NOV/DEC 2014 Vol.2 No.1

critical comms

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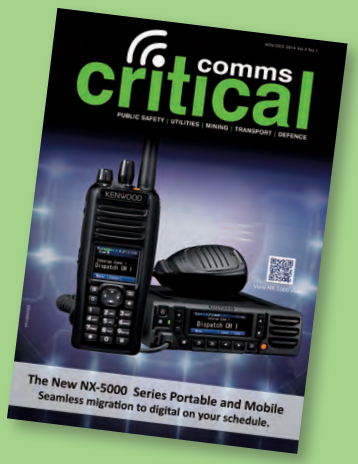
www.CriticalComms.com.au/latest_issues

ON THE COVER



KENWOOD has launched the NX-5000 series of portable and mobile two-way radios capable of multiprotocol operation in two digital formats, P25 Phase 1 and 2 and NXDN, as well as mixed digital and FM analog.

Designed to facilitate intelligent migration to digital, particularly for users operating with a mix of analog and digital radios, the NX-5000 is suitable for public safety and mission-critical applications, including utilities, and for systems that demand durability and a high level of performance, and need to operate in FM analog, conventional trunked, P25 or digital NXDN.

GPS capability enables comprehensive fleet management and the large colour display is designed for at-a-glance operational status checks. Built-in DSP makes the portable and mobile suitable for high noise environments. Both models exhibit high audio quality in digital and analog operations along with 56-bit DES encryption as a standard feature, with optional 256-bit AES encryption.

The NX-5200/5300 with two portable 5 W models, from 136-1754 MHz and 380-470, 450-520 MHz, meets MIL-STD 810 C/D/E/F/G as well as the IP68 water immersion standard, with built-in Bluetooth making hands-free operation easy and with a MicroSDHC memory card increasing voice and data memory capacity.

The NX-5700(B)/NX-5800(B) mobile operates from 5-50 W in the 136-174 MHz model and 5-45 W in the 380-470 and 450-520 MHz range. It meets MIL-STD 810 C/D/E/F/G, with the RF deck meeting IP54 and the remote head meeting the IP55 blowing rain standard. The mobile has a DB-25 accessory connector and features 4 W speaker audio with up to 4000 channels, 512 Ch/Zone and 128 Zones.

JVC KENWOOD Australia Pty Ltd
www.kenwood.com.au

Transmit

The future is not only digital, but smart digital. That's the clear message from many leading thinkers in the critical communications industry, and it is impossible to disagree with them. The coming years will see a convergence of capabilities offered by traditional radio and those that are now commonplace on smartphones and other 21st century devices.

One of the fields that will benefit greatly from this convergence is the transportation industry, argues Motorola's Steve Crutchfield in this issue. From tracking to routing, from job ticketing to man down, 'smart radios' promise to give us the best of both worlds.

The digital convergence goes further, however. In this issue's Spectrum opinion column, David Cox argues that the industry needs to awaken to the possibilities inherent in the IT industry, by treating data as the 'new voice'. The coming explosion in data used by business- and mission-critical organisations, such as live video streaming, will mean that cloud computing could become the industry's new best friend. But attitudes will need to change, says David - narrowband should not mean narrow-minded.

As this issue was going to press, the final report of ARCIA's economic study was about to be released. Some preliminary figures were mentioned at the ARCIA industry dinner in Melbourne in October. Keep an eye on the *Critical Comms* website, and we'll bring you all the details as soon they're available.

Comms Connect in Melbourne was once again a roaring success, with a wide range of speakers, workshops and exhibitors keeping everyone busy over the three days. For 2015, Comms Connect will return to Sydney in June and Melbourne in December.

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

Calendar

March 2015

What: Mobile World Congress 2015
When: 2-5 March 2015
Where: Fira Gran Via, Barcelona, Spain
Website: mobileworldcongress.com

April 2015

What: APCO Australasia 2015 Conference
When: 29-30 April 2015
Where: Melbourne Convention & Exhibition Centre
Website: apcoaust.com.au

What: RFUANZ 2015
When: 30 April - 1 May 2015
Where: Te Papa, Wellington
Website: rfuanz.org.nz

May 2015

What: Australian & New Zealand Disaster and Emergency Management Conference
When: 3-5 May 2015
Where: Jupiters Gold Coast
Website: anzdmc.com.au

What: Australian & New Zealand Search and Rescue Conference 2015
When: 6 May 2015
Where: Jupiters Gold Coast
Website: sar.anzdmc.com.au

June 2015

What: Comms Connect Sydney
When: 3-4 June 2015
Where: Sydney Showground, Sydney Olympic Park
Website: comms-connect.com.au

December 2015

What: Comms Connect Melbourne
When: 1-3 December 2015
Where: Melbourne Convention & Exhibition Centre
Website: comms-connect.com.au

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

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ICEBOUND
SATCOMS SAVE THE DAY

Satellite comms were crucial in the rescue of passengers from a Russian ship in the Antarctic.

When 74 passengers and crew set sail for Antarctica aboard the Russian ship MV *Akademik Shokalskiy* late last year, they had no idea of what they were about to endure.

They would have been prepared for the violent westerly winds that would have assaulted them as they navigated the Southern Ocean. And they definitely would have been equipped for sub-zero temperatures. It's no secret that the southernmost continent is the coldest on the planet - almost completely covered in ice and with temperatures that can drop to -89°C.

But they wouldn't have expected to become stranded on Christmas Day, trapped for two weeks by encroaching pack-ice in Commonwealth Bay.

The rescue operation that was launched involved five vessels from five nations: the *Akademik Shokalskiy* itself, the Chinese icebreaker *Xue Long* ('Snow Dragon'), the French *L'Astrolabe*, the Australian *Aurora Australis* and the *Polar Star* from the USA.

The logistics involved in organising some of the world's largest ice-going ships, in one of the most remote regions on the planet, can only be described as challenging. Clear and constant communication would be absolutely vital if the operation were to succeed.

In constant contact

Shortly after 7.20 am on 25 December, the Australian Maritime Safety Authority (AMSA) in Canberra received notice of a distress signal - the *Akademik Shokalskiy* was beset by pack-ice (which is too thick to break through) off the coast of Antarctica. AMSA assumed coordination of the rescue operation after being notified by the Falmouth Maritime Rescue Coordination Centre in the UK.

"The size of our region poses some significant challenges," said AMSA Search and Rescue Operations Manager Alan Lloyd. "In the case of the Antarctic rescue, it happened in a remote location where there weren't a lot of ships. In fact, the closest was still days away."

Given that the nearest ships were at least two days from the stricken research vessel, timing was critical and any delay could be costly.

"Using Inmarsat-C, part of the Global Maritime Distress and Safety System (GMDSS), we were able to alert ships in the vicinity of the vessel in distress. We were not only able to notify them of the situation and ask for help, but we could also send the identity, position, course, speed and cargo of the ship," said Lloyd.

Inmarsat-C is a two-way data service used to monitor and track maritime activity around the world. It offers data transfer, email, SMS, telex, remote monitoring, position reporting, electronic chart and real-time weather updates, maritime safety information (MSI) and security services to ships around the world. The service is also available for land mobile and aeronautical use.

Lloyd said that while coordinating rescue ships, AMSA's Rescue Coordination Centre (RCC) was also in constant contact with the stranded vessel.

"The Antarctic rescue clearly demonstrated the value of satcom in search and rescue. RCC Australia was able to communicate regularly with the vessel beset by ice and the vessels that responded to the distress situation," he said.

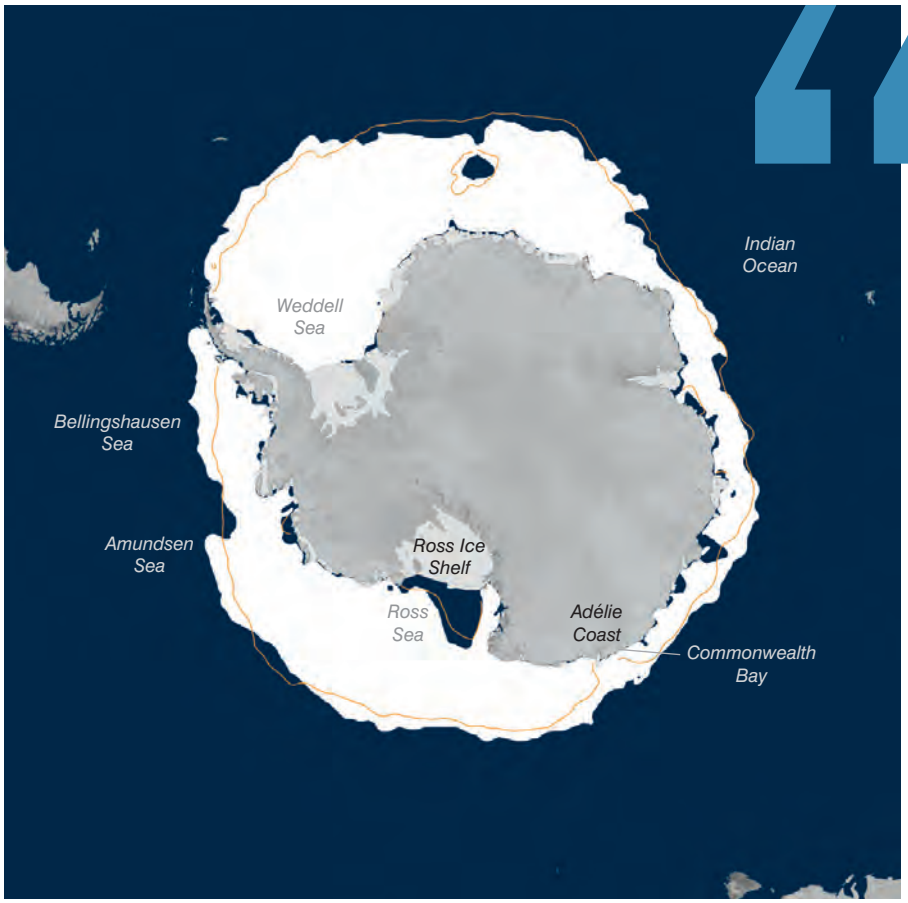
"GMDSS allowed RCC Australia to manage the incident. We were able to alert nearby ships and assist in coordinating the search and rescue operation with minimum delay, as well as tracking the positions of the responding vessels in relation to the location of *Akademik Shokalskiy*."

Airlifted from the ice

Meanwhile, the 74 people aboard - 50 scientists and volunteers, two journalists and 22 Russian crew members - could do nothing but watch as south-westerly winds pushed the ice floes even tighter against the ship.

The *Xue Long* couldn't get any closer than six nautical miles to the *Akademik Shokalskiy*, the captain of the Chinese vessel advising AMSA that its own situation was not dire and that they would remain in their current position to assist as required. The helicopter-equipped *Xue Long* had enough food for several weeks and could support

Akademik Shokalskiy *stuck in the ice.*



The passengers were airlifted by a Chinese helicopter.

ACCESS TO MOBILE AND COST-EFFECTIVE SATELLITE COMMUNICATIONS HAS REDUCED THE INFORMATION AND COORDINATION GAP.

those stranded on the Russian passenger ship.

On 2 January the *Xue Long*'s helicopter airlifted the passengers from the *Akademik Shokalskiy* to an ice floe where they were picked up by a barge and transferred to the *Aurora Australis* to begin the long voyage home.

The 22 crewmen aboard the Russian vessel decided to wait until the ice pack relented; the ship broke free a week later. (The other rescue ships had been released from the tasking as they were no longer required.)

Be prepared

Lloyd said that if it hadn't been for recent advances in satellite communications, the rescue mission could have ended differently.

"Access to mobile and cost-effective satellite communications has reduced the information and coordination gap," he said. "AMSA moved from relying on facsimile transfer of incident details and briefing information to having internet access to incident maps and task briefings as well as the digital tracking of rescue assets - whether maritime, aviation or land."

Lloyd said the technology wasn't exclusive to large vessels and also enabled individual rescuers to maintain the vital link between themselves and the RCC.

"In responding to search and rescue, maritime casualty and pollution incidents, we send staff out into the field to assist and coordinate remediation efforts," he said. "Our personnel are able to maintain real-time linkages to AMSA's rescue coordination centre by voice and data via a number of technologies, including Broadband Global Area Network (BGAN) and personal mobile satellite phones.

"This constant and reliable communication allows incident responses to be undertaken in an effective and timely manner, especially in remote locations."

Lloyd said anyone planning a sea voyage must be prepared for absolutely everything.

"I would recommend distress beacons and access to a two-way communication device (voice and/or text) suitable for the area you're operating in," he said. "During a crisis, access to reliable and bulletproof distress equipment allows anyone requiring assistance to communicate with rescuers."

