applications requiring 'corridor', sectorised or other directional network coverage requirements; and are also suited to diversity receiver applications requiring multiple antennas.

They're also suitable for use with the recently amalgamated 403–430 MHz 'whole of government' spectrum initiative, and also for TETRA or other networks operating within the 380–430 MHz band.

The antennas are DC grounded for lightning protection and feature a PIM rating of -150 dBc, providing low IM and low-noise characteristics for optimum performance. The mounting style suits various pole, mast and wall installation locations. Mechanical tilt mounting brackets are supplied.

RFI

www.rfi.com.au



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CODAN'S US\$1.1M STRATUS WIN

Codan Radio Communications has been awarded a US\$1.1 million contract to supply its Stratus Network to an undisclosed US government agency. The award is the first significant sale of Stratus since its launch at the International Wireless Communications Expo (IWCE) in March. Codan said Stratus is being trialled by multiple US agencies, with smaller Stratus sales already completed. Stratus is a hybrid P25 and LTE (3G/4G) deployable network that integrates the strengths of the two technologies to provide secure wide area voice networks. A complete Stratus network comprises the Stratus repeater, power centre, tactical server and rapid antenna.

More info: bit.ly/1ic4yB7



SENSUS, BAI PARTNERSHIP

Sensus and BAI have partnered to design, supply and install a digital infrastructure that will enable water utilities to remotely and continuously monitor and diagnose problems and pre-emptively prioritise and manage maintenance issues. Data from smart sensors, including meters, will ensure the reliable, safe and cost-effective delivery of water and energy through improved operational efficiency and customer engagement. FlexNet is based on open standards and can support capacity and reach requirements. It is interoperable with multiple systems and endpoints for delivering data that helps utilities respond quickly to changing market and customer requirements.

More info: bit.ly/1Ljc1VI



Intrinsically safe radio

The Hytera PD712 Ex/PD792 Ex is an intrinsically safe, digital, portable two-way radio which has been designed to the strict requirements of European ATEX and North American FM standards, with certifications for ATEX, IECEx and the latest FM and CSA specifications.

The overall design complies with the latest American Military Standard-MIL-STD-810G, which means the product can withstand environmental conditions such as high/low temperatures, high humidity, vibration and shock. The radio works safely in most hazardous environments, even in the presence of hydrogen and dust particles.

The PD712 Ex/PD792 Ex has a dedicated emergency button that will trigger an alarm and initiate a voice call to a preprogrammed colleague or group call. Built-in man-down, GPS and lone worker functions are also available. The 1800 mAh battery lasts for 17 h under 5-5-90 duty cycle, with 40% less battery consumption than analog radios.

Hytera Communications Co. Ltd

www.hytera.com.au



Dipole antenna

The RFI COD2-159172 vertical enclosed dipole base station antenna is compatible with analog and digital technologies, and is designed for use by VHF high-band network operators requiring operation across a broader range of frequencies.

The unit operates across 159-172 MHz, and its light weight and small projected area assists with convenient mounting on buildings and minimises installation wind loading on towers. It is suitable for use by government agencies and other users requiring multinet network VHF operation. The unit is DC grounded for lightning protection and the reduction of precipitation static noise.

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SAFE WORKING

Workers keep safely out of the way during logging operations.

Used in the forest harvesting industry, the Logsafe GPS Monitoring system was developed to help protect forestry workers who often work in very demanding conditions. By combining the Logsafe system with Icom's NXDN radio technology, 'breaking out' and 'falling' staff are able to work with more peace of mind knowing that they have another layer of safety support on-site.

Dependable radios are crucial for this system to work efficiently. Icom digital radios were chosen to work with Logsafe because of the radio network's capabilities. "Initial trials found Icom radios had the best GPS accuracy, fastest data transfer speeds, best battery life and highest flexibility in terms of programming commands with our Logsafe system," said Joseph Brolly, managing director of Logsafe.