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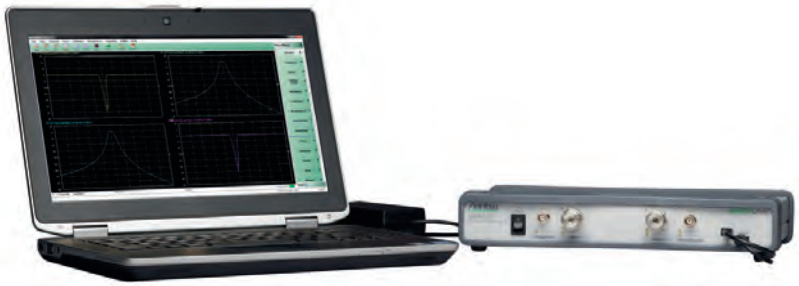
USB-based vector network analyser



Anritsu has expanded its ShockLine family of vector network analysers (VNAs) with the introduction of the MS46122A series. Incorporating Anritsu's patented shock line VNA-on-a-chip technology, the MS46122A low-cost, full-reversing, 2-port VNAs are packaged in a very compact 1U chassis and are optimised for ultra-cost-sensitive test applications in manufacturing, engineering and education environments.

The MS46122A series includes the world's first compact VNAs with frequency coverage up to 20 GHz and 40 GHz, respectively. A third model in the ShockLine series covers 1 MHz to 8 GHz. The MS46122A ShockLine VNAs offer best-in-class performance in many key areas, such as speed, trace noise, stability and dynamic range. The analysers minimise test times and maximise throughput, making them well suited for testing passive devices such as cables, connectors, filters and antennas.

Externally controlled via USB from a user-supplied PC, the MS46122A VNAs do not contain an embedded computer or solid-state drive. Since there is no onboard data storage and all information is saved on an external user-supplied computer rather than the VNA, the MS46122A is suitable for secure area operation.

Anritsu Pty Ltd
www.anritsu.com

Controller speaker microphone

The Sepura ULTRA CSM IP67-rated controller speaker microphone offers all-weather performance and outstanding audio quality to users operating in the harshest and most challenging conditions. Its ergonomic design makes it easy to use, even with gloved hands or in poor light, and it is fully compatible with Sepura's complete STP8000 and STP9000 series radios.

The unit has been developed with the exacting needs of users working in the most demanding environments - such as firefighters and miners. It can operate at very high temperatures and features a casing made of durable self-extinguishing material.

The importance of the product's ease of use and manageability influenced the decision to place specific controls and key radio functions on the speaker microphone itself - delivering vital time-saving advantages specifically in emergency and hazardous situations. The availability of extra secondary control increases flexibility and user options, without impairing clarity.

Sepura PLC
www.sepura.com

Wi-Fi M2M router

The NetComm Wireless NTC-140W 4G WiFi M2M router delivers fast and powerful 4G LTE capabilities to high-bandwidth M2M applications such as security video, digital signage, remote healthcare and emergency response. The unit features two Gigabit Ethernet ports and high-speed Wi- Fi along with vehicle voltage support, GPS and ignition input for mobile assets.

The router connects to most of the 300 LTE networks now launched in 107 countries, enabling seamless collection, analysis and management of large amounts of data from remote and unmanned applications.

Featuring a penta-band 4G module, the router establishes a super-fast connection to global 4G LTE networks and offers penta-band 3G support covering 3G networks worldwide. The device ensures reliable connectivity to time-critical systems, telehealth services and disaster-recovery applications with automatic failover to 3G when outside of 4G coverage areas, and instant fallback to 4G when the Gigabit Ethernet ports are used as an alternate internet connection. The built-in VPN clients also ensures a secure connection over public mobile networks.

The powerful processor delivers optimal performance and its embedded NetComm Linux OS and software development kit (SDK) enables the installation of custom firmware to the onboard flash memory via the programming interface. Its polycarbonate and rubber enclosure is mountable, designed for rugged deployments and also features temperature tolerances making it suitable for remote and industrial environments.

NetComm Ltd
www.netcomm.com.au

Scratched from the Cup (again), Justin has finally agreed to stick to the...

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CRS ACCESSORIES

News

SEPURA'S DMR TIER III

Sepura has announced the availability of its DMR Tier III solution, a move that was accelerated by the recent acquisition of Fylde Micro. Sepura says its DMR Tier III system provides a cost-effective, scalable, trunking solution that ensures reliable, spectrum-efficient communications for organisations of all sizes. The company added that its fully trunked network with a dedicated control channel provides a range of features not available with proprietary systems and is available as an upgrade to existing Sepura Tier II deployments or as a variety of preconfigured systems.

More info: bit.ly/1Ej6aMY

ATC COMMS FAILURE

An arson attack on a Chicago air traffic control centre by a telecoms employee caused a widespread comms blackout and loss of command and control. The attack took out the centre's automation system which provides information and flight plan data to air traffic controllers' screens, and also knocked out voice comms between the centre and aircraft, adjacent ATC centres and control towers. Many functions and radar coverage were quickly transferred to other ATC centres, with the exception of voice. The ATC system uses a 1990s-vintage voice switching control system (VSCS) that cannot be networked.

More info: bit.ly/1suvWIA

MOTOROLA'S GERMAN MILESTONE

Motorola Solutions has delivered its 200,000th TETRA digital radio terminal to German public safety organisations. The terminal was delivered in Bavaria, where Motorola Solutions' partner abel & käufl Mobilfunkhandels GmbH has won the tender for the districts of Weilheim-Schongau, Bad Tölz-Wolfratshausen and Garmisch-Partenkirchen for the delivery of 5000 radio terminals and corresponding service and support. The TETRA digital radio solutions will be used by fire departments and security services

More info: bit.ly/119Z55s

TETRA radio

The Airbus TH1n is the first device in a class of pocket-sized Tetra radios whose size and shape enables users to wear it in several different ways. The device is small enough to wear on a clip holder, a shoulder holster, around the neck, on a belt or lapel, or in a pocket.

The fully featured TETRA radio is in power class 3L (1.8 W), has an IP65, robust design (1.5 m free fall), clear audio and long-lasting batteries. Frequency bands covered are 380-400, 410-430, 806-825 and 851-870 MHz

CSE-Uniserve Pty Limited

www.cse-uniserve.com.au

Wi-Fi modules

Connect One has launched its next-generation (G2) Wi-Fi modules to support the latest 802.11b/g/n wireless standards for the Internet of Things (IoT) market.

The modules incorporate fast, secure wireless standards while creating a no-change upgrade path. They feature full 802.11b/g/n support; easy switching between Wi-Fi Access Point and Wi-Fi Client Operation modes; and an industrial temperature range of -30 to +85°C.

The modules offer good system performance for IoT connectivity with Broadcom BCM43362 Wi-Fi Transceiver SOC and its 802.11b/g/n MAC and baseband functionality. The modules provide multiple hardware interfaces, extensive firmware, a full suite of secure internet protocols for Wi-Fi client mode and up to eight Wi-Fi users in router or access-point modes.

Designers gain immediate, full-featured connectivity without any Wi-Fi driver development or porting, minimising project development challenges and time to market. The modules also serve as independent Wi-Fi access points where Wi-Fi infrastructure does not exist. Users can use the modules to connect to and manage their deployed, in-field devices via standard Wi-Fi devices.

The range offers advanced internet-level security; the module includes Wi-Fi encryption algorithms (WEP/WPA/WPA2), internet SSL communication and encryption algorithms. It provides a secure separation between the embedded application and the network in order to protect the application from attacks originating from the internet.

Caelera Pty Ltd

www.caelera.com

Cable and antenna analyser

The pocket-sized SiteHawk Antenna and Cable Analyser operates from 85 MHz to 4 GHz and features an intuitive interface readily accessible to the first-time user and which minimises clicks for experts who use it every day.

Substantial internal storage eliminates the need to worry about file storage, holding thousands of traces on the device for future analysis or reporting. With the SiteHawk, it is simple to: (1) determine if there is a problem with a cable and antenna system using the Measure Match function and, (2) locate the source of the problem with the Use Distance to Fault measurement.

Suitable for use in Worldwide Cellular and PCS/DCS systems; supporting measurement of CDMA, GSM, and LTE Protocols the New SiteHawk Antenna and Cable Analyser makes measurements quick and easy.

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COMMUNITY COMMS

Pat Devlin, Managing Director, Ruckus Wireless A/NZ

Public Wi-Fi networks promise to give municipalities more than just free communications for their constituents.

Municipalities across Australia are rushing to build wireless networks for their cities. Perth, Brisbane, Gold Coast, Sunshine Coast, Adelaide and Canberra have all made investments recently to provide free Wi-Fi in CBD areas.

Each city moved quickly and each investigated different models to fund and operate the network.

So what's the hype all about, what are the different models and what is the business case for public Wi-Fi?

How public networks get built

Large outdoor networks require significant investment to build, and there are three ways this can happen: the municipality itself invests in the network, a carrier builds the network, or the two combine.

In Australia, we have several examples of both models. In Adelaide and Canberra there is a carrier partnership in place. What's in it for the carrier? There's the opportunity to connect their customers to the Wi-Fi network and off-load traffic from increasingly congested carrier networks. And there's a branding opportunity, a means to reach out to new customers and bring them across.

What's in it for the municipality? A partnership can be a means to build service without bearing the full brunt of infrastructure or network costs.

Local service provider Infrastructure Logic believes it's important to keep public Wi-Fi networks carrier neutral. They see many parties, including carriers and application providers, buying services on these networks further down the track.

"Our business model appeals to municipalities, as our open-access wholesale Wi-Fi model enables multiple parties to share the same infrastructure at a fraction of the cost of traditional network models," said Infrastructure Logic's managing director, Mevan Jayatilleke.

"The open-access model allows for small and medium businesses, as well as municipalities, to develop innovative applications for people as well as for connected things."

Public Wi-Fi: paid service or public utility?

Some cities see Wi-Fi as a utility and say ownership of the user's experience should be firmly in the hands of the city.

"It was important to us that the City of Perth was the ultimate owner of our network. We own the user experience and it's our own platform for innovation," said Jonathan Stoate, CIO at City of Perth.

"We have already leveraged our Wi-Fi infrastructure to enable the WA Symphony Orchestra to stream the 'Symphony in the City' and we will also be streaming the upcoming TEDx Perth event."

"In addition, it enables us to choose any ISP to work with in the market and that gives us amazing flexibility for the future."

This theme of control is common among several recent deployments. It provides municipalities with a platform to directly reach the people that matter to them and allow them to access online information guides and location maps on the fly.

In addition, in the case of an emergency, public safety announcements could be broadcast to all connected devices.

Big issues for public networks

There are some tough issues to be tackled for public network operators. Security, bandwidth and scalability are amongst the top

© Eugenio Marongiu/Dollar Photo Club

concerns to be dealt with. While there are plenty of mature options in the market to filter and secure large-scale networks, the problem of scalability is not so easily handled.

This is a huge challenge for CBD Wi-Fi operators. What happens when there are 5000 people connecting to a network that usually services 50? Big crowds present during major public events or festivals pose a few different problems. One is bandwidth demand. The increasing number of concurrent connections may strain individual Wi-Fi access points (APs).

Many public Wi-Fi operators are considering the use of temporary Wi-Fi APs powered by solar panels or batteries. Wireless APs can create a mesh to enable additional APs to be deployed without further cabling.

Another big issue is radio interference. The human body is a great absorber of RF signals. Lots of bodies can mean lots of additional radio interference. Moving bodies make the problem a difficult one to plan for.

"We chose wireless technology that could cope with lots of interference in a challenging and changeable outdoor environment," explained Stoate.

Then there is the question of coverage. Should we build a CBD-only network? How far out should coverage extend? Location-based services and Wi-Fi analytics will come to the rescue on this front.

We can now capture and analyse traffic patterns from Wi-Fi-enabled mobile devices, even if they don't actively connect to the network. We can use anonymous data to see where traffic is concentrated then create a real-time heat map, which allows network operators to analyse where their users are aggregating within a space. They can define zones and compare traffic data between different zones.

All this data is customisable for time intervals, allowing historical analysis and tracking of trends.

Hot Spot 2.0 and carrier offload

A recent change to public Wi-Fi authentication is Hotspot 2.0. It offers a simpler authentication process and can also allow a public network owner to work with a mobile operator for data offload by using a phone's SIM card to authenticate. This is a means for the network owner to monetise public Wi-Fi, without handing over ownership rights.

Hotspot 2.0 also offers increased security and makes roaming between hotspots a seamless experience. This concept was particularly appealing for cities like San Francisco and San Jose that recently implemented Hotspot 2.0 networks.

"Hotspot 2.0 enables open Wi-Fi to become secure Wi-Fi in a very transparent way. The number 2 reason we chose it was roaming," said Flavio Aggio, CTO, San Francisco Department of Technology.

Wi-Fi analytics for planning

Today, city planners work hard to gather data on human traffic movement. Location-based services on a Wi-Fi network make this process a whole lot simpler. During this year's Vivid festival in Sydney, IBM and Ruckus Wireless used location data analytics to map and visualise the real-time movement of festival attendees with Wi-Fi devices walking around the 40-plus installations along the Vivid Light Walk precinct.

"Today's cities are bustling, exciting and packed full of a diverse range of people. But underneath is a complex system of infrastructure and operations," said Glen Thomas, Vice President of Marketing and Communications, IBM Australia and New Zealand.

"The opportunity now exists for organisations to connect and better understand the relationships between these systems using advanced technologies, like analytics," added Thomas. "For example, understanding how visitors move around large-scale public events can help organisers better plan to enhance visitor experiences."

Location-based services on a Wi-Fi network provide cities with unique insights into their residents and tourists. This has the potential to change the way city planning data is collected. Planning data today captures simple metrics - location-based services offer city councils a big data approach.

Time-based information on traffic flow, dwell times at locations, and numbers of new versus returning visitors enables city councils to plan development, change zoning, develop tourism strategies and, even better, plan for an emergency - by identifying potential bottlenecks, for example.

The business case for public Wi-Fi

The business case for public Wi-Fi varies from place to place. While it can be all about traditional mobile data and built by network carriers, more and more cities are looking at public Wi-Fi as a utility.

This doesn't mean carriers won't be able to connect their customers to these networks, but it's likely the city itself will want to be the broker of any connection between their users and the service provider or carrier.

No matter what the business case, there is a rush to deploy services to begin a 'smart city' journey. It certainly seems the technology is mature enough to make it happen.

Rukus Wireless
www.ruckuswireless.com

Field analyser with PIM and line sweep test

Anritsu has introduced the MW82119B PIM Master, which combines a 40 W battery-operated PIM analyser complete with an (optional) 2 MHz to 3GHz cable and antenna analyser, eliminating the need to carry multiple instruments to measure the RF performance of a cell site.

The field analyser provides users with a handheld field passive intermodulation (PIM) analyser with line-sweep capability so that they can fully certify cell site cable and antenna systems.

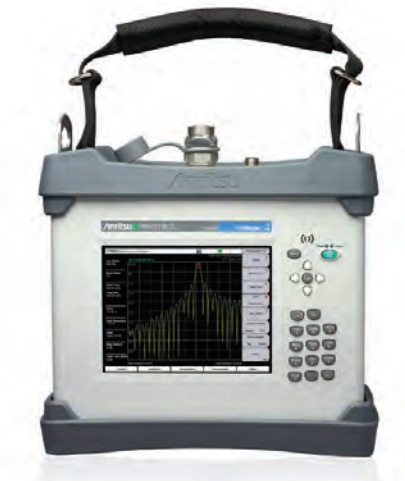
The PIM Master with Site Master option supports the full array of site tests. Field users can conduct PIM versus time, swept PIM, distance-to-PIM (DTP), return loss, VSWR, cable loss and distance-to-fault (DTF) measurements. In addition to eliminating the need to carry multiple instruments to the top of a tower, the integrated PIM Master allows all site data to be stored in one location for fast retrieval.

The PIM Master is MIL-STD-810G drop test rated and is designed to withstand transportation shock, vibration and harsh outdoor test conditions. The unit has also achieved an IP54 ingress protection rating, certifying its ability to operate without damage after exposure to blowing dust and water spray.

Nine models in the family address the prevalent wireless networks, covering 700 MHz LTE (upper and lower) bands, APT 700 MHz band, 800 MHz LTE band, 850 MHz cellular band, 900 MHz E-GSM band, 1800 MHz DCS band, AWS 1900/2100 MHz band, 2100 MHz UMTS band and the 2600 MHz LTE band.

Anritsu Pty Ltd

www.anritsu.com



Satellite network terminals

M2M Connectivity is distributing SkyWave Mobile Communications' range of machine-to-machine (M2M) satellite products in Australia and New Zealand. The company's satellite, cellular and satellite-cellular products and applications are used in a broad range of applications for remote asset management in the transportation, maritime, oil and gas, mining and utilities sectors - from tracking trucks and vessels to monitoring fixed mining and SCADA equipment.

SkyWave terminals utilise Inmarsat satellite communications for M2M applications. Inmarsat is a provider of global mobile satellite communications for M2M and other applications, providing service over land, sea and air through a versatile satellite network.

IsatData Pro is a service that teams SkyWave's range of terminals with Inmarsat's global L-band satellite network. It is claimed to offer the highest payload and lowest latency of any L-band satellite store-and-forward service. IsatData Pro offers 99.9% network availability and a ubiquitous, resilient and flexible solution for remote, unmanned locations.

M2M Connectivity

www.m2mconnectivity.com.au

RF digitiser

Cobham Wireless (formerly Aeroflex wireless business unit) has introduced a measurement option that enables users to perform power measurements more quickly, directly reducing test times in power servo applications.

Option 194 (Fast Power Measurement) on the PXI 3030 series RF digitiser results in a 57% reduction in servo loop time when applied to an LTE signal.

Fast power measurement is beneficial when testing cellular or WLAN power amplifiers as well as in many other applications. Measurements such as ACLR, EVM and efficiency are made at a constant output power. Reaching the desired output power is an iterative process, which normally adds significantly to the measurement time. The Fast Power Measurement technique gives users a significant improvement in test time and considerable potential savings in future capital expenditure.

The PXI 3000 Series RF modular instruments provide five generations of test capability covering most applications in RF design validation and wireless manufacturing test. Licensed options are available for LTE/LTE-A, GSM/UMTS/HSPA+, WLAN 802.11a/b/g/n/p/ac, GPS, Bluetooth, DECT, FM and all generic standards.

Cobham Wireless

www.cobham.com

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News

SIMOCO FOR SCOTTISH GOVT

The Scottish Parliament has chosen Simoco's DMR, including 250 hand portable radios, audio accessories, fixed mobiles and a 4-channel trunked system. The contract was awarded in July 2014 following a formal tender process, and installation and user training was successfully completed within one week during September. The Scottish Parliament was looking for a digital radio system that would provide a single channel, with resiliency in the event of equipment failure, and have the ability to perform a range of functions including group broadcasts in the event of an emergency.

More info: bit.ly/1tS8bx2

TAIWAN DEPLOYS ZETRON

The Hsinchu County Fire Council (HCCFD) in Taiwan has integrated Zetron's MAX Dispatch with a JVC Kenwood NEXEDGE digital radio network. MAX Dispatch was chosen because it offers the affordable, next-generation, IP-based features and functionality the HCCFD was seeking, as well as the requisite integration to an 18-channel JVC Kenwood NEXEDGE digital radio network. The installation was completed by the Taiwan-based Zetron reseller Systemcom. HCCFD has plans to expand the system over a LAN/WAN to allow them to use MAX Dispatch at a second command centre.

More info: bit.ly/1uUcnjl

SEPURA TETRA FOR LEBANON

Sepura's partner Scientia Global has been awarded a contract to supply a TETRA system for Lebanon's Internal Security Forces - Land Mobile Radio Project. The contract marks the first of several phases to build a new nationwide system for the Lebanese Internal Security Forces. It comprises several base station sites, several control rooms, a switching centre and a microwave backhaul communications network.

More info: bit.ly/1AQx0Qb

Cable analyser

The Fluke 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. The analyser is available to rent.

The unit features high-speed testing, including a 9 s Category 6 auto test. It 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 - simplified testing protocols across multiple media types; LinkWare management software for test analysis and professional test reports; dedicated diagnostics.

TechRentals

www.techrentals.com.au

Vector signal analyser

National Instrument's 26.5 GHz high-performance vector signal analyser (VSA) delivers a combination of low noise floor, high linearity, and low phase noise with up to 765 MHz of instantaneous bandwidth.

Engineers can analyse some of the industry's widest bandwidth signals in a single acquisition including radar pulses, LTE-Advanced transmissions and 802.11ac waveforms. In addition, the VSA's fast measurement speed helps engineers decrease time to market and ultimately lower their cost of test.

Users can program the VSA's user-programmable FPGA with LabVIEW system design software to customise instrument behaviour and address the most advanced RF test applications.

National Instruments Australia

www.ni.com/oceania

TETRA mini base station

The Airbus TB3p mini TETRA base station from CSE-Uniserve has all of the features of the larger TB3 base station but in a unit that's about the size of a laptop.

The powerful TB3p delivers eco-efficiency with a power consumption of about 40 W, which is less than 10% of that of a conventional macro base station. It offers TEDS, air-interface encryption, Type 1 handover and base station fallback, and comes pre-configured, so setting it up requires no RF expertise. The unit also works indoors, such as shopping malls or parking halls, and can be used as a stand-alone base station to provide hotspot coverage where a network may not reach.

The base station can be operated and maintained over a remote connection, and can use either conventional time-division multiplexing transmission or internet protocol (IP) transmission.

CSE-Uniserve Pty Limited

www.cse-uniserve.com.au

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SMART RADIO
APPS IN THE DRIVER'S SEAT

Steve Crutchfield, MD, Motorola Solutions Australia and New Zealand

The transport industry will be revolutionised by smart radios and apps.

What is an app, really? The name has been somewhat hijacked for a consumer audience, and at the mere mention of the term one immediately pictures a square icon on a touch screen that opens up a game or website. As the years roll on, there's a good chance younger generations won't be aware it's actually short for 'application', such is the pervasiveness of the shortened term in the vernacular.

But lost in the abbreviation is the definition: an application - at its most basic level, and while still being defined in a device perspective - is simply a program that enables a device to operate a specific function. And that definition is not limited to the smartphone that you undoubtedly have in your pocket right now. An application can appear on any device, and there's a good chance that anyone in the transportation industry has with them a device that's become just as app-ready as the smartphone.

I'm talking, of course, of the trusty two-way radio.

The two-way radio has undergone a renaissance recently, evolving from an analog staple of industry comms into a digital device capable of much more than simply one-to-one communications.

In much the same way the phone got smarter, so too has the digital radio, to the point that we can refer to it as the 'smart radio'. The smart radio has brought with it a functionality that has opened the floodgates for app developers to create industry-specific and industry-agnostic applications.

If we look from a transport point of view, the application possibilities could change the nature of how the job is done.

Broadening capabilities

Inherent in digital radios is the ability to communicate one-to-one and one-to-many, by voice or text. They have internet connectivity. They have built-in GPS and mapping services. They can send and receive data including images and video.

Simply put, the radio is capable of so much more than ever before, and app developers have exponentially increased its capabilities.

As these apps are being developed, two-way radio handsets are beginning to replace other proprietary devices that were previously used for the sole purpose of performing one or more specialised functions - functions that can now be done by the radio and the app.

For example, drivers can now use the digital radio to automatically determine a new route in the event of gridlock, using the mapping and imaging features in the radio along with the GPS. Meanwhile, the 'man down' application is one that is transforming the way organisations are approaching worker safety.

Automation applications are particularly useful in the transportation arena. For example, the radio can be used to alert headquarters if a bus is speeding in a school zone. This can assist the organisation in ensuring the safety of its staff and the general public.

The job ticketing app, meanwhile, is making everyone's lives easier. In the past, users needed a second device to manage job

dispatch as the best way to ensure the information was correct by sending it as data (email, text, for example) and the two-way radio was a voice-only platform.

The digital radio, however, has data capability and can now assign, track and manage job requests, negating the need for that second device.

Enhancing the power of digital

These examples are just the tip of an expanding iceberg. There are literally hundreds of two-way radio software application developers across the Asia-Pacific region alone, focused on developing business-specific applications across multiple industries, including transportation.

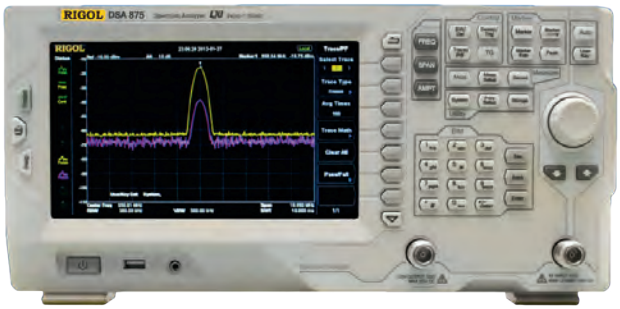
As apps continue to be developed, digital radios will increasingly be viewed as not just a complement to the smart device, but as the preferred communications tool in the transport industry.

And as has been the case with consumer electronics, the more powerful the applications become and the larger the application ecosystem grows, the greater the power of the digital radio.

These apps - and the increased focus on creating business-specific digital radio apps among software developers - promise to change the workplace in the same disruptive way the app store changed the mobile phone.

The transport industry is among those that will see the most significant disruption - in a good way - in the years to come.

Motorola Solutions Australia Pty Ltd
www.motorola.com/au



Spectrum analysers

The Rigol DSA800 Spectrum Analyzers Series enable precise direct measurements of higher frequency signals and systems, complete with built-in tracking generators. The ability to make measurements up to 7.5 GHz is critical for seeing third harmonics of 2.4 GHz wireless designs, while resolution bandwidth settings down to 10 Hz means precise visualisation of low-power RF signals.

Features include a VSWR measurement toolkit for configuring and evaluating antennas and an advanced measurement kit that enables additional measurement functions such as channel boundaries and signal-to-noise ratio. Accessories include the 8 GHz VSWR bridge or directional coupler and attenuator sets for higher power work (6, 10 or 30 dB high-power attenuators).

The EMI-DSA800 option provides EMI RBW settings, as well as a quasi-peak filter across the entire spectrum of interest for compliance and immunity testing. Low power issues can be investigated by adding an optional preamplifier. The displayed average noise level (DANL) normalised to 1 Hz is specified as low as -161 dBm (typical) from 5 MHz to 3.2 GHz.

Whether debugging an RF transceiver set, designing layout and configuration changes to maximise efficiency or testing a system in noisy environments, the analysers help to quickly and easily identify and analyse areas of RF concern.