Thanks to accurate GPS, the hauler operator is now able to see the location of each breaker-out on the crew's harvesting map in relation to the moving ropes. This system gives the hauler operator more peace of mind when going ahead with the drag after receiving the go-ahead, as they can confirm via



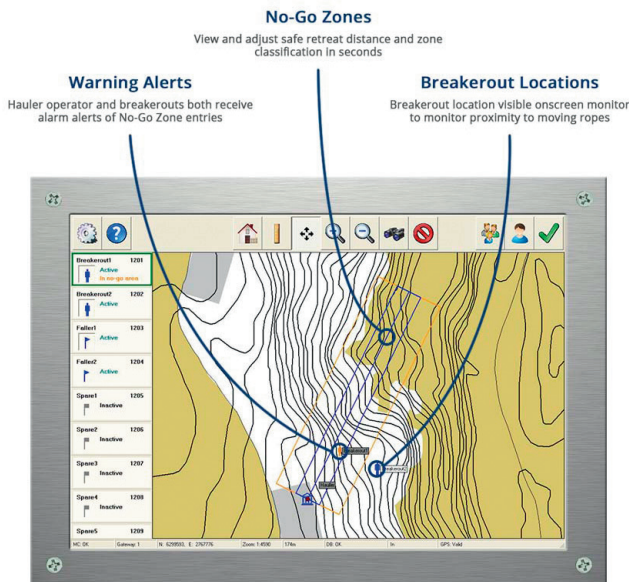
the monitor screen that no breaker-out is in the no-go zone.

"The Logsafe system locates each breaker-out and displays their position relative to the moving ropes and the safe retreat zone on the crew's harvesting map on the computer screen," said Brolly. "This provides a last line of defence for more peace of mind for the hauler operator, particularly when the breakouts are working out of sight, which happens often."

Existing systems rely on physical markers, tooter signals and verbal radio instructions. Icom radios are programmed to activate a warning alarm inside the hauler cab as well as the breaker-out handsets in the field if a breaker-out enters the no-go zone while the ropes are moving on inhaul or outhaul — ensuring breaker-outs are at least 15 metres from moving ropes at all times.

"This provides a warning system to raise awareness of a failure to retreat to the required position," said Brolly.

Logsafe also offers fallers more support in the event of an emergency, helping to drastically reduce time taken to locate an injured faller, thanks in part to the Icom radio's GPS accuracy



The location of workers can be easily monitored.

and radio functionality. Fallers often work away from the rest of the crew on their own, which makes it hard to locate and respond in emergency situations.

Under the Logsafe system, faller location is displayed on-screen inside the hauler and updated every 80 seconds; exact real-time position is available at the touch of a button. The Logsafe system also supports the faller with a man-down system. If the faller's

radio is on angle of more than 45° for more than 120 seconds, a warning alarm will sound for 30 seconds on the radio. If the faller does not move to a vertical position within this time, the Icom radio will activate the emergency process.

Thanks to the radios, rescue teams are able to locate the injured faller faster as the faller's GPS coordinates are sent to the hauler operator as well as the breaker-outs' handheld radios. There is also an emergency button on the radios that instantly sends out an emergency alert and location to the crew.

Monitoring and managing new data such as safety and production information can also be reported thanks to the Logsafe system. The system is able to produce real-time reports on drag cycles per day, log count, faller check-in, tree drives and also the number of times a breaker-out enters the no-go zone, by tracking the GPS location of the Icom radios. This information can be used by crew management to assist with daily tailgate meetings. The Logsafe GPS system eliminates the use of physical markers as well as the need to cart around extra equipment. A radio is all that is needed by the ground crew for all voice, GPS and digital communication.

Icom's waterproof GPS radios are programmed on forestry radio channels and have features such as IP67 waterproof/dust-proof protection and MIL-STD 810-standard builds. The Logsafe GPS system is compatible with all cable-logging system and installations currently underway in New Zealand's Northland, Dunedin and Napier regions.

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Gauss/Tesla meter

The FW Bell 5180 Gauss/Tesla Meter is a magnetic measuring device with digital signal processing (DSP) that works in either sensitive laboratory environments or rugged industrial settings. It is available to rent from TechRentals.

The device has a frequency bandwidth of DC to 30 kHz, and Dynamic Probe Correction enables measurements from 0 to 30 kg with basic accuracy of 1.1% full scale (FS). It also has built-in software that eliminates complex calibration procedures. Other features include: ampere readings; detachable transverse probe and zero Gauss chamber; corrected analog output (± 3 V FS); and a USB communication port.

TechRentals

www.techrentals.com.au

EMI receiver

Keysight Technologies has added real-time spectrum analysis (RTSA) as an option for its standards-compliant MXE EMI receiver, enabling test labs to observe and diagnose transient and wideband emissions during electromagnetic compatibility (EMC) compliance and pre-compliance testing.