Emona Instruments Pty Ltd
www.emona.com.au

Vector network analyser

The Rohde & Schwarz ZND vector network analyser features two test ports, and the base unit is designed for unidirectional measurements from 100 kHz to 4.5 GHz. Its easy-to-use options provide for flexible upgrades. The frequency range can be extended to 8.5 GHz, plus the instrument can be equipped for bidirectional measurements up to 4.5 or 8.5 GHz. These functions can be locally activated.

The analyser is suitable for production-line measurements such as characterisation of passive mobile phone components, enabling users to easily measure S-parameters such as S11 on antennas or S21 on filters. The device offers a specified dynamic range of up to 120 dB and a specified power sweep range of up to 48 dB. Options for time domain measurements, general-purpose interface bus and a parts handler interface are also available.

The analyser's 30 cm touch screen and intuitive user interface make it easy to configure measurements and analyse results. All instrument functions are accessible in no more than three operating steps via the soft panel. A toolbar and drag-and-drop functionality allow users to configure the unit very quickly, and touch-screen tabs make it simple to switch between instrument set-ups. Traces and channels can be arranged in any desired combination, enabling users to display results in a clear and straightforward manner, even for complex measurements.

Rohde & Schwarz (Australia) Pty Ltd
www.rohde-schwarz.com

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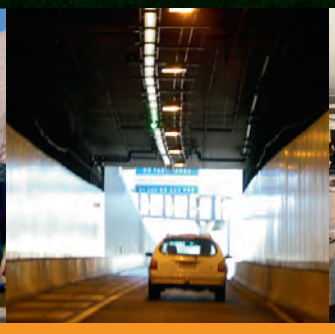

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Industry Talking

I would like to congratulate all the ARCIA members who helped to organise the annual Gala Dinner in October. The event brought together the industry in glittering fashion at the Melbourne Convention Centre and close to 500 people enjoyed dinner, industry awards and guest speakers. The awards continue to be popular and I would encourage all members to submit their candidates in 2015. This is a great way to receive industry recognition and to reward the dedicated efforts that people put into their work.

The dinner was held in conjunction with Comms Connect. I particularly enjoyed this year's program with many excellent speakers covering a range of topics. The presentation from the Victorian Department of Justice on the Emergency Call Alert system was excellent and really showed how well technology can be used. Public safety is such an important aspect of what our industry is about and it is tremendous to see such great innovation in action.

During November, ARCIA was asked to host a delegation from China and several ARCIA committee members gave up their time to present on behalf of our organisation. It is important that we continue to promote what we do, so a big thank you to those members who took this task on. Feedback from the organisers indicated that the visitors appreciated our efforts, which gave them a better understanding of the radio communications industry in Australia. They were surprised to learn that ARCIA does not receive any government funding and is supported only by its membership.

During the past few months ARCIA has been busy engaging with the ACMA and stating our case on a number of issues. I am pleased to report that the considerable effort the committee has been putting into this is paying off. The resulting lines of consultation between ARCIA and the ACMA have never been stronger and we will continue to keep growing this very important relationship. During Comms Connect an update from the ACMA provided an insight into the changes that are taking place and it is very refreshing to see the ACMA actively engaging with our community.

Members should pay special attention to Milestones 2 and 3 of the 400 MHz band plan and the changes that are required by government users to comply with harmonised government spectrum (HGA) rules. There will continue to be shifts for these users from commercial spectrum to HGA and members need to be aware that standard 450-520 MHz equipment may not be compatible. If any members come across issues regarding the changes required or problems from the agencies involved, then keep ARCIA involved and we may be able to assist or negotiate suitable outcomes.

Finally, by the time you read this the long-awaited ARCIA economic study will be officially released. ARCIA has gone to a lot of effort to make an impact with this report and get the information to the right people. The bottom line is that this report confirms what we all know but others seem to overlook. Our industry is active, is important and creates tremendous value in our economy, with a 'social benefit' ten times greater than the economic benefit.

Hamish Duff, President
Australian Radio Communications Industry Association

Horn antenna

Available to rent, the AH Systems SAS-200/571 Horn Antenna is designed for use at UHF and microwave frequencies above 700 MHz.

Applications include the calibration of other antennas, as a directive antenna for devices such as automatic door openers or as a feeder (or feed horn) for larger antenna structures. The double-ridge guide horn antenna also comes with an N-type (F) connector.

Features include: 700 MHz to 18 GHz frequency range; 300 W continuous power; 50 Ω impedance; 200 V/m maximum radiated field.

TechRentals
www.techrentals.com.au

Microwave test system

Aeroflex has announced a high-frequency extension for the 7700 Integrated Microwave Test System, boosting frequency coverage from 6 to 26.5 GHz and addressing a growing need for a compact, economical, high-frequency benchtop microwave test system.

The 7700's synthetic architecture and building-block modular design enable faster measurement throughput than with conventional instrument-based systems while also providing improved flexibility and enhanced configuration options.

The 7700 comes standard with several built-in measurements, test executive software and reporting tools to accelerate automated test development.

Aeroflex Incorporated
www.aeroflex.com

Multi-octave spiral antenna

Steatite Q-par Antennas has released an ultrasmall multi-octave wideband 1-18 GHz left and right hand circularly polarised spiral antenna, suitable for applications where space and gain requirements are at a premium.

At a diameter of 78 mm, the antenna provides good return loss; gain and axial ratio over the full 1-18 GHz operational band; and suitability for satisfying challenging applications including ELINT and COMINT systems, radar warning receivers systems and spectrum management antenna arrays.

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News

TAIT TO INSTALL DMR TIER 3 FOR MANITOBA HYDRO

Tait Communications has won a multimillion-dollar contract to supply Manitoba Hydro, the Canadian province's major energy utility, with an 80-site trunked DMR Tier 3 VHF network. The deal includes the supply of more than 3700 Tait 9300 portables and mobiles over the three-year project. The Tait solution includes approximately 40 Zetron Acom dispatch consoles as well as Eventide recorders. Both Zetron and Eventide are certified with Tait's Endorsed Technology Partner program. Tait will also provide 24/7 support services for Manitoba Hydro through its Service Advantage Program.

More info: bit.ly/1tZvir5

ETHERSTACK'S US GOVT WIN

Etherstack has won a contract to supply a trunked P25 network to the Naval Reactors Facility (NRF) near Idaho Falls in the United States. The network's ISSI and CSSI capabilities will enable the NRF to connect with neighbouring public safety radio networks, enabling communications between users on both networks. The CSSI capability gives the NRF a choice of dispatch console suppliers now and into the future, avoiding vendor lock-in. Etherstack's reach in the US has been growing, with a North American client base that reaches into Canada.

More info: bit.ly/1xqhYga

ESTA AUDIT

An audit by Victoria's Auditor-General has found that the state's Emergency Services Telecommunications Authority (ESTA) dispatch system is working well in most respects but still has issues to solve. The audit assessed how ICT systems and processes are used to deliver an emergency service response. The audit found that when all systems are working, ESTA is meeting call-taking standards but is consistently failing to meet its emergency ambulance dispatch standards. It found that when the computer-aided dispatch system fails, the backup manual card-based process is inadequate.

More info: bit.ly/1xkFASe

Rugged tablet computer

The ultra-thin and lightweight Panasonic Toughpad FZ-G1 is a fully rugged 10.1″ tablet running Windows 8 Pro and is designed for highly mobile field workers.

Powered by a third-generation Intel Core i5 vPro Processor with an all-weather IP65 dust and water-resistant design, the tablet has a WUXGA daylight-readable, 10-point multi-touch and digitiser screen, making it suitable for mobile field workers in hazardous and non-hazardous environments - even for those who work in the rain and wear gloves.

Toughpad G1 tablets have been engineered to not only withstand the hard knocks of life on the road, but to operate flawlessly in intense sunlight and heat, as well as in dusty and dirty environments, pouring rain and freezing temperatures.

ATEX zone II and IECEx certified, the unit weighs 1.08 kg (without pen), has a battery life of approximately 8 h and is supplied with Windows 7 pre-loaded (Win8 ready).

CSE-Uniserve Pty Limited

www.cse-uniserve.com.au

RoIP gateway

Zetron's RoIP (Radio-over-IP) Gateway is designed to transport analog wireline two-way radio control circuits over IP networks. Each RoIP Gateway connects to one (Model 6301) or two (Model 6302) radio circuits, and each circuit supports analog audio, binary control (PTT & COR) as well as RS232 serial data.

The analog audio is field-selectable between a balanced 4-wire connection suitable for most fixed station radios, and unbalanced transmit and receive audio suitable for direct connection to most mobile radios.

In many cases, a mobile radio's programming and/or control head serial data can be transported over IP as well. A pair of RoIP Gateways is thus able to transport one or two analog radio circuits across an IP network.

Product features include: transports voice (3-wire unbalanced or 4-wire balanced), I/O (PTT & COR) and data (RS232) for up to two radio circuits; handles Tone Remote Control (TRC) and Local/E&M radio circuits; remote PTT operation controlled by VOX or COR; use of TCP and Unicast UDP allows operation over standard IP networks; and compatible with many IP-based RTP voice recorders.

Other features include: field-selectable voice compression includes PCM (64 Kbps) and ADPCM (16-32 Kbps); fully configurable via web browser, including all audio levels; embedded operating system, and no moving parts; designed for harsh, unattended radio site environments; optional 1U x 19″ rack mount for two units; operates from 12 VDC; optional direct, built-in support for the Department of Homeland Security (DHS).

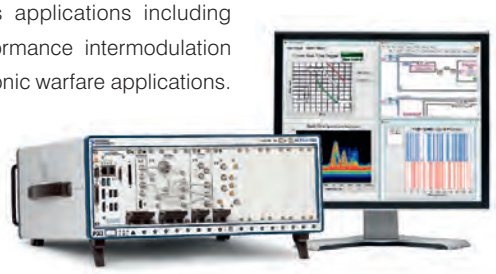
Zetron Australasia

www.zetron.com

Signal generator

The small-form-factor National Instruments 20 GHz PXI continuous wave signal generator features a combination of exceptional phase noise and fast tuning time (100 μs).

The fast-tuning instrument addresses applications including blocking/interferer generation, high-performance intermodulation distortion test benches and various electronic warfare applications. It complements the company's modular instruments and expands the measurement capabilities of the PXI platform.



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PIM Master™

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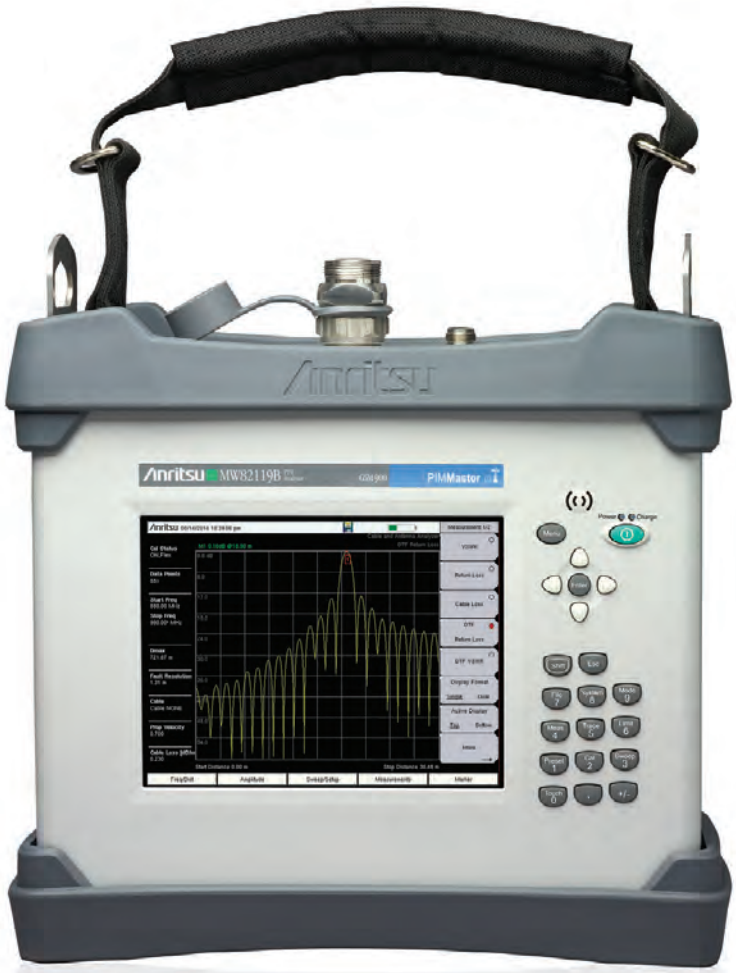

Full certification just got lighter!

Introducing a handheld PIM, cable and antenna analyzer all in one box.

Anritsu's PIM Master™ B-series is a 40 Watt, battery-operated PIM analyzer featuring line sweep capability. With the Site Master™ option included, the PIM Master is able to fully certify cable and antenna system performance, measuring PIM, Distance-to-PIM, Return Loss, VSWR, Cable Loss and Distance-to-Fault with a single test instrument.

Learn more: www.anritsu.com/en-US/PIMMaster

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HIGH-OCTANE RADIO

Digital, noise-cancelling, encrypted radios are giving Team Kiwi Racing the winning edge.

For the second year in a row, Icom New Zealand is providing a customised digital communications solution to Team Kiwi Racing (TKR) for the 2014-15 New Zealand V8 Touring Cars race season.

Reliable communication between drivers, pit crew, engineers and other staff on race day is vital to ensuring that all departments work in unison to maximise every opportunity to gain track position for the team.

Previously, TKR's analog radio system experienced ongoing problems on and off the track, with coverage being an issue on a number of circuits due to dips in the terrain. Background noise was another problem - a racetrack is a high-noise environment.

TKR is now equipped with six Icom IC-F4161DSs, which meet military specifications and are able to withstand the harsh and demanding environment inside a V8 touring car and in the pit stop area. The units have built-in noise cancellation, which makes communication much clearer. And race strategy and plans remain a secret thanks to built-in encryption.

The switchover from analog to digital was done in between race seasons, but in effect was very simple as the digital radios also operate in analog mode if required, so very little work was needed. All existing antennas and accessories were compatible.

The radios are deployed both in-car using a custom wiring loom and car kit to allow hands-free use and integration into the drivers' helmets, and also by the team management to talk to the drivers and the pit crew.

The car radios are off-the-shelf units and were installed by TKR. The pit equipment too is off the shelf and worked straight out of the box with standard accessories.

The radios have been set up to allow a range of talk groups or for everyone to hear each other in one large group.

David John, TKR owner and director, says that he is very pleased with the clarity and dependability of the radios.

"A high-octane industry like this requires split-second decisions to be made, which can win or lose you a race. It is important that a team invests in the best equipment possible to maximise their potential," says John. "We will be using Icom exclusively to train our up-and-coming drivers as part of TKR's Development Academy as well."

The 2013-14 season left TKR glowing with numerous highlights. One of its drivers won Rookie of the Year and throughout the season the team achieved plenty of podium results, with races won and multiple rounds won outright. At the biggest race meeting of the year, Bathurst, Mount Panorama, TKR impressed with three wins from three starts.

Such success has put a stop to claims that the Doppler effect would cause problems when the cars travelled at speed. "Icom's digital radios have proved themselves to be totally reliable at all times and we have never encountered any disruptions, even when going full speed around the Adelaide Clipsal 500 street circuit or over the top of Mount Panorama, Bathurst," says John.

Thanks to the digital switchover, Icom's radios provide TKR uninterrupted, crystal clear coverage, even while going at speeds of up to 300 kilometres per hour.

Of the successful 2013-14 race season partnered with Icom, John says, "The high quality and reliability that Icom is renowned for ... aided in the team's victorious season in the Porsche Carrera Cup. We are confident that with Icom's ongoing partnership we will see the same results in this year's New Zealand motorsport arena."

Icom New Zealand
www.icom.co.nz

Portable multifunction calibrator

GE Measurement & Control has announced the DPI 620 Genii that combines comprehensive, multifunctional test and calibration capabilities with digital HART and Foundation fieldbus communication in a single handheld device. The device integrates with calibration and maintenance software, so that calibration and configuration data is available from the field devices through to ERP. The device is designed for use in the process, chemical, petrochemical, oil and gas, pharmaceutical and power-generation sectors.

The DPI 620 can measure and simulate the electrical parameters, temperatures and frequencies that are associated with the majority of process instrumentation. A modular tool, its duties can be expanded by the addition of a flexible pressure system. This comprises a range of 32 high-accuracy pressure measurement modules with ranges from 25 mbar up to 1000 bar; three pressure-generating stations so that pressure can be generated pneumatically from 95% vacuum up to 20 to 100 bar, and hydraulically up to 1000 bar, which solves the transportation and EHS issues of using gas bottles and regulators.

The HART and Fieldbus communication capabilities allow configuration, commissioning and calibration of digital devices. With built-in libraries of all 1300 registered HART and 600 Foundation fieldbus device descriptions, Genii can view, change, clone and store device configurations, even offline. Analog variables can be measured and sourced without the need for secondary calibration equipment and Genii provides its own 24 V loop supply and contains an integral 250 ohm HART resistor.

GE Measurement & Control

www.ge-mcs.com

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News

AIRWAVE'S DUBAI OFFICE

Airwave has opened a Middle East office in Dubai in the United Arab Emirates, its fourth country-based bureau. "The opening of the Dubai office is in response to increasing demand for our expertise and knowledge in building, maintaining and operating Airwave's Emergency Services Network (ESN) in Great Britain. The office will serve as a hub to advise Middle Eastern customers on mission-critical communications," said Mike McKone, director Middle East, Airwave. Dubai is the fourth country (the others are Australia, Germany and Great Britain) in which Airwave has established a presence.
More info: bit.ly/1zdY7jH

OPTUS 10 SETTLES IN

Optus has completed the on-orbit testing of its latest satellite, Optus 10, which is now being moved to its operational geostationary orbital position. Geostationary communications satellites generally are initially placed into temporary locations while post-launch testing is completed, before being allowed to 'drift' to their final orbital slots. The on-orbit tests were conducted using Optus ground stations in Sydney, Canberra and Perth. The Optus 10 payload's flexibility means it can operate in either the Ku Fixed Satellite Services (FSS) or Broadcast Satellite Services (BSS) bands.
More info: bit.ly/1twplHm

SOLAR-POWERED TOWER

BAI's Muswellbrook broadcast tower has turned its back on traditional energy, going off-grid to run entirely on solar power thanks to the introduction of advanced battery storage technology. Photon Energy has designed and delivered the project in association with the German Energy Agency Deutsche Energie-Agentur GmbH (dena) and BAI using predominantly German technology. The pilot project ensures solar power is captured via 215 kWh of battery storage during daylight hours, enabling a constant 24-hour power supply to the commercial site.
More info: bit.ly/1GGfXR6

Docking station

Beam Communications' BEAM IsatDock2 docking stations for the recently released Inmarsat IsatPhone satellite handset are Inmarsat approved and come in four types - maritime, vehicular, in-building, and a low-cost universal solution.

The docking stations enable the use of satellite handsets to be extended to applications where normal handheld services are limited or impractical.

Beam Communications Pty Ltd
www.beamcomm.net

System combiner

The RFI Wireless MiniSystem Combiner (MSC) is a compact multichannel combiner system that provides a convenient, easy-to-deploy RF combining solution compatible with both analog and digital radio technologies.

The MSC is a 'building block' product that enables one or more channels' TX and RX frequencies to be combined and connected to an antenna system.

An affordable option, the MSC is versatile and suitable for radio systems in many markets - from shopping centres and large warehouses, to shipping ports and oil rigs. The MSC is easy and quick to deploy, with a plug-and-play set-up that can be installed into existing radio systems. It mounts easily into 3RU 19″ rack mounts with rear accessibility.

RFI
www.rfi.com.au

Smart antenna

The TW5340 smart antenna pairs Tallysman's Accutenna technology antenna with STMicroelectronics' Teseo II receiver. This combination makes the product suitable for use in every environment, including urban canyons.

The multi-constellation GNSS smart antenna provides simultaneous GPS/GLONASS/SBAS reception. It is designed for use in professional-grade applications such as precision timing, network synchronisation, low-current applications and tracking/positioning applications.

The device supports ST Microelectronics Autonomous A-GPS, which accelerates GPS positioning by predicting satellite ephemeris data, based on previous observations. This results in very fast time-to-first-fix.

The antenna can be configured to output up to three NMEA 0183 message lists with navigation update rates up to 10 Hz. RS232, CMOS and USB interfaces are available with input voltage options of 3.3, 5 and 12 V. The standby mode provides for very low current consumption (<100 uA) and is particularly useful in battery-operated applications.

A standard 1PPS synchronised to UTC time is available as a single-ended output or as a differential output at RS422 levels. Tallysman's Windows-based Configurator enables simple configuration of parameters such as baud rates, output message rates, constellation, tracking parameters, 1PPS configuration and standby mode parameters.

The product is housed in an IP67 housing and is REACH and ROHS compliant. A non-magnetic version is also available as Part Number TW5341.

M2M Connectivity
www.m2mconnectivity.com.au

THE CONNECTED COUNCIL

Liverpool City Council's multipurpose CCTV and Wi-Fi network promises to improve community safety and increase council efficiency.

Liverpool, in Sydney's southwest, is the fastest growing city in NSW. Its current population of nearly 200,000 is expected to almost double over the next 10 years. Safety and amenity are crucial elements in Liverpool City Council's strategy and vision for a more vibrant and safer city for everyone to enjoy.

For the council to achieve its aspirations, it needed to promote a more vibrant city centre; one that is active, safer - particularly at night - and better connected.

As Liverpool City Council (LCC) acted on its vision, it secured federal funding for a CCTV and free Wi-Fi network to support redevelopment and re-urbanisation initiatives in the CBD.

Liverpool Police Commander Peter Gillam said the city's new CCTV network would help police monitor public safety hotspots within the CBD: "It will provide 24-hour recording of local streets, retail precincts and parks across central Liverpool and act as a valuable deterrent against all types of antisocial behaviour."

Ned Mannoun, Liverpool City Council Mayor, explained: "It was important that we commissioned a quality, reliable and value-for-money system. With this in mind, Council undertook an extensive tender process, evaluating 10 submissions."

Scalable platform

The high-profile project was awarded to SAT to design, supply, install and service. SAT is an Australian-owned and -operated radio-communications consultancy and engineering specialist.

SAT proposed a turnkey solution, described by its director, Dale Stacey, as being "futuristic and robust, as its innovative ringed topology delivers a highly resilient network".

"Where it stands out is that its design and extremely high bandwidth have resulted in much broader benefits than just safety. Within the budget, it will meet the future requirements of Council - it's about forward thinking, flexibility and scalability."

The network comprises five 1 Gbps microwave radio rings - based on 25 of NEC's latest high-capacity, e-band iPasolink EX Microwave units - that link 30 cameras, the police station, Council's administration building and more than 60 Wi-Fi access points.

"What made this quite a complex architecture was the number of elements and sub-systems that had to integrate with the NEC common platform," said Stacey.

This project is based on the new IEEE-802.11ac standards, which deliver, at 300 Mbps, the latest mobility and mapping features required to meet the growing connectivity expectations of users. The radio platform is scalable to 2 Gbps enabling Council to double its capacity without changing hardware.

Until now, it has been the ongoing OpEx rather than the upfront CapEx that has constrained the uptake of networks such as LCCs. The NEC e-band solution operates in a specific, self-regulated frequency that attracts only a low-cost ACMA licence of a mere $20 per month, per link.

Stacey endorsed the NEC microwave units as "coming from a very reliable pedigree and, combined with the support of NEC's knowledgeable technical people, they provide the perfect backbone for this application".

All-in-one solution

The project has delivered three channels of simultaneous customer traffic - CCTV, Wi-Fi and Council corporate data - over the same private backhaul network. This 'three for the price of one' solution has succeeded in driving down the per-unit lifecycle cost.

"We have multiple channels all within the cost of a single piece of infrastructure. The project meets all the criteria for responsible investment by Council and our aim to build a tech-savvy city for the future," said Mannoun.

This is one of the first integrated Wi-Fi and CCTV solutions in Australia and certainly one of the most advanced. As a state-of-the-art crime-fighting tool, it allows easy monitoring by police and other authorities. Its surveillance capacity is also expected to reduce vandalism with the flow-on effect of cutting Council's security and maintenance costs.

The adaptive modulation of the NEC radio equipment results in smaller dish and antenna size. This provides not only infrastructure cost savings but also reduces wind load and, thereby, the force on rooftops and poles for better safety, as well as the highly sensitive issue of visual impact.

This standard, repeatable configuration makes it a low-risk solution that is extremely strong from both a management and maintenance perspective. "Collectively, between LCC, SAT and NEC, we've created an all-in-one solution to take to other councils and enhance the amenity of communities around Australia," said Stacey.

NEC Australia
www.nec.com.au

UV-stable IP66 enclosures

ROLEC has launched the technoPLUS IP66-rated enclosures, offering the technical features of its diecast aluminium boxes in a range of UV-stable plastic housings. The series is manufactured from ASA Luran so it does not degrade in sunlight, making it suitable for outdoor applications such as base stations, monitoring equipment and detection equipment.

The range has been developed with an optional mast/pole attachment, enabling it to be installed quickly and easily on lamp posts, poles or communications masts. Each enclosure is pre-moulded with screw ports at the rear for fitting the mast attachment so no machining is needed.

Hinged lid trims hide all the mounting and fixing screws for security and weather protection. The lid is recessed to enable accurate assembly of a membrane keypad or label. Retaining straps hold the lid in place and the enclosure can be installed with the lid closed, helping to protect any fragile electronics inside.

The enclosures are available with IP66 or IP67 protection ratings and in five sizes ranging from 130 x 90 x 70 mm to 270 x 170 x 90 mm. Case parts are moulded in UV-stabilised ASA Luran with a 2° mould slope for casting ejection. They are fully insulated.

Standard colours are light grey with stone grey plastic polyoxymethylene lid trims. The pole/mast attachment is ASA Luran, stone grey. The standard gasket is silicone (-50 to +140°C) and an EMC gasket (-55 to +160°C) is also available.