With RTSA, engineers can more easily see and understand high-speed transient signals that are difficult to capture with traditional spectrum or signal analysers. This is especially useful in applications such as radar, automotive and wireless communications that often experience fast-moving, short-duration emissions.

In RTSA mode, the MXE can provide real-time analysis bandwidth up to 85 MHz below 3.6 GHz and up to 40 MHz above 3.6 GHz, ensuring image-free, over-the-air diagnostics that enable faster, easier analysis of emissions. RTSA offers 100% probability of capture for signals with durations greater than 3.7 μ s when viewing with an 85 MHz span.

Keysight Technologies Aust Pty Ltd

www.keysight.com

Wi-Fi test set

The Greenlee AirScout, available from Australian Tel-Tec, allows service providers to replicate and stress test complex Wi-Fi home and office environments to enable Wi-Fi readiness.

The free-standing Wi-Fi test set has a frequency range of 2.4 and 5 GHz bands and a data transfer rate of 1 Gbps

(wired LAN). It gives an automated solution that surveys the residence from Layer 1 all the way through to the application layer, providing technicians with a tool that distills complex measurements into easy-to-understand metrics. This helps technicians to convey to consumers whether their applications are supported where they need it.

The product has the ability to find problems as well as identify solutions. It can make intelligent channel selections by measuring over time the types and amounts of traffic at Access Points, and after the device has surveyed the site, it will also provide the optimal coverage Access Point location. The Wi-Fi test set has the capacity to support up to 30 locations over several levels at a site and deliver an accurate analysis, record and a solution validation to complex Wi-Fi environments.

Australian Tel-Tec Pty Ltd

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Configuration and management software

Tait Enable Fleet OTAP is a software product that configures and manages a radio fleet from a single point of control. It's based on a server or a cloud and uses up-to-date secure technology to present the appropriate information and controls to the team that is managing and operating the radios.

EnableFleet OTAP can manage radio fleets by either wired or OTAP connections and makes in-field programming faster with consistent results. It can send firmware updates, in addition to configuration changes and feature licence updates. Radios remain fully operational while receiving upgrade data, and the solution reduces over-the-air data transmissions by only sending the information that is different between the current and the required configuration.

The software can be used for all 9300 and 9400 series radios and is available for DMR Tier 3 and P25 trunked systems.

Tait Communications

www.taitradio.com

IoT wireless I/O modules

Advantech has combined the core functions of data acquisition, processing and publishing into a single I/O module to meet the needs of a wide range of industries, such as environmental monitoring, machine monitoring and smart cities. The company claims its module will improve the way that data is gathered from remote or difficult-to-wire locations.

The Advantech WISE-4000 series wireless ethernet I/O modules can be used without needing to go through a gateway to provide the information. Deployment is easy as a limitless number of I/O modules can be used to gather the information from any third-party sensors and connect to an existing network.

With an integrated HTML5 interface, the module can be configured and accessed from any mobile device using a standard web browser and without needing to go through an access point. The series uses RESTful API, meaning system integrators can adjust the configurator to meet their specific needs.

The module's data logger can send time-stamped information to a Dropbox account or a private cloud. It can also buffer the device's data so that in the event of network failure, no data is lost. Other features include: three levels of security, interchangeable antennas for flexibility and external DIP switches so the factory settings can be easily reapplied.

The series includes the WISE-4050 4-channel digital input, 4-channel digital output module; the WISE-4060 4-channel digital input, 4-channel relay output module; and the WISE-4012E 6-channel input/output module for developers with WebAccess (optional).

Advantech Australia Pty Ltd

www.advantech.net.au



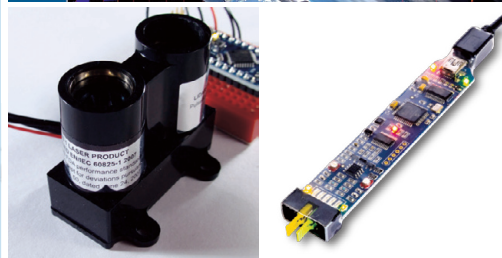
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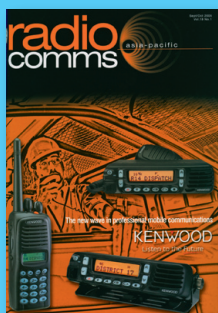
Backhaul