Accessories include the mast/pole attachment and an internal mounting plate. Customisation options include CNC milling and drilling; and silk-screen and tampo printing of legends and logos.

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Simulation software

MathWorks has announced the latest version of MATLAB, which includes an updated graphics system, big data capabilities and improved collaboration features for packaging and sharing code and for source control integration. With these capabilities, engineers and scientists in major industries can more easily analyse and visualise their data.

The updated default colours, fonts and styles in the graphics system make it easier to interpret and gain insight from data. New syntax for changing properties of graphics objects makes it simpler to customise visualisations. Other features include rotatable tick labels, support for multilingual text and symbols, and automatic updating of date and time tick labels.

Additional big data capabilities provide efficient ways to process data sets that don't fit into memory. These include simplified ways to access and analyse big data text files and databases, and support for the MapReduce programming technique. These capabilities also scale for use on big data platform Hadoop.

The software offers Git and Subversion source control system integration through the Current Folder Browser, including the ability to sync from web-hosted repositories such as those on GitHub. Custom toolboxes can be packaged as single, installable files. This makes it easier to distribute install and manage the shared code.

MathWorks Australia

www.mathworks.com.au

802.11n WLAN solution

Moxa's AWK-1131A is an 802.11n wireless AP/client that features a smaller housing with advanced protection technology, making continuous wireless connections a reality for industrial applications. It is designed with galvanic isolation technology to protect devices from the electrical disturbances commonly found in industrial environments. In addition, it supports 802.11n MIMO technology to reduce multipath effects and increase data rates up to 300 Mbps for bandwidth-hungry applications, and features millisecond-level roaming to minimise packet loss for seamless connections with mobile applications.

The 802.11n technology used in the series is suitable for video surveillance applications that require up to a 300 Mbps data rate and Gigabit wired transmissions. With the release of the series, the company now offers a comprehensive range with both single-radio and dual-radio IEEE 802.11n industrial wireless solutions for the bandwidth-hungry systems found in industrial applications.

Madison Technologies

www.madisontech.com

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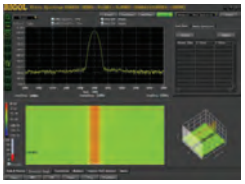

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EMONA

RURAL RADIO

Jonathan Nally

Firefighters in country Victoria now have access to a digital radio system.

In May 2013, Telstra won a contract from the Victorian Government to roll out a new radio network - the RMR, or Regional Mobile Radio network - for the Country Fire Authority (CFA), to replace the analog system that had been in use. The RMR network is owned and operated by Telstra and runs base station sites equipped with Motorola P25 equipment.

The primary aim of the RMR, which went live earlier this year, is to connect all of the regional fire brigades back to the Emergency Services Telecommunications Authority (ESTA), which operates the triple-zero dispatch system.

Telstra also owns and operates the Statenet Mobile Radio, or SMR, network, which uses TaitNet MPT hardware. The SMR network has multiple users, including Victoria Police, Ambulance Victoria, the Department of Environment and Primary Industry, as well as the SES and other agencies.

"We've been running SMR for a couple of decades," said Daniel Chivell, Telstra's System Architect for Managed Radio in Victoria. "We run the Emergency Services Managed Radio side of the Telstra business, and we look after most of the emergency services voice comms in country and regional Victoria."

While there are already around 120 sites in the SMR network, the addition of the RMR network brought the total to almost 200 sites.

"We had the SMR network and we knew what the coverage was from those sites," said Chivell. "But because of the new P25 base stations, we needed to survey each of the sites to demonstrate the required service performance levels.

"We have very sophisticated radio coverage prediction tools. And so we had predicted what coverage we would get from each site and then the combined coverage across the state," said Chivell. "We then had to prove that what we had built was what we had promised the customer."

Unprecedented scale

The Wireless Network Engineering team needed to survey not just the signal strength but also the voice quality, a bit error rate, from multiple sites at once. They needed to survey the sites over a period of only a couple of months, which required the teams to drive tens of thousands of kilometres through country Victoria.

"We set up a standard car that we calibrated with an antenna in exactly the right spot, according to our agreed testing methodology," said Chivell. The base stations are Motorola equipment and Tait radios were used in the survey vehicles.

"We had up to three survey cars out at any one time," said Chivell. "We even had to have multiple shifts of drivers, because you only have a small amount of time between when your sites are built and when you have to have them completed by."

The teams began surveying in December 2013 and finished at the end of May 2014.

So how did it go? "Very, very well," said Chivell. "It was the first time anyone in the world had surveyed a P25 network on this scale. Normally, when people survey networks they do

> IT WAS THE FIRST TIME ANYONE IN THE WORLD HAD SURVEYED A P25 NETWORK ON THIS SCALE. NO ONE HAD SURVEYED ON AN ENTIRE STATE LEVEL BEFORE.

one site at a time, or small counties and districts. No-one had surveyed on an entire state level before."

Chivell has high praise for the survey team. "The Drive Survey team was managed by a very capable graduate engineer, who became known simply as 'The Stig'," said Chivell. Overall, they visited hundreds of CFA fire stations, endured five flat batteries, three breathalyser stops, one flat tyre and far too many coffees and bacon and egg muffins.

Software saves the day

To ensure the networks were surveyed to the required standard and completed on time, Telstra enlisted the aid of a US company called Survey Technologies Inc (STI), which produces network survey software.

"A few years ago, I was at the Comms Connect exhibition hall and bumped into STI and saw their software," said Chivell.

STI's software had the ability to measure up to four sites at a time, but Telstra needed more than that. The CFA network comprises 16 districts, and they needed to survey entire districts at once. Each district could be served by over 20 individual sites.

"We didn't want to have to drive the same road multiple times, as one road might be served by three or four sites," said Chivell, adding that historically it had been easier with the SMR as "we'd only ever surveyed one site at a time, because we had built it over such a long period of time".

So Telstra went back to STI and asked them to develop a BSQM, a best server quality measurement. With BQSM, one of the radios was set to scan up to 20-plus sites and find the top three strongest channels. The system then assigned those channels dynamically about every second to three other radios. Those three radios would then simultaneously survey the three sites.

"What that enabled us to do was we could drive down a road knowing that we had one radio that was looking at all of the sites in the district that we needed to survey, and at every moment picking the top three," said Chivell.

"We would set the base stations to broadcast a digital test pattern. Being a digital network, we had to measure a bit error rate from the sites - so while the first radio was doing a fast scan, the other three radios were measuring the bit error rate because that takes more time and calculations."

Having STI based in Oregon was no impediment to their support of the equipment. "We had several times when we required assistance configuring the gear. We were able to set up a remote desktop session between the computers running the survey gear and STI. We'd organise a hook-up at 8 am our time, which was afternoon their time, and they'd log on and take direct dumps of the error messages and give us the solution the next day," said Chivell.

"There are various case studies of what other people have done elsewhere in the world, and as far as we can tell, nobody had ever surveyed a P25 system on this particular scale before," said Chivell.

A couple of thousand kilometres north, Telstra was working on another similar network.

"They had the same problem as us - they needed to survey quite large areas in a short amount of time," said Chivell. "The guys up there used the same survey gear. Even though it's a UHF network and has some slightly different parameters, they were able to use the same STI survey gear with a few tweaks."

The end result

Improving CFA communications was a key recommendation of the Victorian Bushfires Royal Commission.

With more than 60,000 members - 98% of whom are volunteers - the CFA is one of the world's largest volunteer organisations. Prior to the establishment of the RMR, 45% of its brigades could not directly contact ESTA and had to relay messages through base station operators.

The new system "will allow brigades to speak directly from the fireground with emergency call centre operators at the three State Emergency Communications Centres, reducing the risk of communication failures and improving safety for both CFA members and the public," said the Victorian Minister for Police and Emergency Services, Kim Wells.

"It will also improve communication between agencies such as Victoria Police and Ambulance Victoria and ensure a consistent approach for the dispatch of CFA brigades and Vic SES units."

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UHF CB radios

The GME TX665 and TX675 lightweight and compact UHF CB handheld radios offer high range coverage with a choice of 1 or 2 W performance providing up to 10 km range, making them suitable for communications when mobile phone reception is not available.

In addition to providing rechargeable lithium batteries, with up to 14 hours of operation, the radios have USB multi-charge with charging accomplished in as little as 4 h. The USB charging options include direct charge into the radio using the USB power supply, via the twin desktop charger or via the 12 V vehicle charger, all supplied. Alternatively, users can utilise any powered 5 V USB socket as a charge source.

There is the ability to customise the TX665 with a choice of interchangeable colour fascia covers. The unit comes standard with a vibrant lime green, while an optional three pack is available offering pink, yellow and grey.

Standard Communications Pty Ltd
www.gme.net.au

PCB design software

Altium Limited has announced the upcoming release of its PCB and electronic system level design software, Altium Designer 15, which introduces support for both IPC-2581 and Gerber X2, keeping designers up to date while giving them a choice that broadens their selection of PCB fabrication partners.

The support for IPC-2581 and Gerber X2 resolves issues of ambiguous or missing data encountered when using older formats such as Gerber RS-274X to hand off design to fabrication, completely describing a PCB according to its design: copper layer images; plated and unplated holes, slots, routes, grooves and microvias; PCB design outline and cutout regions; complex layer stack regions; rigid and flexible board areas; material specifications; fabrication notes, tolerances and other critical standards-compliance information.

With Altium Designer 15 a new Pin Pairs feature has been added to: enable accurate length and phase tuning across termination components; enable length, phase and delay tuning traversing an entire signal path. Designers will no longer require external software or have to maintain complex lists of signals and nets, but instead will be able to plan and route groups of high-speed nets with much greater efficiency and accuracy.

Altium Limited
www.altium.com

Digital oscilloscope

Available to rent, the Fluke 199C is a handheld, 200 Mhz, two-channel colour digital oscilloscope with built-in digital multimeter and recorder. It is designed to simplify testing in challenging industrial environments.

The portable unit features isolated inputs, automatic and external triggering, as well as a full range of manual trigger modes. The 14.4 cm colour display includes persistence functionality for analysing complex, dynamic signals in a manner similar to that of an analog oscilloscope. The device can also measure electrical power properties such as VA, VAR, etc.

Features include: automatic capture and replay of last 100 screens; timebase range in scope mode 5 ns/div to 2 min/div; input sensitivity 5 mV/div to 100 V/div; 2.5 GSa/s real-time sampling.

TechRentals offer a set-up and download service for this product.

TechRentals
www.techrentals.com.au

Radio remote control range

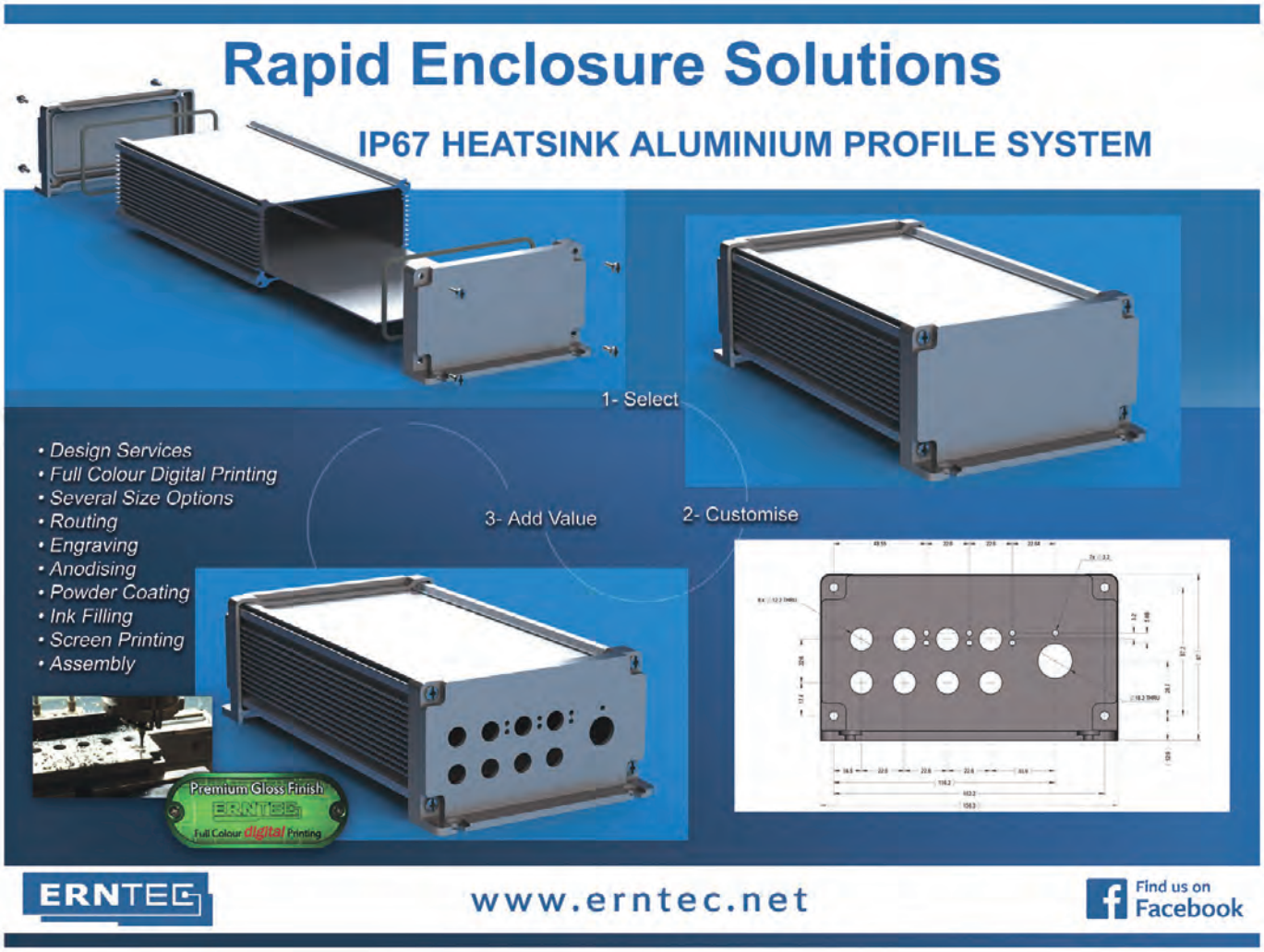
The SAFIR range of radio remote controls from Jay Electronique consists of two families of handheld controls, 'Beta' and 'Gama', and two Bellybox families, 'Pika' and 'Moka'. All of these families can be configured to offer varying combinations of buttons, switches or joysticks to meet the needs of the application.

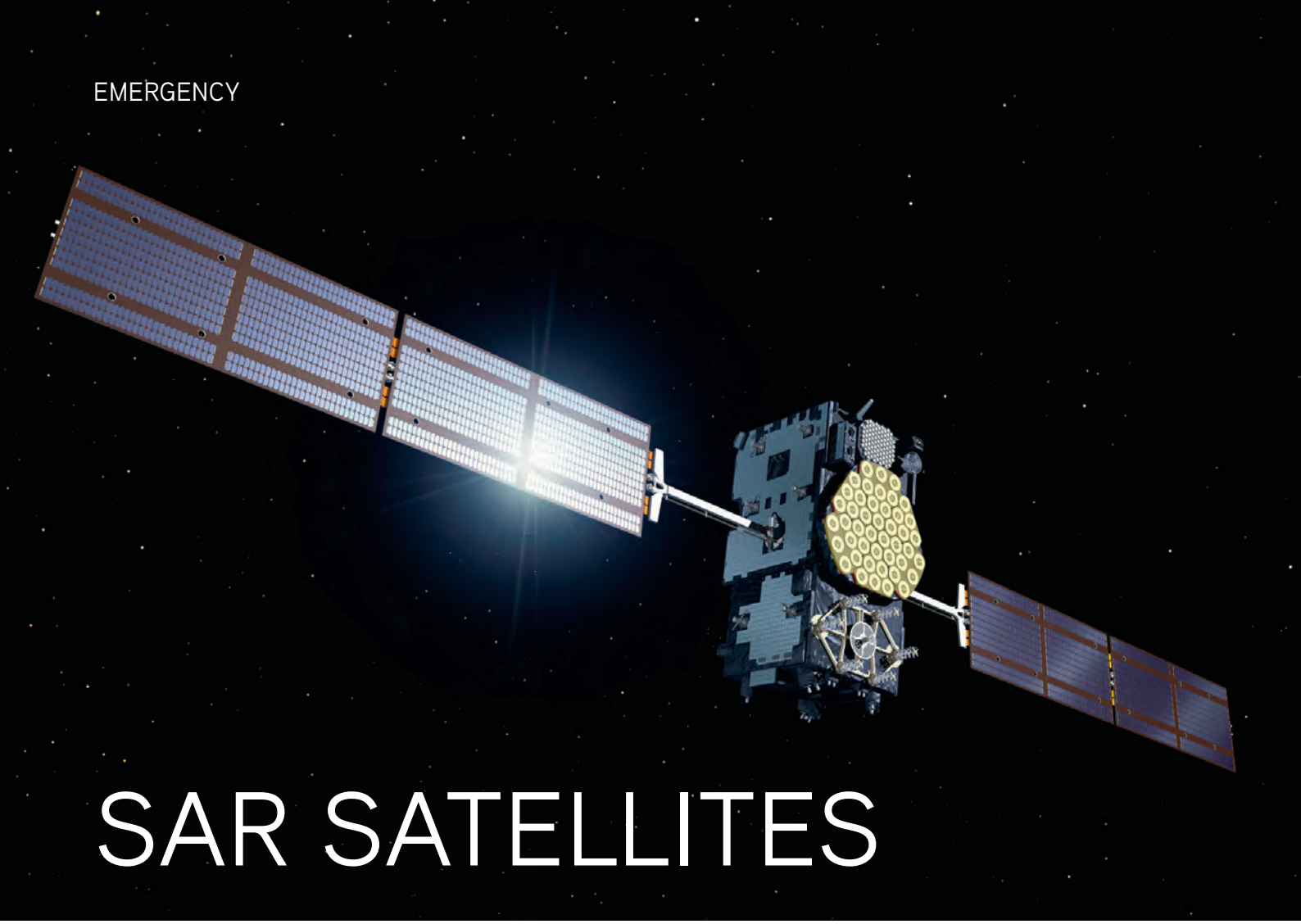
Standard on all SAFIR transceivers is a backlit, anti-reflection, LCD display able to indicate the battery charge level, the behaviour of the radio link, the name of the equipment being controlled remotely and feedback from the equipment such as weight of load, overload, limit switches, alarms or fault diagnostics. Navigation menus also allow users to configure the application, integrate a large number of functions or monitor a specific part of the equipment. Further customisation of logos and pictograms which appear on the screen is also available utilising the iDialog software supplied with each unit.

Safety is at the heart of the SAFIR product range with the emergency stop function certified SIL 3 (EN 61508) or PLe (EN 13849) and the standard function buttons, certified to SIL2 or PLd. Other options are available to enhance the safety of those applications that require it, such as infrared startup, action zone limitation, validation buttons or use in ATEX areas. Access to the radio remote control and certain functions can also be limited to authorised operators by password.

Control Logic Pty Ltd

www.control-logic.com.au





SAR SATELLITES

A trans-Tasman contract for new satellite ground stations and a new mission control centre will provide a major boost to the region's search and rescue capability.

Maritime New Zealand (MNZ) and the Australian Maritime Safety Authority (AMSA) have signed a contract that will provide a major boost to search and rescue (SAR) in the region.

The contract with McMurdo Group's Techno-Sciences Inc will improve the way emergency distress beacon signals are picked up and passed on to rescue authorities.

Two new satellite receiving stations will be built, one near Taupo in New Zealand and the other in Western Australia, along with a new mission control centre in Canberra, to pick up signals from Medium-altitude Earth Orbit Search And Rescue (MEOSAR) satellites.

MEOSAR satellites (orbiting at around 20,000 km above the Earth) are replacing the current Low-altitude Earth Orbit Search And Rescue (LEOSAR) satellites (orbiting between 800-1000 km), which are being phased out over the next four years.

Existing beacons, of which there are 46,000 registered in New Zealand, will not be affected by the change.

Six satellite dishes will be built at the New Zealand site, located mid-way between Taupo and Rotorua, with construction scheduled to be completed by the end of 2015. The receiving station is expected to be commissioned towards the end of 2016 and operational by 2017.

The New Zealand contract is made up of NZ$7.2m for construction of the receiving station and NZ$5.5m in operating costs over the next 11 years.

There are currently 16 MEOSAR satellites orbiting Earth, compared to five LEOSAR satellites, meaning beacon signals will be received more quickly and beacon locations identified with greater accuracy. This will further improve over the next five years as the number of MEOSAR satellites is expected to increase to more than 50, ensuring several satellites will be in view at all times from anywhere on Earth.

As with the LEOSAR system, beacon signals will be passed through the MEOSAR satellites to the two ground stations, processed through the Canberra mission control centre and relayed to the Rescue Coordination Centre New Zealand (RCCNZ), thus triggering SAR operations. The RCCNZ, part of MNZ, responds to around 550 beacon alerts each year.

"The joint investment by New Zealand and Australia in the MEOSAR project is another example of the close cooperation between our two countries in what is a vital area of operations," MNZ Director Keith Manch said.

"The change is necessary because without a medium Earth orbiting receiving station, New Zealand would effectively lose its ability to respond to distress beacons once the LEOSAR satellites are phased out. But the change brings with it significant improvements to search and rescue capability."

AMSA Chief Executive Officer Mick Kinley said Australia and New Zealand's ground stations would work cooperatively to achieve overlapping coverage of the two countries' search and rescue regions.

"This offers a high degree of resilience in the event of a system outage that would be expensive for either country to achieve alone," Kinley said. "AMSA is pleased to continue this collaborative regional approach with New Zealand."

New Zealand's search and rescue region extends from just below the equator to the South Pole, halfway across the Tasman, and east to halfway to South America.

Optical loss test set

Available to rent, the Fluke multi- and singlemode (CFP-Q-ADD) OLTS modules for the DSX-5000 measure fibre-optic attenuation, length and propagation delay.

Features include: built-in visible fault locator (VFL); provides tier 1 certification at 850, 1300, 1310 and 1550 nm in 3 s (for two wavelengths); a set reference wizard ensures correct reference settings and eliminates negative loss errors.

The set also provides automatic pass/fail analysis to industry standards or custom test limits. Other features include: interchangeable power meter adapters available for various connector types to enable the most accurate 1-jumper reference method; dual wavelength measurement capability on a single fibre; encircled flux compliant as required by ANSI/TIA and ISO/IEC.

TechRentals offers a set-up and download service for this product.

TechRentals

www.techrentals.com.au

Wireless battery monitoring system

The Ablerex Enerbatt 3G wireless battery monitoring system is based on short-range radio linking of individual battery block monitoring units, allowing battery characterisation and detection of incipient problems. Mature radio data transmission technology avoids cumbersome, problem prone and costly cable harnesses, and provides superior battery bank expansion flexibility.

The system provides one-second reports on battery impedance, voltage, temperature and string performance and monitors up to 4000 batteries, transmitting battery data via 2.4 GHz radio links with up to 50 m reach. Individual batteries in a string are monitored in one-second intervals by BMK monitoring units suitable for 2, 6 and 12 V. Individual battery voltage and temperature are transmitted by 2.4 GHz radio signal to BMS-RFR receiver.

BMS-HCT Hall-effect CTs monitor individual string currents (from 50 to 2000 A) and feed this information to BMS-SMK string measuring kits (one per string) measuring string voltage to 150 or 750 V. BMS-RFR receivers pick up the signals from battery voltage BMK monitoring units and BMS-SMK string measuring kits (up to 256 nodes).

The BMS-RFR receivers are daisy-chained to transmit their data to the BMS-DC-LCD data collector. With a 16 GB flash memory card and 7″ LCD touch screen, the data collector provides immediate supervision and can by connected via RS485 to supervisory computers.

Power Parameters Pty Ltd

www.parameters.com.au

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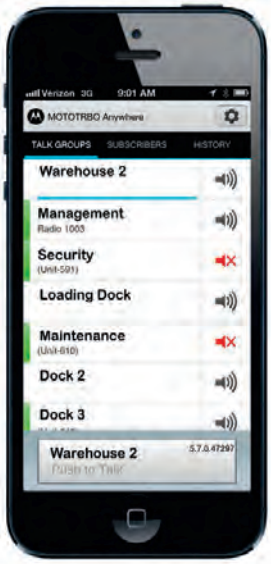

Radio software

Motorola Solutions' MOTOTRBO Anywhere takes two-way radio beyond the traditional push-to-talk functionality by enabling users to communicate with MOTOTRBO users and talkgroups from a smartphone or tablet.

MOTOTRBO Anywhere is built around a smartphone or tablet application, a network server and gateway, and provides the flexibility to go further, react faster and reach more people.

A typical scenario would be a supervisor heading home after a shift and needing to continue to monitor operations when outside the MOTOTRBO coverage area. With MOTOTRBO Anywhere, he or she can still connect over any public mobile phone network.

In some situations, workers can't carry a radio. They may already be carrying a smartphone and don't want to be burdened with a second device. MOTOTRBO Anywhere enables plenty of choices across Android or iOS devices, cellular or Wi-Fi, smartphone or tablet.

An organisation may need to add new people (eg, visitors, contractors) to a network quickly, when there are no spare radios available. MOTOTRBO Anywhere can give those people immediate or temporary access to a communications system.

MOTOTRBO Anywhere is initially available for Motorola's MOTOTRBO Connect Plus systems only.

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IP voice recorder software application

The Simoco IP Voice Recorder is a powerful software application which enables the recording and playback of all Simoco Xd voice calls from a standard-specification PC.

The voice recorder provides a user-defined means of recording, archiving and retrieving recordings. Recordings can be filtered by date, time and called or calling party. The ability to locate essential information quickly and conveniently means that retrieval is easy and fast, saving time and resources.

Each voice recorder server supports up to 100 channels. Simoco Xd IP flexibility enables additional servers to be added anywhere in the network. Each server acts as a component of a single distributed network system.