BACKHAUL, OCTOBER 2015: THE INDUSTRY 25 AND 10 YEARS AGO

25 YEARS AGO. The cover of the October/November 1990 issue of *What's New in Radio Communications* featured the Philips PRM80 series of mobile radios, which had been awarded an Australian Design Award, and also became the first Australian product to receive one of West Germany's Gute Industrie Form Awards. The very successful units sold all around Australia and across the globe. Elsewhere in the magazine, LW Edwards of Moonraker Australia brought us up to date on marine mobile HF radio antenna design considerations, and we presented a case study on the communications system used by Yellow Cabs in Brisbane. It's also interesting to be reminded of company names that no longer exist, eg, Aussat, OTC and Marconi (now part of BAE Systems) to name just a few.



10 YEARS AGO. By coincidence, this issue of *Critical Comms* features JVC Kenwood on the cover, and so did the September/October 2005 issue of *Radio Comms Asia-Pacific*. Back then, the latest and greatest Kenwood technology was the 180 series of radios, which included VHF and UHF models with



FleetSync digital signalling, dual priority scan and QT/DQT sub-audible QT tones and DQT digital codes. Elsewhere in the magazine, Peter Baines, the then managing director of Tait Electronics (Aust) shared his

views on the positive future of radio comms, despite the perceived threat from cellular technology; we presented a case study on radio comms for a Sydney-based courier company and another case study on a trunked radio system installed in Bangkok's underground railway network. We also presented a potted history of radio communications test sets, from the Singer FM-10 RCTS to the (then) latest Rohde & Schwarz and HP models.

Ready for the brave new world?

I have spent most of this year discussing disruption and disruptive technologies. What I have learnt from my audiences is a large disconnect. What Google, IBM, Microsoft and others are working towards for 2030, people are not expecting until 2050+.

So what will the application of deep learning computing, quantum computers, robotics, 3D printing, IoT and so on have on the radiocommunications industry? The expectations and warnings from the leading engineers, economists and social scientists are as follows:

1. 80% of Fortune 1000 companies will not exist in 2030.
2. 85% of radio system/network design work will be fully autonomous — done by computers. The user will only need to provide the computer with requirements and constraints.
3. 90% of installation and construction work will be fully autonomous, with a robotic workforce, delivering flawless workmanship at $\leq 25\%$ the cost.
4. Clients will be able to print fully functional radios, on-site, in under 24 hours, at 1-2% current market prices. Radios will be sold as a CAD/CAM file. This will enable an order-of-magnitude increase of 'radio-manufacturing' companies in the global market.
5. Radio standards/protocols will be aaS. Radios will be able to operate any waveform, at any time. Standards will be an app. They will be able to conduct communications across multiple waveforms simultaneously.
6. NGARA technology will be a consumer product.
7. Narrowband communications will shrink to 1% of current market size. Voice-only, low-speed data will have a very niche market/client base.

What normally follows these discussion points, after justification, is a combination of denial, disbelief, quackery or "this is next century technology".

Ray Kurzweil (director of engineering at Google) prepared the Law of Accelerating Returns. "An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense 'intuitive linear' view. So we won't experience 100 years of progress in the 21st century — it will be more like 20,000 years of progress (at today's rate). The 'returns', such as chip speed and cost-effectiveness, also increase exponentially. There's even exponential growth in the rate of exponential growth."

I assume the question rattling around your mind is, how should I prepare for these disruptions? To be honest, I am still trying to work this out myself. You will not be able to escape it — not even by age or retiring; our generation will be the first generation that will extend our life expectancy during our lifetime. And this will not be by a decade or so; it will be by a century or so.

To navigate through these disruptions, you will need to learn and develop your knowledge and skills. I will offer you my insight on what you should aim to do in the next 10 years:

1. Get a Bachelor of Engineering, with a strong computer systems component.
2. Learn programming. This is the 'second' language that will be taught to school children.
3. Strengthen your professional network.
4. Find some great mentors outside your professional/typical circle. Learn.

My only intent is to warn you of what is coming. It is up to you to prepare.

Lawrence McKenna is the Telecommunications Section Manager, WGE; the Deputy Chair, Engineers Australia VicITEE; and Director, BICSI South Pacific. He is also a member of Standards Australia (communications cabling and broadcasting and related services), plus two ITU working groups. Don't miss his presentation at Comms Connect in Melbourne in December.





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PD712 Ex

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