Distributed architecture enables high resilience and easy expansion.

Features include: automatic archiving; parameter-based report filtering; PC-based runs on Win 7; scalable storage capability; automatic archiving with email status reporting; IP connection to Simoco Xd system; analog, DMR Tier II and Tier III operation.

Simoco Australasia Pty Ltd
www.simocogroup.com

Battery analysers

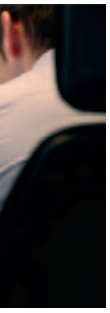
The Fluke 500 Series Battery Analysers simplify the workflow of testing stationary batteries and battery banks through an intuitive user interface that provides quick, guided test set-ups ensuring technicians are capturing the correct data while visual and audio feedback cues reduce the risk of errors.

The rugged, compact units are suitable for testing mission-critical battery backup applications in data centres, hospitals, airports, utilities, oil and gas, and railways. They perform all key measurements including battery resistance, DC and AC voltage, DC and AC current (BT521 model only), ripple voltage, frequency, and battery temperature (BT521 only). The 500 Series Battery Analysers have been specifically designed for measurements on stationary batteries including GEL, AGM (absorbed glass MAT), lithium-ion, as well as wet-cell lead-acid batteries.

The series intelligent test probes streamline the testing process by displaying measurement results on their integrated LCD. Technicians can capture voltage readings and temperature logging automatically or via the integrated save button. The probes feature infrared temperature measurement (BT521 only), tricolour LED for pass/fail/warning indications, and audio feedback.

The analysers also include simple, yet powerful reporting and analysis tools that manage large volumes of data to produce analysis graphics and data tables on a PC or create quick email format reports with .csv files.

Fluke Australia Pty Ltd
www.fluke.com.au



TETRA radio

The intrinsically safe Airbus THR9 Ex TETRA radio is certified according to ATEX and IEC-Ex specifications. The Lifeguard man-down alarm is an important safety feature for users working in places where the risk of accidents is higher.

The unit is rated II 2G Ex ib IIC T4 Gb for gas, II 2D Ex ib IIIC T90°C Db IP6X for dust, IP65 protection against water and dust, and has a solid and robust build. The unit has an integrated GPS receiver, and the frequency bands covered are 380-430 and 450-470 MHz

CSE-Uniserve Pty Limited

www.cse-uniserve.com.au

Wireless modules

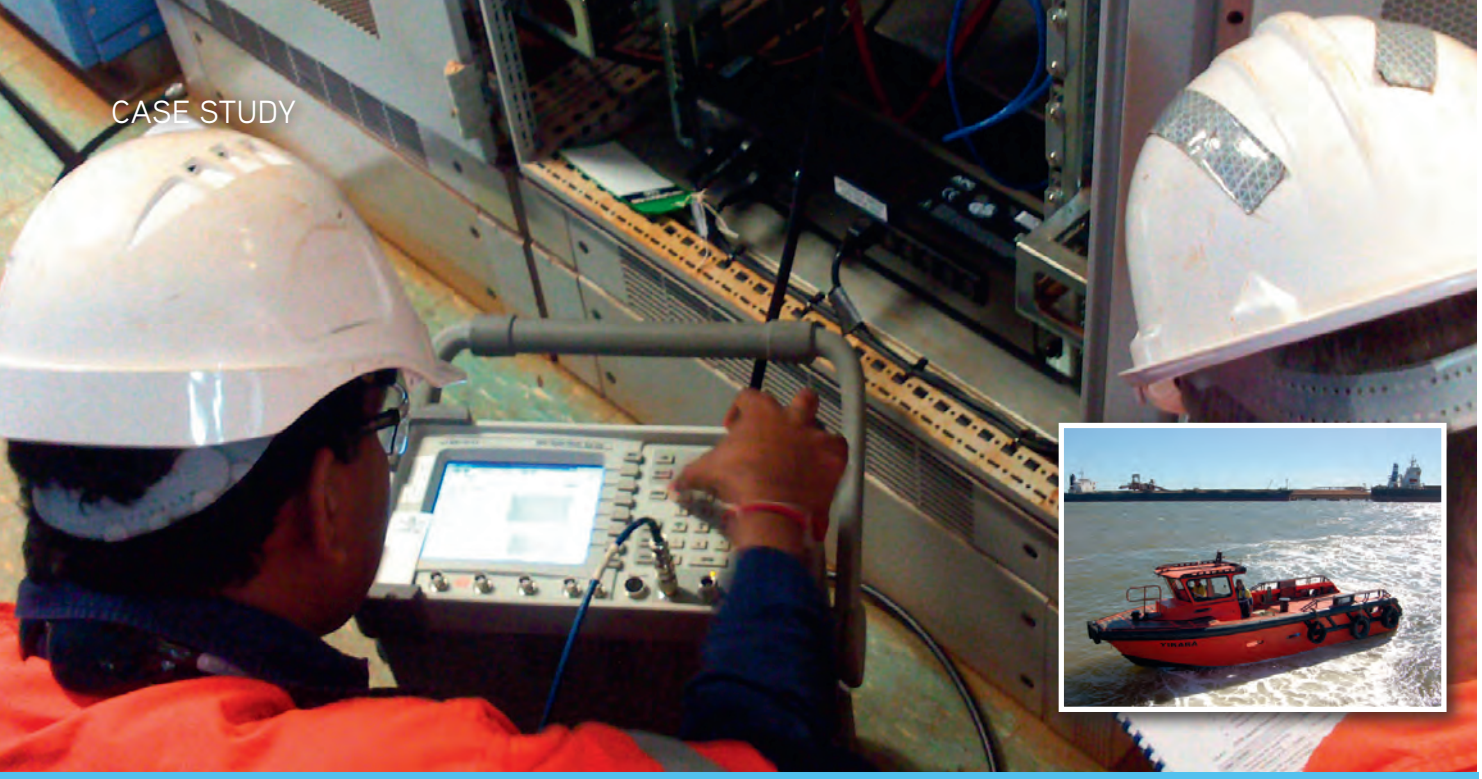
The Sierra Wireless AirPrime HL Series modules are a small, scalable, flexible solution in a compact and easy-to-integrate form factor that is interchangeable across 2G, 3G and 4G technologies. The flexible hardware design of the modules features a choice of snap-in socket or solder-down options. Both options enable manufacturers to leverage one design for their 2G, 3G and 4G deployments simply by changing modules.

Designed to be futureproof, the series offers secure upgrades over the air for any number of deployed devices, ensuring devices have the latest features and capabilities and can stay in service for many years while lowering maintenance time and operating costs. The modules include satellite navigation support with GNSS (GPS and GLONASS) and offer low power consumption and an extended power supply range, significantly improving battery-powered applications.

As more products are monitored and controlled remotely and as 3G and 4G LTE technologies evolve, now is the time to be designing systems with scalability in mind. The modules offer a clear and simple 2G-to-3G or 4G LTE migration path for the user's scalable wireless design.

M2M Connectivity

www.m2mconnectivity.com.au



REPEAT BUSINESS

When a mineral resources provider needed to extend its underground comms, it chose RFI DSP-based repeaters.

When a major mineral resources provider in Western Australia needed to extend the coverage of its underground communications, it chose RFI to supply and integrate a rebroadcast and combining system.

RFI facilitated the extended VMRS (voice mobile radio system) coverage within underground areas, specifically linking the communications of the rail car dumpers and a conveyer belt tunnel under the harbour to the Port Hedland terminal and Finucane Island ore-transfer stations.

In order to provide extended coverage, this project required two separate but similar networks coupled to existing multichannel base station sites.

The first was located at the Port Hedland Nelson Point terminal to extend coverage to the underground dumper works. This solution required one RFI DSPbR repeater, configured as a master to interface directly into an existing multichannel base station transmitter combiner and receiver multi-coupler.

The DSPbR is a multichannel digital signal processor-based repeater used to improve coverage inside buildings, tunnels, underground and remote areas. It covers VHF, UHF 700 and 800 MHz bands and is modular, expandable and fully configurable.

The DSPbR has significant advantages over conventional broadband repeaters due to its channelised (narrow-band) design.

Using a 'star' topology configuration, the DSPbR was connected to numerous slave DSPbRs using fibre-optic cables. Each slave-configured DSPbR was then used to provide extended bidirectional radio coverage below ground via a network of leaky feeder cables at four different locations.

The second network was located on the Finucane Island base station site with one DSPbR again configured as a master connected to numerous slave DSPbRs. This provided extended coverage for a further set of car dumper works below ground.

RFI
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Backhaul

25 YEARS AGO. The cover of the December/January 1989-90 issue of *What's New in Radio Communications* featured the (now very clunky looking) Bird Electronics model 4391 digital wattmeter from Vicom. The back cover featured the apparently 'mindboggling' KL series VHF/UHF series base stations from Unilab in Perth.

Elsewhere in the magazine we carried news of NEC winning a contract from the Electricity Commission of NSW to replace its 22-hop microwave system between Sydney and Tamworth; the Quiktrak system that told police when a car had been stolen (using strategically placed radios in urban areas that activated transponders in vehicles, and triangulated their positions); and advertiser Autophone Australia was pushing the recent arrival in Australia of Zetron products and systems.

10 YEARS AGO. The cover of the November/December 2004 issue of *Radio Comms Asia-Pacific* featured the release of Kenwood's FleetDispatch software. Inside, we carried news of a research project in the UK to stream high-quality video images from surveillance cameras direct to police officers. Known as Vigelant, if implemented the system would need a "national network for high bandwidth information exchange with interfaces to both mobile and rapidly deployable units", which in turn would require a "flexible national network incorporating broadband technology including WLAN, satellite, fibre and direct-link microwave components". Sound familiar? And what, no mention of LTE?

And Bob Horton, acting chairman of the ACA (now ACMA) summarised the agency's recently released report into spectrum use in Australia. Some numbers: the Australian economy was $12.3 billion larger in 2002-03 than it would have been without telecoms regulatory reforms introduced in 1997; the reforms resulted in 54,000 extra jobs and a 97% increase in the output of the telecommunications industry.

Spectrum

Narrowband, not narrow-minded

Land mobile radio has set the pace through innovation and delivering more with less, while simultaneously providing operational flexibility and resilience for users. Trunking and specialised mobile radio (SMR) techniques are the pioneering solutions that radio users have demanded and employed for their critical and enterprise operations. Digital radio delivers reliable one-to-many voice communications more effectively and efficiently than any other networked wireless solution. Instant group-based communications remains essential for mobile teams.

However, without network resource sharing and collaboration, smart SMRs and GRNs - first established in Australia - would not have been as successful, nor would they have been adopted globally. Without question, it has been the vision and determination to harness LMR technologies and apply them specifically to the needs of government and enterprise users alike that has built and sustained a client-focused industry that directly and indirectly employs over 3000 professionals in Australia.

Yet it is not good enough to live on past successes and become so core-focused that we miss influencing and changing the future. In particular, the LMR industry cannot provide lip service to the data needs of users - rather, it must engage proactively in the harnessing of data applications to serve its clients.

No longer can we rely just on 'instant voice' and 'hardened networks' as the means to convince new users of the benefits of investing into LMR. We must realise that 'data is the new voice'.

Holy Grails like great audio, long battery life and excellent RF design meant nothing when a certain computer company connected an audio player and full colour interactive display to a phone module. That day the world changed forever - no one cared about great audio, RF performance and battery life, but instead wanted and desired a new concept - a smartphone with apps.

The lesson for our industry is that we must harness the best concepts and delivery technologies that will open up the capabilities of our narrowband networks and investments. Narrowband does not mean narrow-minded.

Perhaps our greatest collaboration partner for the future is cloud computing. What is a cloud? Effectively it is a DataSMR. This we know and understand, we invented it, a sharing of purpose-built, hardened technology platforms, with flexibility, security, scalability and pay-as-you-go. Sounds like a GRN or SMR, but with data, not voice.

Our industry must engage and embrace cloud computing or DataSMR techniques. They share a single customer base focus like ours, ie, traditional LMR users such as enterprises, government and field operational teams.

Embracing cloud-computing concepts translates to delivering focused enterprise applications from a hardened and universal accessible resource. Access via the internet can be via many communication paths, including narrowband.

What LMR offers is a low-cost, resilient, always-available and value-added proposition for our users. But we can no longer refine our hardware story and live on voice applications alone - instead we must focus our energy not on our core business, but on our customers' core businesses. That means understanding how and why they run their operations so that as LMR professionals, we can partner, collaborate and bring a new suite of client solutions that blend SMR and DataSMR together.

To sustain our industry, we must look up, refocus from our protocol wars and take our seat at the communications table with other delivery systems such as 3/4G and LTE. That way, we can provide our customers with smarter, more efficient and client-focused solutions that include data applications. Data is the new voice.

David Cox is co-founder and Director of Pacific Wireless Communications and also VP Distribution for Safemobile Pty Ltd. He is the recipient of this year's ARCIA Jonathan Livingston Award.

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As the market leader in **DMR Tier III Trunking** solution, Hytera has so far offered over 6,000 channels to institutions of different sizes and industries, and various departments of governments, who rely on the system for seamless and resilient communications. Hytera empowers professionals and organizations to work more efficiently, and gain edges to stay ahead of the competition.

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